MINUTE ITEM
This Calendar Item No. C43 was approved as Minute Item No. 43 by the State Lands Commission by a vote of 3 to 0 at its 7/6/95 meeting.

CALENDAR ITEM
C43

A 33
S 18

07/06/95
PRC 5463 WP 5463
J. Smith

DREDGING LEASE

APPLICANT:
City of Morro Bay
595 Harbor Street
Morro Bay, California 93442

AREA, TYPE LAND AND LOCATION:
Granted mineral reservation lands at Morro Bay Harbor, San Luis Obispo County.

LAND USE:
Dredge a maximum 1.1 million cubic yards of material from navigation channels and entrance to Morro Bay Harbor. Disposal will be at either of the following U.S. Army Corps of Engineers (Corps) approved sites: (a) nearshore, immediately offshore of Morro Bay State Park; and (b) in the surf-zone along the beach north of the harbor, between Morro Creek and Azure Street.

PROPOSED LEASE TERMS:
Lease period:
July 1, 1995 through June 30, 1996.

Royalty:
No royalty shall be charged for dredged material placed at either of the approved offshore disposal sites. A minimum of $0.25 per cubic yard shall be charged for material used for private benefit or commercial sale purposes.

PREREQUISITE CONDITIONS, FEES AND EXPENSES:
Filing and processing fees have been received.

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STATUTORY AND OTHER REFERENCES:

A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13.

B. Cal. Code Regs.: Title 2, Div. 3; Title 14, Div. 6.

C. Chapter 1076, Statutes of 1947; Chapter 1874, Statutes of 1957; Chapter 70, Statutes of 1960; Judgment as amended, 12/30/68 in City of Morro Bay v. County of San Luis Obispo, et al., Superior Court Case No. 30417 (San Luis Obispo County).

AB 884:

Application incomplete at time of print.

OTHER PERTINENT INFORMATION:

1. A Finding of No Significant Impact (FONSI) attached hereto as Exhibit "B", was prepared and adopted for this project by the United States Army Corps of Engineers. The document was circulated for public review as broadly as State and local law may require and notice was given meeting the standards in 14 Cal. Code Regs. 15072(a). Therefore, pursuant to 14 Cal. Code Regs. 15225, the staff recommends the use of the federal FONSI in place of a Negative Declaration.

2. This activity involves lands identified as possessing significant environmental values pursuant to P.R.C. 6370, et seq. Based upon the staff's consultation with the persons nominating such lands and through the CEQA review process, it is the staff's opinion that the project, as proposed, is consistent with its use classification.

3. To avoid impacts to the federally listed snowy plover, all dredging must be completed by March 16, 1996.

APPROVALS OBTAINED:

United States Army Corps of Engineers; Regional Water Quality Control Board; California Coastal Commission.

FURTHER APPROVALS REQUIRED:

State Lands Commission.

EXHIBIT:

