

**CALIFORNIA COASTAL COMMISSION**

45 FREMONT STREET, SUITE 2000  
 SAN FRANCISCO, CA 94105-2219  
 VOICE AND TDD (415) 904-5200

RECORD PACKET COPY

**M 12c****STAFF RECOMMENDATION****ON CONSISTENCY DETERMINATION**

Consistency Determination No.	<b>CD-45-98</b>
Staff:	MPD-SF
File Date:	4/6/1998
45th Day:	5/21/1998
60th Day:	6/5/1998
Extended to:	6/12/1998
Commission Meeting:	6/8/1998

**FEDERAL AGENCY:** U.S. Army Corps of Engineers

**DEVELOPMENT**  
**LOCATION:**

Humboldt Bay Navigation Channels and offshore  
 Humboldt Open Ocean Disposal Site (HOODS),  
 Humboldt County (Exhibits 1-3)

**DEVELOPMENT**  
**DESCRIPTION:**

Five Year Maintenance Dredging Program, consisting of  
 Spring (125,000-210,000 cu. yds./yr.) and Fall (340,000-  
 700,000 cu. yds./yr.) dredging, with disposal at HOODS

**SUBSTANTIVE FILE**  
**DOCUMENTS:**

See Pages 14-15

**EXECUTIVE SUMMARY**

The U.S. Army Corps of Engineers (Corps) has submitted a consistency determination for a Five Year Maintenance Dredging Program for Humboldt Bay, consisting of biannual Spring and Fall dredging, with disposal at the Humboldt Open Ocean Disposal Site (HOODS). The Commission has historically concurred with individual dredge sessions on a project by-project basis. The Commission has authorized disposal at HOODS for the last

14 dredging sessions (i.e., 7 years), and EPA formally designated HOODS a permanent dredge disposal site in 1995. The major issues raised by the dredging and disposal in Humboldt Bay are impacts to fisheries and marine species, loss of sand to the littoral cell, and navigational concerns.

The continued use of the HOODS will not cause a navigation hazard or adverse impacts to commercially valuable fishery resources. It could, however, contribute to beach erosion and shoreline retreat through loss of sand from the littoral system. As it has maintained consistently through past reviews of disposal of sand at HOODS, the Commission has expressed concerns over the need to monitor the shoreline for erosion along the north and south spits of Humboldt Bay.

To address this concern, the Corps has been monitoring the shoreline as an integral part of the Humboldt dredging program. The Corps will continue the monitoring as part of this 5-Year Program, as well as to reconsider disposal at HOODS in the event the monitoring were to indicate that shoreline erosion is occurring. Given the monitoring results to date, it is not yet clear whether loss to the littoral system of the material dredged from Humboldt Bay is significant to the local beaches or shoreline, due to the amount of natural sedimentation into Humboldt Bay, as well as the healthy delivery of sediment to the south spit by the Eel and Mad Rivers. As long as this monitoring program continues, there will be an early warning of any shoreline erosion that may occur. If it does, the Corps will be able to revise its disposal practices to keep more material in the littoral cell. Therefore, with the Corps' commitment to continue its shoreline monitoring program and modify the project if the results so warrant, the proposed program is consistent with the dredging, beach replenishment, navigation, marine resource and commercial fishing policies of the Coastal Act.

## **STAFF SUMMARY AND RECOMMENDATION**

**I. Project Description.** The Corps proposes to conduct a Five Year Maintenance Dredging Program in Humboldt Bay, from Fall 1998 through Spring 2003. The program would continue the Corps' past practice of biannual, Spring and Fall maintenance dredging of existing navigation channels to existing dredged depths. As it has been performed historically, Spring Maintenance Dredging would consist of removal of an estimated 125,000 to 210,000 cu. yds. of material, consisting primarily of fines and clays, dredged from the North Bay, Eureka, Samoa, and Fields Landing Channels. Fall Maintenance Dredging would consist of removal of an estimated 340,000 to 700,000 cu. yds. of material consisting primarily of sands, dredged from the Humboldt Harbor Bar, Entrance, and North Bay Channels. Disposal of both Spring and Fall dredging sessions would be at the Humboldt Open Ocean Disposal Site (HOODS) (Exhibits 1), which is one square mile in size, ranging in depth from 160 to 180 feet. Specific disposal locations at HOODS would be in Quadrants 3 and 4, Cells B4, B5, C4 and C5 (Exhibit 3).

A hopper dredge would be used to perform the dredging. The spring dredging is performed by a small government-owned barge and the amount of dredging is limited by the capacity of the barge and the time allotted for its use in Humboldt. The larger fall dredging episode is performed by a large commercial hopper dredge.

**II. Disposal History.** The Commission has reviewed and authorized numerous individual Corps dredging projects at Humboldt Bay since the federal consistency provisions were implemented. From the 1940s until the late 1980s, the Corps disposed of Humboldt Bay dredge material at a site identified as "SF-3," located south of the harbor entrance in about 55 feet of water (Exhibit 1). In 1977 EPA granted an interim designation to this site. However, in the 1980s the site began to shoal, creating a navigation hazard to local boaters and fishers. Consequently, SF-3 was "dedesignated." (The Corps continued to dispose material at SF-3 for several more years through a project-specific authorization pursuant to Section 103(d) of the Marine Protection, Research and Sanctuaries Act of 1972.)

In 1988 the Commission concurred with a consistency determination for the disposal of the fall dredge material at a near-shore site south of the harbor entrance (CD-5-88) (Exhibit 1). The Commission encouraged the use of this site for sandy beach-compatible material, as it retains beach quality material in the littoral cell. In 1989, the Commission concurred with a consistency determination for the disposal of the spring dredge material at SF-3 and for the disposal of the fall dredge material at the near-shore site (CD-26-89). The spring dredge material comes from the inner harbors and contains silts and clays, which are not suitable for near-shore disposal.

For the last 14 dredging operations (and one harbor deepening project), in reviewing consistency and negative determinations the Commission and its staff have agreed with the Corps that the HOODS site was the most appropriate and least damaging alternative (ND-21-98, ND-24-98, ND-128-97, ND-17-97, ND-91-96, ND-61-95, ND-10-95, CD-111-94, CD-64-94, CD-5-94, CD-48-93, CD-1-93, CD-89-92, ND-18-92, CD-29-91, CD-1-91, CD-31-90, and CD-3-90). In 1995 the Commission concurred with EPA's consistency determination for permanent designation of the HOODS site (CD-72-95).

**III. Status of Local Coastal Program.** The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the LCP has been certified by the Commission and incorporated into the CCMP, it can provide guidance in applying Chapter 3 policies in light of local circumstances. If the LCP has not been incorporated into the CCMP, it cannot be used to guide the Commission's decision, but it can be used as background information. The Humboldt County LCP (Humboldt Bay segment) has been certified by the Commission and incorporated into the CCMP.

**IV. Federal Agency's Consistency Determination.** The Corps of Engineers has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

**V. Staff Recommendation.**

The staff recommends that the Commission adopt the following motion:

**MOTION.** I move that the Commission **concur** with the Corps of Engineers' consistency determination.

The staff recommends a **YES** vote on this motion. A majority vote in the affirmative will result in adoption of the following resolution:

**Concurrence**

The Commission hereby **concurs** with the consistency determination made by the Corps of Engineers for the proposed project, finding that the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP).

**VI. Findings and Declarations:**

The Commission finds and declares as follows:

**A. Need for Dredging/Navigation.** Maintenance dredging of existing navigation channels in Humboldt Bay supports the dredging needs of the Humboldt Bay Harbor and Recreation District, the Coast Guard, commercial fishing boats, and recreational boats using the Bay. The Harbor District is a commercial port recognized by the Coastal Act (Section 30701). The Coastal Act contains strong policy language and legislative direction supporting and encouraging protection of existing shipping and boating uses, including the transportation of oil and gas, timber and timber products, and other commercial and recreational shipping and fishing activities. 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 30234 provides:

*The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

Section 30701 provides, in part, that:

*The Legislature finds and declares that:*

*(a) The ports of the State of California, including the Humboldt Bay Harbor, Recreation, and Conservation District, constitute one of the state's primary economic and coastal resources and are an essential element of the national maritime industry.*

Maintenance of the channels within the Bay is necessary to provide access to berthing, unloading and loading, and repair areas. These channels need regular dredging in order to maintain the depth necessary for ingress and egress into the bay. Without regular dredging, the channels would eventually silt up and interfere with access into the bay. The Coastal Act supports the proposed maintenance dredging in Humboldt Bay, because it is necessary to accommodate high priority uses such as those identified in Sections 30220, 30224, 30234 and 30701 of the Coastal Act. Disposal at HOODS would not result in a navigation hazard or adversely affect fishery resources for the reasons discussed below in analyses of alternative disposal sites and marine resource impacts, and therefore the proposed disposal would also be consistent with these Coastal Act policies.

**B. Dredging:** Section 30233(a) of the Coastal Act states in part that:

*(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 [, including]: ...*

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

The proposed maintenance dredging program constitutes dredging within wetlands and estuaries, and the proposed disposal constitutes filling within open coastal waters. Section 30233(a) of the Coastal Act sets up a three part test for such projects: (1) an allowable use test; (2) a mitigation test; and (3) an alternatives test. The first test is met because the project qualifies as an allowable use under Section 30233(a)(2) as "Maintaining existing, ... previously dredged, depths in existing navigational channels...".

Addressing the second (alternatives) test of Section 30233(a), without the dredging navigation in the Bay would become hazardous and eventually impossible due to sedimentation. No other dredging alternatives are feasible or less damaging. The Commission therefore reiterates, as it has found previously, that the proposed maintenance dredging of existing navigation channels to previously dredged depths represents the least damaging feasible dredging alternative.

Turning to disposal alternatives, factors included in the disposal site selection process have historically been: (1) the site needed to be located close enough to the harbor to be economically feasible; (2) the site needed to reflect the concerns of the local boating and fishing community; and (3) the site needed to minimize unavoidable adverse ecological effects from disposal. As analyzed in previous consistency determinations, the Corps considered several disposal sites: the proposed HOODS site (used in the past 14 dredging operations); the nearshore site (used in 1988 and 1989); and SF-3 (used for many years prior to 1988), all of which are shown on Exhibit 1. When the Commission concurred with EPA's consistency determination for permanent designation of the HOODS disposal site as the area's dredge disposal site in 1995, the Commission compared the three sites as follows:

*SF-3 was rejected due to the fact that past disposal at that site resulted in mounding and waves breaking, causing a navigational hazard to boaters. The Corps used the near-shore disposal site for disposal of material from ...[several] past dredging sessions. As part of its dredging operations, the Corps of Engineers monitored the near-shore site through pre- and post-disposal bathymetric surveys, release of seabed drifters, and biological sampling. From the bathymetric surveys, the Corps determined that the near-shore site has shallowed over much of the area by several feet and has not returned to its pre-disposal depths. There were also concerns about effects on juvenile crab habitat, other biological effects, and impacts to*

*navigational safety. Therefore, unless ongoing shoreline erosion monitoring indicates an erosion problem, the Commission considers the near-shore site to be less preferable than the HOODS site.*

Biologically, use of HOODS for disposal minimizes the impacts of disposal on biologically and commercially important species in the area. This site has shown lower biotic abundance than other sites in the general area. In addition, the site is at a depth (160 to 180 ft.) which minimizes shoaling problems. Finally, as discussed below concerning disposal site monitoring and in the following section of this report concerning shoreline monitoring, the site will continue to be monitored to assure it remains the least damaging disposal alternative. Therefore, as it has found for dredging activities in Humboldt Bay for the last seven years, the Commission concludes that, with the monitoring program, and assuming no evidence of shoreline retreat, disposal at the HOODS site represents the least environmentally damaging feasible alternative.

The third (mitigation) test of Section 30233(a) is met because: (1) the temporary turbidity impacts from dredging are minor and do not warrant mitigation; and (2) monitoring at the disposal site and, as discussed in the following section, monitoring shoreline erosion, to date have not indicated disposal to be causing significant adverse impacts. The site designation process included measures to manage and monitor impacts at the disposal site. EPA and the Army Corps have joint authority for regulating ocean disposal of dredged material and for managing ocean disposal sites. Management of an ocean disposal site includes: (1) regulating the quantities, types of material, times, rates, and methods of disposing dredged material at an ocean disposal site; (2) developing and maintaining an effective monitoring program for the site; (3) recommending changes for site use, disposal amounts, or designation for a limited time based on periodic evaluation of site monitoring results; and (4) enforcing permit conditions. These measures are provided in EPA's Site Management and Monitoring Plan (SMMP) (Exhibit 5), which describes the management and monitoring activities, and which will be in effect for the expected period of site use (up to 50 years and/or an expected maximum capacity of 400 million cubic yards). The primary goal of the SMMP is to assure that the continued use of the disposal site will not cause significant adverse impacts on the marine environment.

Therefore, the Commission finds that the project's impacts are either self-mitigating or do not rise to a level that requires mitigation. The Commission concludes that the 5-Year Dredging Program constitutes an allowable use, is the least damaging feasible alternative, and includes adequate monitoring and commitments to avoid or mitigate impacts in the event monitoring documents adverse impacts, and is therefore consistent with Section 30233(a) of the Coastal Act.

C. Sand Supply. Section 30233(b) of the Coastal Act provides:

*(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.*

This section of the Coastal Act encourages placement of sandy dredge spoils in a manner that will ensure their return to the longshore transport system, when possible. One of the concerns of any dredging project and spoils disposal is the loss of sand to the particular littoral cell, and the possible resulting erosion up- or down-coast. Fall maintenance dredging material in Humboldt Bay (i.e., the material from the Bar, Entrance and North Bay channels) is predominantly sand and may be suitable for either beach replenishment or nearshore disposal.

Prior to the late 1980s, both Spring and Fall material was placed at SF-3, which may have been shallow enough to be within the littoral system given the high-energy wave climate off Humboldt Bay. However, as discussed on page 3 of this report, disposal at SF-3 was discontinued because the material placed at SF-3 was mounding and creating a shoaling problem. Longer period waves break at the mound and add to the generally difficult navigation in and out of Humboldt Harbor. Such a navigational hazard can be dangerous to boaters and commercial fishers, and may discourage boating in the area. The Commission subsequently supported disposal at a nearshore site in the late 1980s, which was definitely within the littoral system. However use of this site was also discontinued, this time due to habitat and fisheries (as well as navigation) concerns. Because of the difficulty in finding a feasible and suitable nearshore site, and given the stability of the shoreline in this area, since the late 1980s the Commission has authorized non-littoral cell disposal for sandy material, as long as it has been accompanied by shoreline monitoring.

This position has been due in part to the fact that the Humboldt Bay area has a high sedimentation rate which may lessen the effect of loss of sand from the longshore transport zone. The primary sources of sediment to the project area are the Eel River and the Mad River. These rivers deliver an estimated 27,225,000 and 2,769,000 tons of sediment to the project area per year, respectively. In addition, the offshore coastal shelf area receives a positive sedimentation rate of 0.78-1.95 inches per year (HSU 1990). The proposed project will remove approximately less than a million cubic yards of sandy sediment annually. Thus, while in other areas of California's coast, in particular eroding shorelines in southern California, a removal rate of this magnitude would be significant, on a short term basis the effects of this loss in the Humboldt Bay area are minimized due to the amount of overall sedimentation.



Long term effects may or may not be significant. The sediment transport system in the project area is not well understood, and opinions vary as to the predominant direction of littoral drift. In an effort to better understand the littoral cell, the Corps has undertaken a long-term study of sedimentation and erosion in the project area. The goal of the study is to detect shoreline changes attributable to removal of sand from the littoral system. If the study demonstrates a problem, the Corps will re-evaluate the location of the disposal site or consider other forms of mitigation.

The major components of the ongoing monitoring program are quantitative and qualitative data and analytical reports, ongoing research by academia and the Corps, aerial photographs, and beach profiles. The Corps has been preparing beach profiles and aerial photographs of the Humboldt cell, initially at least once every two years, and subsequently, with agreement from the Commission staff, once every three years. The Corps originally proposed in the subject consistency determination to revise this to once every five years; however, for the reasons discussed below and as recommended by the Commission's staff, this approach has been rescinded and the Corps will continue the once-every-three-year frequency. The Corps further describes the Monitoring Plan and results gained to date as follows:

***Humboldt Shoreline Monitoring Program:*** *As part of a previous Consistency Determination issued by the Commission, and concerns regarding the permanent Section 102 designation of HOODS (Humboldt Open Ocean Disposal Site), the Corps agreed to establish the Humboldt Shoreline Monitoring Program (HSMP). The HSMP is intended to monitor the effects of removing material from the littoral zone and disposing of it in a non-dispersive, deep-water disposal site (HOODS), and any potential affects on the shoreline (i.e., erosion or accretion) this may cause. The HSMP is located within the Eureka littoral cells and extends from a point approximately 10 km south of the South Jetty, and 10 km north of the North Jetty (... [Exhibit 4]).*

*In October 1990, the HSMP study was started and initial data was collected. The Corps reviewed historic shoreline conditions and developed a "threshold of unfavorable shoreline change" (i.e., baseline warning position), which would act as an erosion warning. This threshold shoreline position has taken into account general seasonal changes to the shoreline, so that any long-term erosion would be noticed. If it is observed through periodic monitoring (i.e., every 3 years for the first nine years and then every five years after that), that the shoreline position of the spits retreats bayward of this warning position, further investigation and reevaluation into the effects of disposal at HOODS and alternative disposal site practices would be initiated. Since 1990, additional HSMP data has been collected in both October 1992 and September 1995.*

*In 1991, a study conducted by Moffat & Nichol on the Humboldt shoreline history from 1948 to 1990, concluded that shoreline accretion was observed up to 9.6 km south of the South Jetty from 1948-1990, and up to 9.6 km north of the North Jetty from 1948-1974. However, a strong pattern of shoreline retreat was observed up to 3 km north of the North Jetty from 1974 to 1990. A comparison of 1992 data with 1990 data showed that the south shoreline during this time has experienced an average accretion of 13 meters, while the north shoreline accreted an average of 2 meters. Whereas, a comparison of 1995 beach profile surveys with those of 1992, indicated a significant amount of shoreline loss had occurred; a comparison of aerial photos taken on 19 September 1997 with those taken on 18 November 1997 indicated accretion had occurred along the entire study reach. Nevertheless, the analysis of shoreline data collected in 1995 revealed that photogrammetric results were in conflict with land-based survey results, and that additional data to be collected in Fall 1998, will be necessary to determine if the shoreline is experiencing erosion or accretion. Overall, based on a re-evaluation of their 1995 data and past work, Moffat & Nichol have determined that accretion is indicated throughout the study area from 1992 to 1995.*

*Although disposal at the HOODS has been ongoing since 1990, to date no relationship between shoreline change and dredge disposal has been determined. Due to the variety of factors affecting shoreline position, the effects of dredged material disposal at the HOODS will only be realized over the long term (10 years or more). Nevertheless, the Corps is committed to continue the HSMP, as agreed to in their [Draft] "Memorandum of Understanding" with the CCC, and the next round of shoreline data collection is scheduled for Fall 1998.*

The Commission staff and the Corps have also been in the process of drafting a Memorandum of Understanding (MOU) to reflect the monitoring commitments; however this MOU has not been finalized. Despite the lack of an MOU, the Corps has remained committed to continuing the monitoring, which the Commission has considered to be crucial if there is to be long-term disposal of dredged material outside the littoral cell.

**Commission Conclusion.** While the continued disposal at HOODS will avoid effects on navigation or fishery resources, it has the potential to contribute to beach erosion and shoreline retreat through loss of sand from the littoral system. Because of the historic problems associated with SF-3 and nearshore disposal at the site that was used during the late 1980s, for the last 7 years the Commission has authorized Corps disposal of sandy material at HOODS, as long as it is accompanied by shoreline monitoring and a commitment to reconsider disposal options in the event the monitoring shows erosion is occurring. Monitoring results to date have not established that shoreline erosion is occurring; however given the discrepancy in the aerial versus shoreline profile results discussed above, the Commission does not at this point support less frequent monitoring as

originally proposed by the Corps. Consequently, the Corps has agreed to modify the consistency determination to remain on its current frequency-of-monitoring schedule. In addition, despite the fact that the Corps is seeking a 5 year authorization, if during the 5 year period evidence indicates shoreline erosion is occurring, the Corps will reconsider its disposal practices at that time. In any event, given the extremely large inputs of sand from the Eel and Mad Rivers, it is very likely to take over five years to establish a consistent shoreline trend. By continuing to monitor the shoreline position, the Corps will have early indications of shoreline erosion, if it should occur, and will be able to revise its disposal practices to keep more material in the littoral cell. With the commitments the Corps has included in this 5-Year Dredging Program, the Commission concludes that disposal of sandy material at HOODS is consistent with the sand supply policy Section (30233(b)) of the Coastal Act.

**D. Marine Resources and Fisheries.** Section 30230 of the Coastal Act states:

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

Further, Section 30231 of the Act states:

*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 ...*

Both of these sections mandate the protection of marine resources. In addition, as quoted on page 5, Sections 30234 and 30234.5 provide for the protection of commercial and recreational fishery resources. Humboldt Bay provides habitat for many species of fish, including finfish, shellfish, clam beds, and oysters. Seven of the state's 12 shellfish reserves are located in the Humboldt area. Of special importance to the offshore area is the Dungeness crab resource. The area also supports a large recreational fishing business.

Two federally-listed endangered species are known to occur in the project area: the California Brown Pelican (*Pelecanus occidentalis*) and the short-tailed albatross (*Diomedea albatrus*). The threatened western snowy plover (*Charadrius alexandrinus*) nests on the South spit of the harbor, and the threatened marbled murrelet (*Brachyramphus marmoratus*)

may also occur in the project area. This species has also recently been listed as threatened by the Fish and Wildlife Service. Various waterfowl, shorebirds, and marine mammals are also found in the Bay.

Recognizing the importance of marine resources to the Humboldt area, the Corps entered into a contract with Humboldt State University to study the marine environment around Humboldt Bay. The study included the collection and analysis of ocean sediments, benthic infauna, demersal fish and macroinvertebrates from the nearshore site and HOODS. Samples were taken in August 1989 and March 1990. The March 1990 survey identified 190 species of benthic infauna. In addition to the survey, the Corps drew on research by Toole to summarize critical stages of commercially important fish and invertebrates for Humboldt County, by habitat and season. For example, the Bay provides important nursery habitat for three species of crab, including Dungeness crab (DFG, 1973). However, the impact on these species should be minimal; further, no time of year is not sensitive for several of these species, and no dredging at all would cause greater damage to the commercial fishing industry. The Commission has also previously found that adult crabs should be able to unbury themselves if sand were placed on them, and that maintenance dredging is unlikely to affect waterfowl, shorebirds, or marine mammals, including the threatened/endangered species noted above, as the dredge plant operates in open water and moves slowly.

Thus, while the proposed project will have temporary negative impacts on some species, due to turbidity and temporary smothering, it will not adversely affect particularly sensitive or either biologically or commercially important species, and the Commission has historically determined the temporary effects from dredging in Humboldt Bay to be minimal.

Turning to disposal, there are no disposal site alternatives that avoid impacts to benthic infauna, epifauna, or other bottom species. Use of HOODS minimizes impacts on biological resources of the area, as the site contains lower biotic abundance than other sites in the general area. Also, HOODS has naturally varying substrates, including areas of fine sand to sandy silt. Disposing of dredge materials in an area with similar substrate to the dredge material should speed recolonization of the site. Mobile fish species will re-occupy bottom the area covered with dredged material at HOODS following completion of disposal operations.

As is necessary for all open ocean dredge disposal activities the Commission reviews, the quality of the sediments proposed for open ocean disposal have been evaluated based on the 1991 EPA/Corps testing manual, Evaluation of Dredged Material Proposed for Ocean Disposal -- Testing Manual (i.e., the "Green Book"). The Corps states:

*The duration of this CD [Consistency Determination] is based upon agreements made in a September 4, 1996 interagency meeting between the Corps, California Coastal Commission, Environmental Protection Agency, and the North Coast Regional Water Quality Control Board. In the above referenced "Environmental Assessment Reviews (EARs)", the Corps summarizes the results of four years of comprehensive baseline sediment testing evaluations. The results have demonstrated that sediments from the Federally maintained channels at Humboldt Harbor are generally free of contamination, and are not expected to pose an unacceptable risk to the marine environment. Based upon this conclusion, it was determined that the Corps will: (1) conduct confirmatory physical and chemical testing of all sediments from Humboldt Harbor & Bay Channels (Spring & Fall dredging) every five-years starting either in 2002 or immediately following the Humboldt Harbor & Bay Deepening Navigation Project and (2) conduct full Green Book (physical, chemical, and biological) sediment testing on a once-every-ten-year cycle, unless baseline conditions change.*

EPA agrees that past sediment testing has been adequate to determine the material suitable for ocean disposal, and that the proposed frequency of future testing is adequate to protect marine resources. Thus, the dredging and disposal program will have minimal impacts on water quality and marine resources. Turbidity will increase temporarily, which may affect the ability of phytoplankton to photosynthesize. However, water quality will not be degraded as the sediments have been tested for possible contaminants. Sediment chemistry and toxicity test from previous spring and fall maintenance dredging and disposal activities within the Humboldt Bay area have demonstrated that the material dredged from these channels is relatively free from organic and heavy metal contamination and is suitable for open ocean disposal. Therefore, based on current and historic sediment quality analysis, the Commission finds that the proposed dredging project will not affect water quality or marine resources of the coastal zone.

To assure that the Commission will continue to receive the information necessary to monitor each dredging session, the Corps has agreed as follows:

**Coordination with the California Coastal Commission (Commission):** *A pre- and post-hydrosurvey are made every Spring and Fall for the maintenance dredging of Humboldt Harbor Channels. The Corps will notify the Commission at least 30 days prior to the start of routine maintenance dredging for the Spring and Fall maintenance dredging projects covered in this CD, and provide information regarding the areas to be dredged, estimated dredging quantity, time schedule for the work, and the current environmental review of the project (i.e., an Environmental Assessment Review [EAR]). In the case of emergency dredging, the Corps will notify the Commission as soon as possible and*

*provide the necessary information and environmental documentation. If there is a significant change in any features of the Spring and Fall projects covered under this Blanket CD, then a request to amend it will be submitted to the Commission at least 60-90 days prior to the commencement of dredging.*

In conclusion, with this commitment for ongoing coordination for the life of the program, as it has found in reviewing the last 14 dredging sessions in Humboldt Harbor, the Commission finds that the proposed dredging and disposal at HOODS represents the least damaging feasible alternative and would avoid significant adverse impacts to marine resources, commercially and recreationally valuable fish resources, and endangered and threatened species. The Commission therefore finds that the project is consistent with Sections 30230, 30231, 30234 and 30234.5 of the Coastal Act.

## **VII. SUBSTANTIVE FILE DOCUMENTS**

1. Previous Corps Consistency and Negative Determinations for Maintenance Dredging in Humboldt Bay: ND-21-98, ND-24-98, ND-128-97, ND-17-97, ND-91-96, ND-61-95, ND-10-95, CD-64-94, CD-5-94, CD-48-93, CD-1-93, CD-89-92, ND-18-92, CD-29-91, CD-1-91, CD-31-90, CD-3-90, CD-26-89, CD-45-88, CD-31-88, CD-5-88, CD-21-87, and CD-18-85.
2. Consistency Determination No. CD-111-94, for Corps Harbor Deepening Dredging in Humboldt Bay.
3. Consistency Determination CD-72-95, Environmental Protection Agency (EPA) designation of offshore (HOODS) disposal site.
4. Environmental Impact Statement for designation of an Ocean Dredged Material Disposal site off Humboldt Bay.
5. Environmental Assessments for Spring 1998 and Fall 1997 Humboldt Bay Dredging, U.S. Army Corps of Engineers.
6. Dependence of Shoreline Change on Channel Dredge Material Disposal Practices, Humboldt Bay, CA, A Case Study, Madalon and Kendall, 1993.
7. Shoreline Mapping for Humboldt Bay Entrance, Phil Williams & Assoc./U.S. Army Corps of Engineers, August 1, 1996.

8. Shoreline Mapping, Pacific Coast Near Entrance to Humboldt Bay, California, Moffatt & Nichol for U.S. Army Corps of Engineers, August 1, 1991.

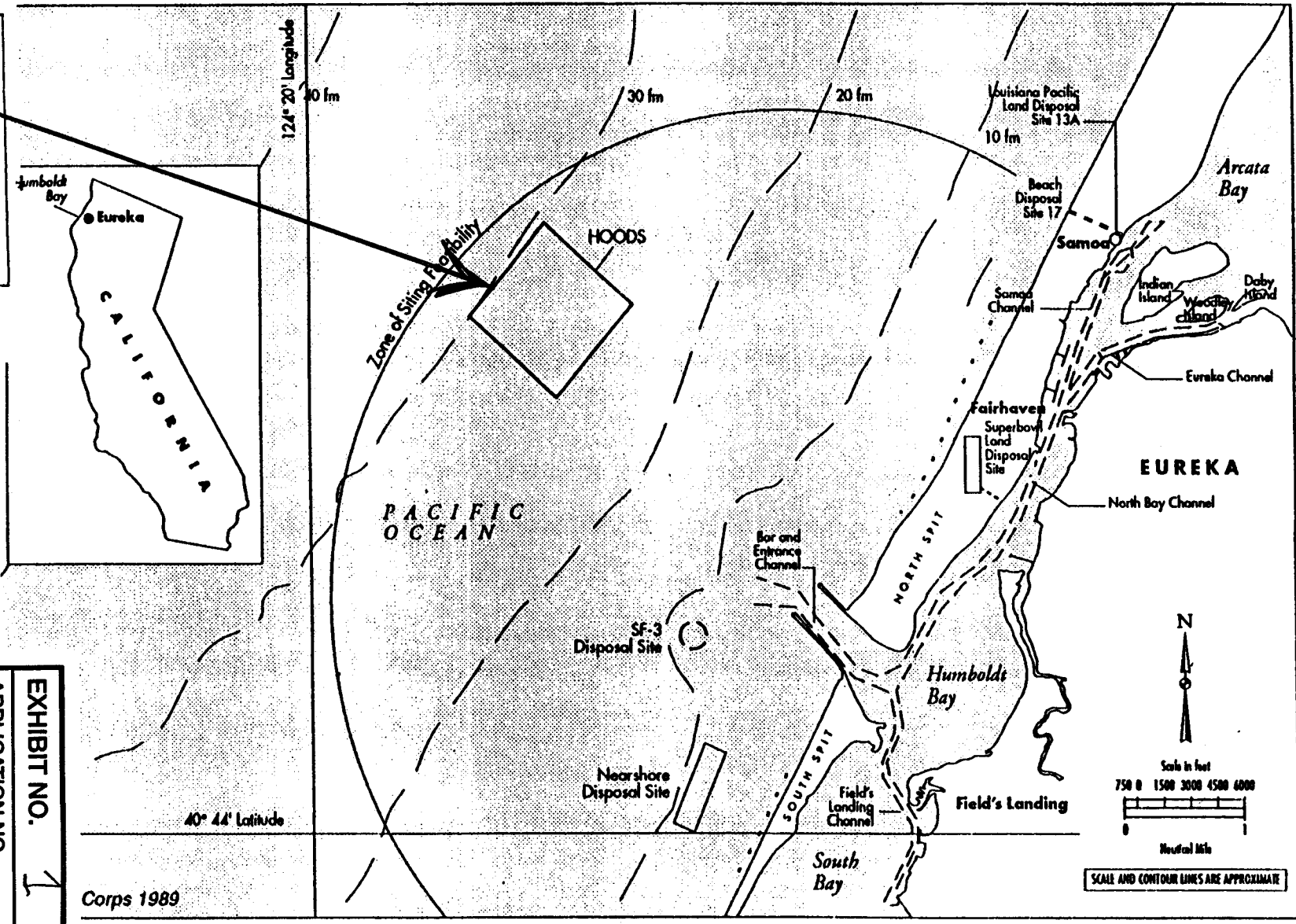
9. Humboldt Shoreline Monitoring Update, U.S. Army Corps of Engineers, 1997/1998.

10. Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, Environmental Protection Agency and the Corps of Engineers, February, 1991.

*4598.doc*

DISPOSAL  
SITE - HOODS

EXHIBIT NO. 1  
APPLICATION NO.  
CD-45-98

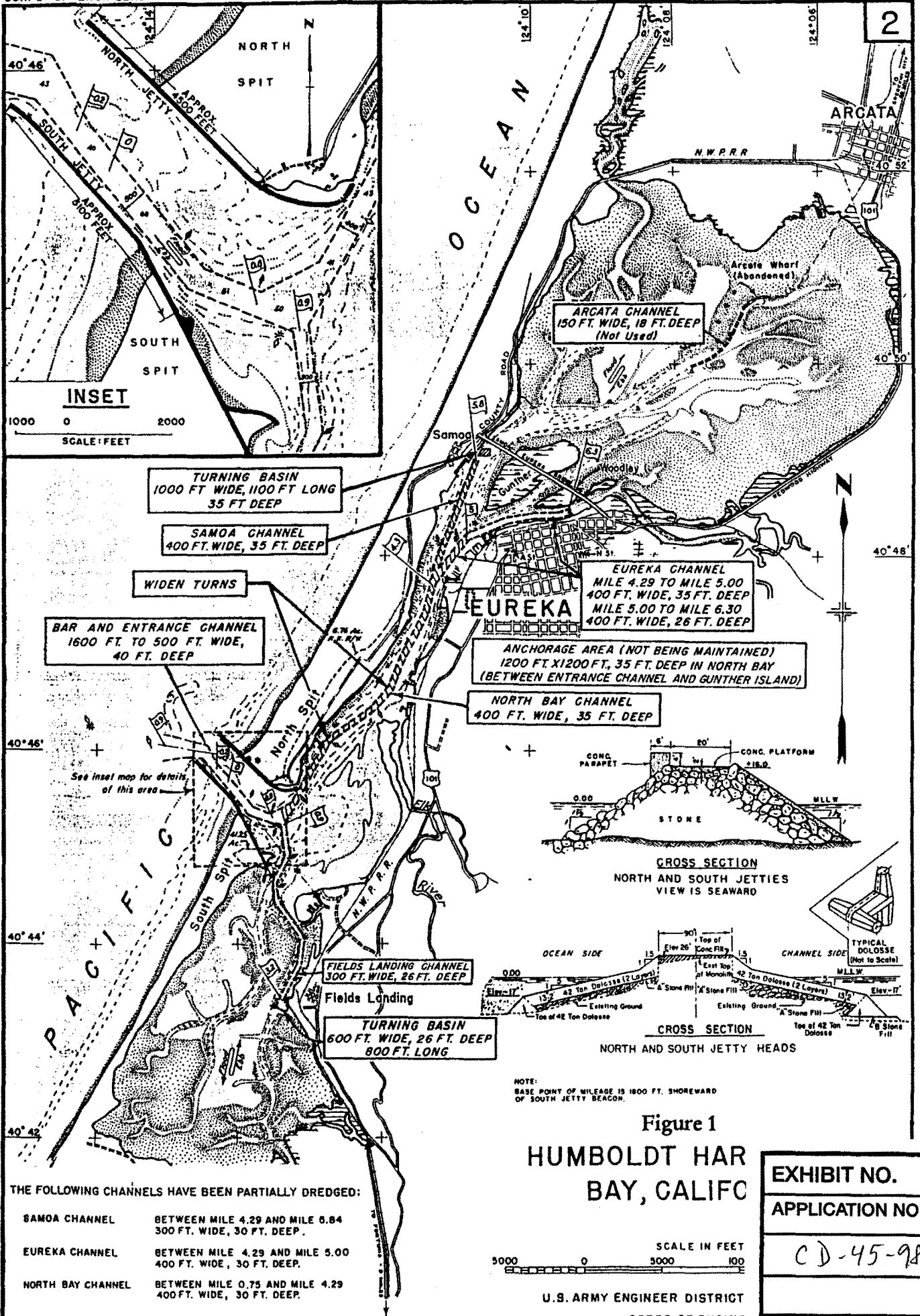


Corps 1989

Figure 1-1. Location of Past and Present Ocean and Land Dredged Material Disposal Sites Near Humboldt Bay, California



2



**INSET**

1000 0 2000  
SCALE: FEET

**TURNING BASIN**  
1000 FT WIDE, 1100 FT LONG  
35 FT DEEP

**SAMOA CHANNEL**  
400 FT. WIDE, 35 FT. DEEP

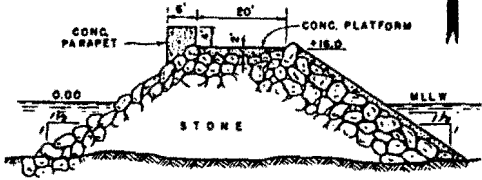
**WIDEN TURNS**

**BAR AND ENTRANCE CHANNEL**  
1600 FT TO 500 FT WIDE,  
40 FT. DEEP

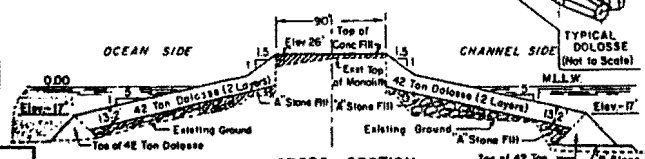
**EUREKA CHANNEL**  
MILE 4.29 TO MILE 5.00  
400 FT. WIDE, 35 FT. DEEP  
MILE 5.00 TO MILE 6.30  
400 FT. WIDE, 26 FT. DEEP

**ANCHORAGE AREA (NOT BEING MAINTAINED)**  
1200 FT X 1200 FT, 35 FT. DEEP IN NORTH BAY  
(BETWEEN ENTRANCE CHANNEL AND GUNTHER ISLAND)

**NORTH BAY CHANNEL**  
400 FT. WIDE, 35 FT. DEEP



**CROSS SECTION**  
NORTH AND SOUTH JETTIES  
VIEW IS SEAWARD



**CROSS SECTION**  
NORTH AND SOUTH JETTY HEADS

NOTE:  
BASE POINT OF MILEAGE IS 1800 FT. SHOREWARD  
OF SOUTH JETTY BEACON.

**Figure 1**  
**HUMBOLDT HARBOR**  
**BAY, CALIF.**

THE FOLLOWING CHANNELS HAVE BEEN PARTIALLY DREDGED:

SAMOA CHANNEL	BETWEEN MILE 4.29 AND MILE 5.84 300 FT. WIDE, 30 FT. DEEP.
EUREKA CHANNEL	BETWEEN MILE 4.29 AND MILE 5.00 400 FT. WIDE, 30 FT. DEEP.
NORTH BAY CHANNEL	BETWEEN MILE 0.75 AND MILE 4.29 400 FT. WIDE, 30 FT. DEEP.

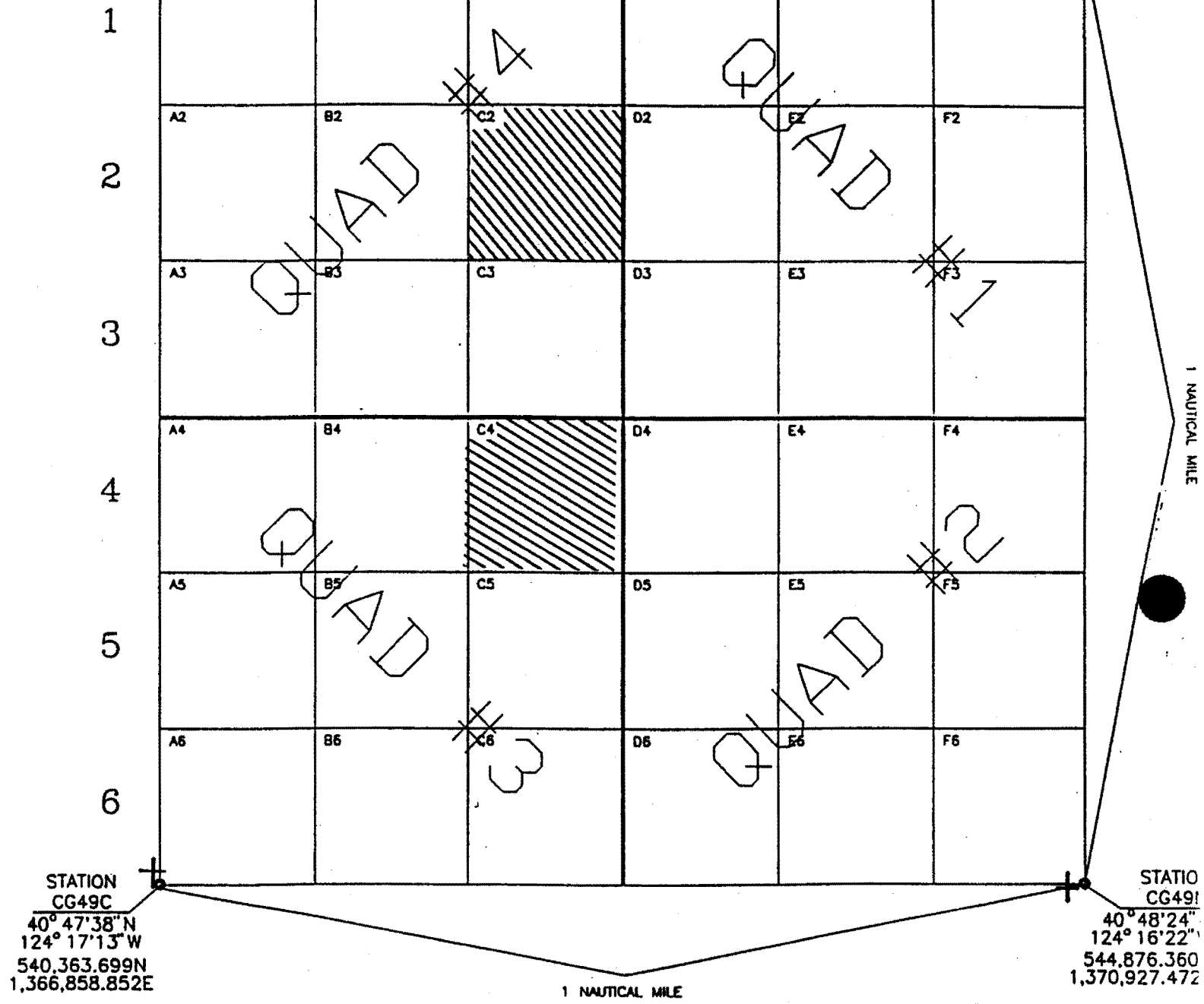
SCALE IN FEET  
5000 0 5000 100

U.S. ARMY ENGINEER DISTRICT  
CORPS OF ENGINEERS  
SAN FRANCISCO, CALIFORNIA

EXHIBIT NO. 2
APPLICATION NO.
CD-45-98

STATION  
CG55C  
40°48'17"N  
124°18'13"W  
544,432.319N  
1,362,346.191E

STATION  
CG55H  
40°49'31"N  
124°17'22"W  
548,910.000N  
1,366,000.000E



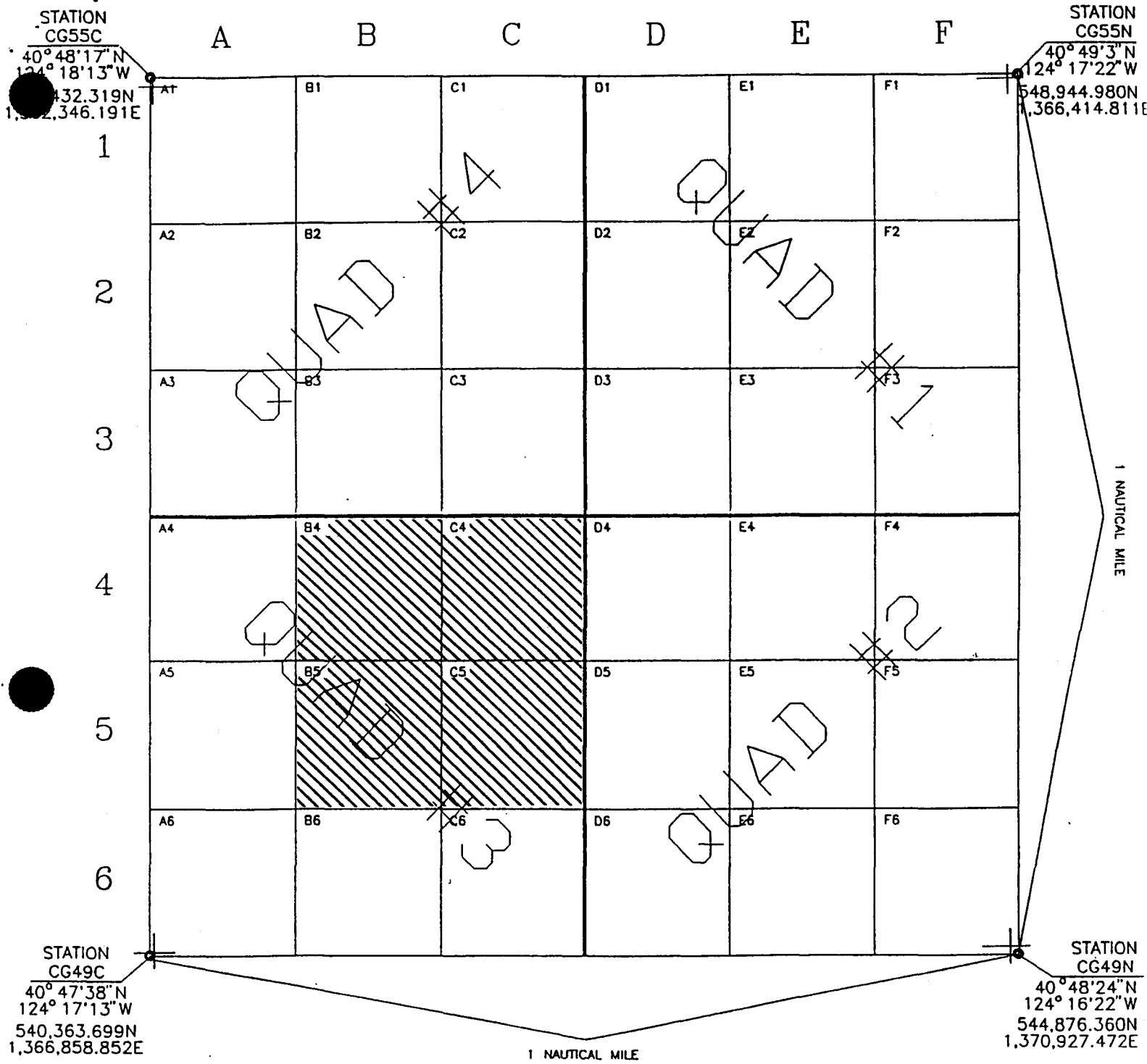
STATION  
CG49C  
40°47'38"N  
124°17'13"W  
540,363.699N  
1,366,858.852E

STATION  
CG49H  
40°48'24"N  
124°16'22"W  
544,876.360N  
1,370,927.472E

1 NAUTICAL MILE

EXHIBIT NO. 3
APPLICATION NO.
CD-45-98

**Humboldt Open Ocean Disposal Site**  
Cells in HOODS used for Spring Maintenance Dredging



# Humboldt Open Ocean Disposal Site

Cells in HOODS used for Fall Maintenance Dredging

EXHIBIT 3 p. 2

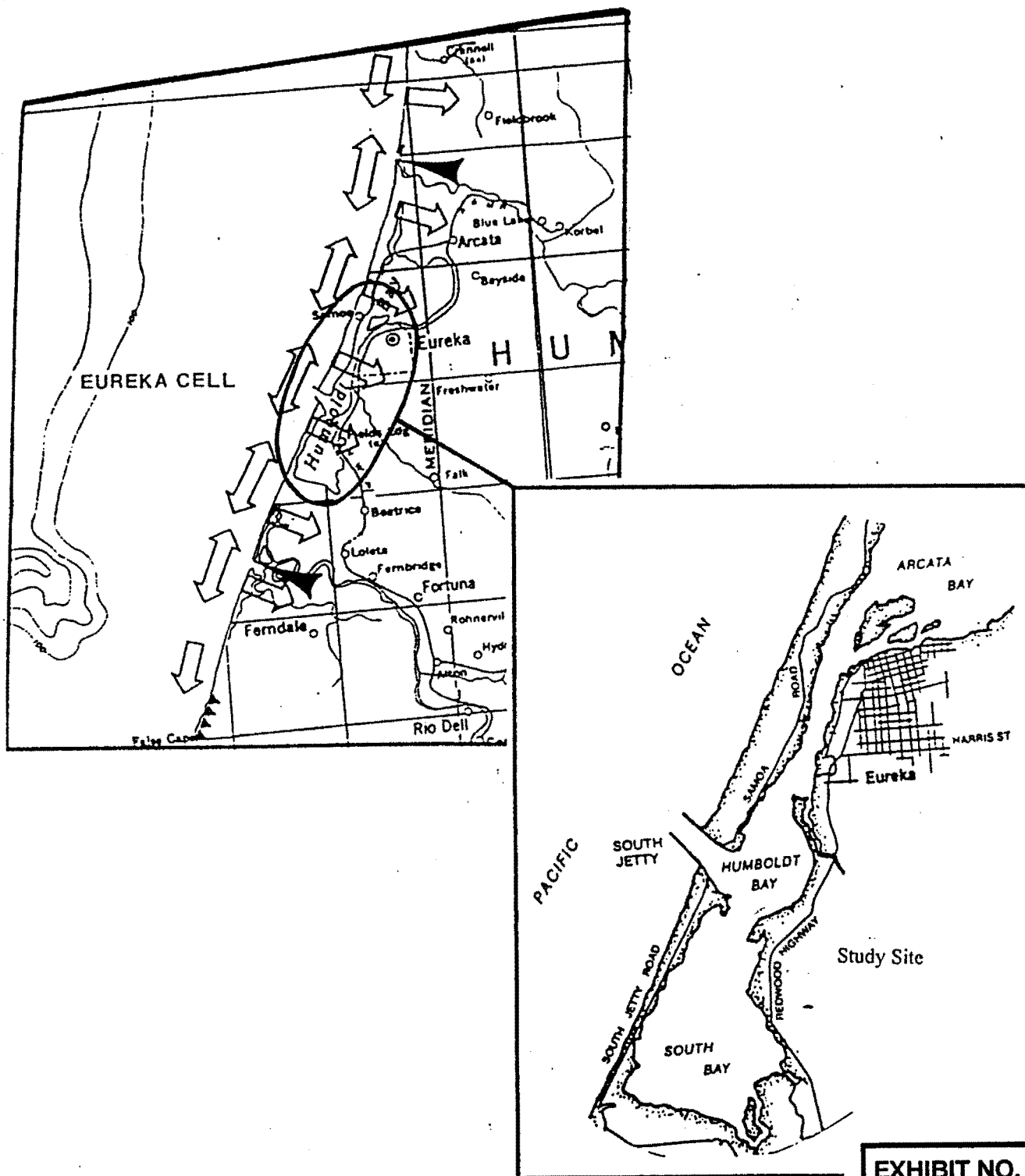


EXHIBIT NO.	4
APPLICATION NO.	
	CD-45-98

FIGURE 4. The Eureka Littoral Cell and Study Site for the Humboldt Shoreline Monitoring Program.

## EXHIBIT A

### HUMBOLDT BAY (HOODS) OCEAN DREDGED MATERIAL DISPOSAL SITE SITE MONITORING PROGRAM

#### I. INTRODUCTION

Disposal of dredged material is expected to change benthic conditions inside the HOODS boundary because the variation of grain sizes in dredged material disposed at the HOODS is expected to allow different species to colonize the area. Site monitoring activities are necessary to assure that long-term unacceptable adverse environmental impacts do not occur within the HOODS site or beyond the site boundaries. A three-tiered monitoring program has been designed to evaluate conditions at the HOODS. Tier 1 consists of periodic physical surveys of the disposal site to determine the areal extent of disposed dredged material and whether material is being deposited outside of the disposal site boundaries. If significant adverse impacts on selected biological resources are suspected based on the Tier 1 survey, data on physical impacts (Tier 2) and body burdens of chemicals of concern (Tier 3) at the HOODS site and adjacent areas will be compared to a reference site.

The HOODS site monitoring activities are a part of the overall HOODS SMMP. The site monitoring program is based on testing specific hypotheses at three sequential tiers. Several aspects of the site monitoring program were developed in direct response to concerns identified in the HOODS Final Environmental Impact Statement (FEIS). These concerns include questions on the movement of dredged material disposed at the HOODS and possible associated impacts on resident marine resources or fisheries resources if the disposed sediments move outside the site boundaries. Procedures defined in the site monitoring program should provide data required to make management decisions; however, the site monitoring program will be managed with the flexibility to modify, delete or substitute new monitoring procedures as other needs are identified.

#### II. OBJECTIVES

One of the major objectives of the HOODS site monitoring activities is to detect potentially adverse impacts beyond the HOODS site boundaries. Adjustments in site use will be selected to prevent adverse impacts from occurring in areas adjacent to the HOODS. Scientific analysis of the fate of the disposed dredged material is essential to meet this objective. With regard to physical sedimentation impacts, the objective is to determine whether benthic biological resources of concern have been adversely affected by sediment movement out of the site. The objective of biological monitoring is: (1) to determine if the ODMDS is causing detrimental bioaccumulation in resident infauna, epifauna or fisheries resources, (2) to provide early detection of potential threats to marine community structure, and (3) to evaluate whether potential impacts on biological resources will adversely affect higher trophic levels.

EXHIBIT NO. 5
APPLICATION NO.
CD-45-98

### III. SITE MONITORING OVERVIEW

The site monitoring activities designed for the HOODS involve sequential collection of physical and biological data to help achieve the objectives outlined above. These objectives are defined to ensure compliance with state and federal laws, to provide guidance for EPA Region IX and Corps' San Francisco District staff for site management, and to address the concerns raised by other interested parties. The following concerns are addressed:

#### A. Sediment Impacts at the HOODS and Outside the Site Boundary

- Adverse physical environmental impacts on benthic communities near the ODMDS boundary.
- Habitat alterations displacing resident benthic communities near the ODMDS.

#### B. Water Column Impacts Outside the HOODS Site Boundaries

- Potential violation of established criteria at or beyond the site boundary at any time, or violation of criteria within the site boundary 4 hours after disposal.

#### C. Biological Impacts at the HOODS and Outside the Site Boundary

- Bioaccumulation of contaminants.
- Significant alteration in benthic communities based on bioaccumulation of contaminants.
- Significant changes in the resident epifauna or fish communities.

Each of these concerns is addressed in the site monitoring activities summarized in Table 1. Monitoring in a particular tier is based upon a testable hypothesis. If the null hypothesis for a specific tier is accepted, advancement to the next tier is not necessary. If the null hypothesis is rejected, an appropriate management action can be considered, or the prescribed monitoring from the next tier may be required. Information on management actions is provided in the HOODS SMMP.

EX. 5 P. 2

Table 1. Tiered Monitoring at the HOODS Ocean  
Dredged Material Disposal Site

---

**TIER 1**

- ▶ Periodic bathymetric, side-scan sonar and/or sub-bottom surveys of the HOODS funded by the Corps' San Francisco District based on site use.

**TIER 2**

- ▶ Assessment of sedimentation impacts on biological resources of concern as identified by EPA Region IX and the Corps' San Francisco District. This tier is triggered if dredged material moving out of the disposal site is determined by Tier 1 analysis to be a potential adverse impact to benthic resources.

**TIER 3**

- ▶ Body burden analyses of chemicals of concern in identified biological resources based on EPA Region IX's site designation and management oversight responsibilities. This tier is triggered if dredged material deposited outside of the disposal site is found to contain contaminants which could potentially cause adverse impacts to benthic resources.

**CONFIRMATORY MONITORING**

- ▶ Additional monitoring requirements imposed as needed by EPA Region IX or the Corps' San Francisco District to evaluate sediment dispersion, sediment quality, and extent of benthic impacts.
- 

EX. 5 P. 3

Tier 1 bathymetric, side-scan sonar and/or sub-bottom surveys are expected to be scheduled on an annual basis, although this schedule may be modified based on the frequency of disposal, the amount of dredged material disposed at the HOODS, and the results of the monitoring activities. EPA Region IX and the Corps' San Francisco District will evaluate the survey data to test the Tier 1 hypothesis. We will determine whether movement of material out of the HOODS may cause adverse impacts on biological resources of concern adjacent to the site. If management options require additional monitoring, then physical (Tier 2) or biological impact (Tier 3) evaluations will be conducted as needed.

Monitoring actions described in Tiers 2 and 3 involve analyses of data from the HOODS in relation to a reference site described in Section II.A of the SMMP. The characteristics of the reference site or sites will represent the conditions of the HOODS before disposal of dredged material occurred. Thus, meaningful comparisons can be made between the sites to determine the impacts of dredged material disposal operations at the HOODS. Future reference site measurements will provide information on natural variability and periods of any unusual conditions in the region.

#### **IV. DETAILS OF TIERED MONITORING**

##### **A. Tier 1 - Bathymetric Survey of the Site**

**Hypothesis:** Dredged material accumulation outside of the HOODS boundary averages less than 4 inches (10 centimeters) relative to the bottom sediment surface defined at the time of site designation.

Monitoring at Tier 1 is designed to determine whether significant amounts of dredged material move beyond the HOODS boundary, thus providing an indication of potentially adverse impacts to nearby benthic resources of concern. Tier 1 monitoring is designed to evaluate the accumulation of dredged material outside of the disposal area, relative to baseline conditions at the time of site designation. Equipment such as precision bathymetry, side-scan sonar, sub-bottom profiling, or other similar oceanographic survey techniques will be used to detect accumulation of dredged material greater than 4 inches (10 centimeters) relative to the bottom sediment surface at the time of site designation. These data will have a resolution of 0.5 inch to test the Tier 1 hypothesis. If Tier 1 analyses show sediment movement outside the site boundary and the null hypothesis is rejected, then management options will be evaluated to mitigate the impacts, or monitoring in Tier 2 can be scheduled.

##### **B. Tier 2 - Sediment Impacts on Biological Resources of Concern**

**Hypothesis:** Dredged material accumulation at or beyond the HOODS boundary does not show significant adverse impacts on biological resources of concern based on sediment physical properties compared to similar biological communities at a reference site or sites.



Tier 2 monitoring activities are designed to detect significant changes in biological resources of concern as a result of dredged material movement outside the HOODS. Biological resources of concern will be identified by EPA Region IX and the Corps' San Francisco District based on information contained in the HOODS EIS, the survey of the HOODS and information on fisheries resources in the area.

If benthic infauna are identified as a resource of concern, then analysis of this community can be accomplished by examining sediment profiles using techniques including but not limited to sediment profiling camera surveys taken in areas where dredged material has accumulated significantly. This type of information can be compared to other locations within the HOODS, zones outside the HOODS that have not been affected by dredged material disposal, or a reference site(s). The sediment profiling camera method has the advantage of providing *in situ* estimates of grain size distribution and infaunal community structure (Rhoads and Germano 1982). In addition, depending on the characteristics of previously deposited materials, newly deposited material can be differentiated by the photographs to indicate the rate of deposition at the site boundary for accumulation depths of from 2-8 inches (5-20 centimeters). Publications on this photographic profiling technique indicate that oxidized surface layer of previously deposited dredged material can be identified photographically when covered by similar material for up to a year (Germano and Rhoads 1984).

If resident benthic epifauna (invertebrates or fish) are identified as biological resources of concern, then bottom trawls can be used to sample areas where dredged material has accumulated. Samples can be compared to locations within the HOODS, zones outside the HOODS, or a reference site(s). The Tier 2 sampling is limited to assessment of physical impacts, such as the loss of a biological resource based on sediment movement, grain size changes or other effects from direct contact with disposed dredged material. Disposal of dredged material with a different grain size than the ambient sediments at the disposal site will change the biological community characteristics of the HOODS. Different species may colonize the disposal area because they can live in the finer or coarser grained dredged material. Simple changes in community structure in response to grain size changes are not considered significant impacts at the HOODS. If Tier 2 analyses show significant adverse impacts to biological resources of concern and the null hypothesis is rejected, then management options will be evaluated to mitigate the impacts, or monitoring in Tier 3 can be scheduled.

### C. Tier 3 - Analyses of Body Burdens in Biological Resources

**Hypothesis:** Contaminant body burdens in biological resources of concern at stations where dredged material has moved out of the HOODS and within the HOODS are not significantly greater than body burdens detected in similar biological communities at a reference site or sites.

Analysis of contaminant body burdens will be conducted as part of EPA Region IX's site designation and management oversight responsibilities. If chemicals of concern (listed in EPA Region IX's August 1989 sediment testing guidance) bioaccumulate to a higher

degree at the HOODS compared to a reference site(s), significant adverse impacts could affect resident biological communities at the HOODS or the adjacent areas where dredged material has moved out of the site. Tier 3 monitoring is designed to determine whether the HOODS is a site of significant bioaccumulation and to provide early detection of the potential for adverse impacts on nearby biological resources or human health.

Tier 3 monitoring will assess the concentration of chemical contaminants in resident infaunal or epifaunal organisms at the HOODS or other areas where dredged material has moved outside the site. The body burdens of organisms collected at or adjacent to the HOODS will be compared to similar organisms at a reference site(s). Collection of resident organisms for this analysis does not need to be quantitative. However, a large enough sample of the target species should be collected to provide adequate tissue for analysis. Sampling devices such as box cores, grabs or benthic sleds may be used. Selection of target species for this portion of the monitoring program should follow the protocols outlined in U.S. Environmental Protection Agency (1987) guidance.

If the Tier 3 hypothesis is rejected, management decisions will be evaluated to mitigate any impacts, or EPA Region IX and the Corps' San Francisco District will consider closing the HOODS and initiating the designation process for another suitable site.

## V. REFERENCES

- Germano, J. D. and D. C. Rhoads. 1984. REMOTS sediment profiling at the Field Verification Program (FVP) disposal site. Dredging '84: Proceedings of the conference, ASCE, November 14-16, Clearwater, FL, pp. 536-544.
- Rhoads, D. C. and J. D. Germano. 1982. Characterization of organism-sediment relations using sediment profiling imaging: an efficient method of Remote Ecological Monitoring of the Seafloor (REMOTS system). Marine Ecology Progress Series, 8:115-128.
- U.S. Environmental Protection Agency. 1987. Bioaccumulation monitoring guidance: 1. Selection of target species and review of available bioaccumulation data. EPA 430/9-86-005.
- U.S. Environmental Protection Agency, Region IX. 1991. EPA Region IX general requirements for sediment testing of dredged material proposed for ocean dumping, effective date: August 1989, 8 pages.
- U.S. Environmental Protection Agency, Region IX. 1995. Final environmental impact statement (FEIS) for the designation of an ocean dredged material disposal site off Humboldt Bay, CA.