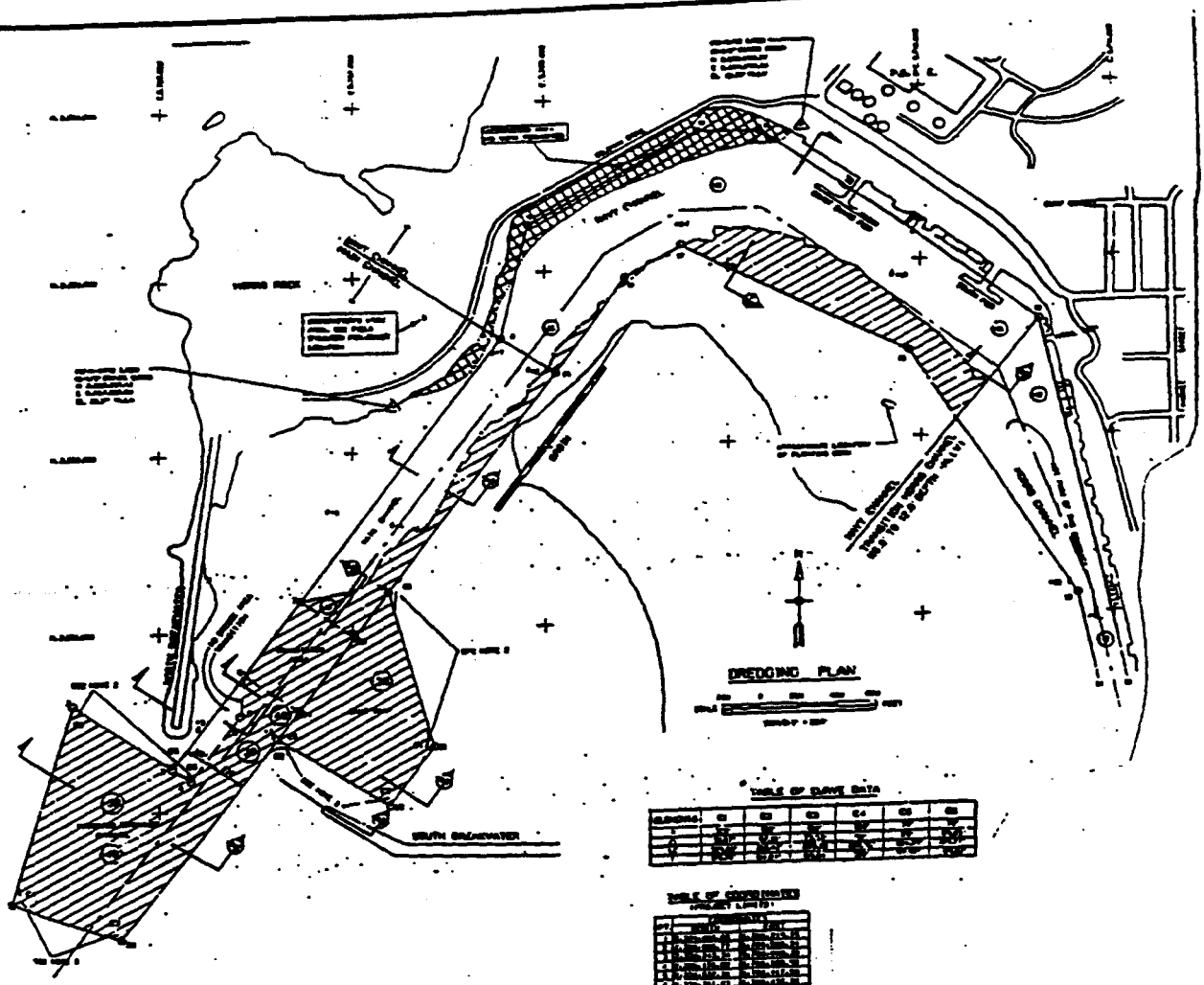
A-1. Dredge Location and Site Map
A-2. Desposition Sites
B. Finding of No Signicant Impact (FONSI)

IT IS RECOMMENDED THAT THE COMMISSION:

1. FIND THAT THE FINDING OF NO SIGNIFICANT IMPACT, (FONSI) PREPARED AND ADOPTED FOR THIS PROJECT BY THE UNITED STATES ARMY CORPS OF ENGINEERS, MEETS THE REQUIREMENTS OF THE CEQA. THEREFORE, PURSUANT TO 14 CAL. CODE REGS. 15225, ADOPT SUCH FEDERAL DOCUMENT FOR USE IN PLACE OF A NEGATIVE DECLARATION.

2. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6370, ET SEQ.

3. AUTHORIZE ISSUANCE TO THE CITY OF MORRO BAY OF A ONE-YEAR DREDGING LEASE BEGINNING JULY 1, 1995 THROUGH JUNE 30, 1996. SAID LEASE SHALL ALLOW DREDGING A MAXIMUM VOLUME OF 1.1 MILLION CUBIC YARDS OF MATERIAL FROM GRANTED MINERAL RESERVATION LANDS IN THE NAVIGATION CHANNELS AND AT THE ENTRANCE OF MORRO BAY HARBOR, SAN LUIS OBISPO COUNTY. DISPOSAL OF THE DREDGED MATERIAL WILL BE AT EITHER OF THE CORP'S APPROVED OFFSHORE DISPOSAL SITES, AS AUTHORIZED. SUCH PERMITTED ACTIVITY IS CONTINGENT UPON APPLICANT'S COMPLIANCE WITH APPLICABLE PERMITS, RECOMMENDATIONS, OR LIMITATIONS ISSUED BY FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES.



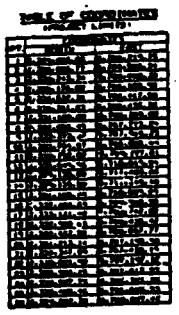
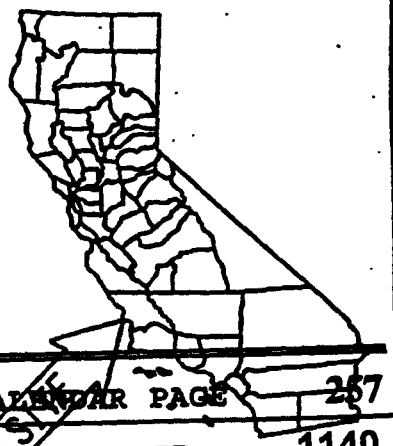


EXHIBIT "A1"
WP 5463



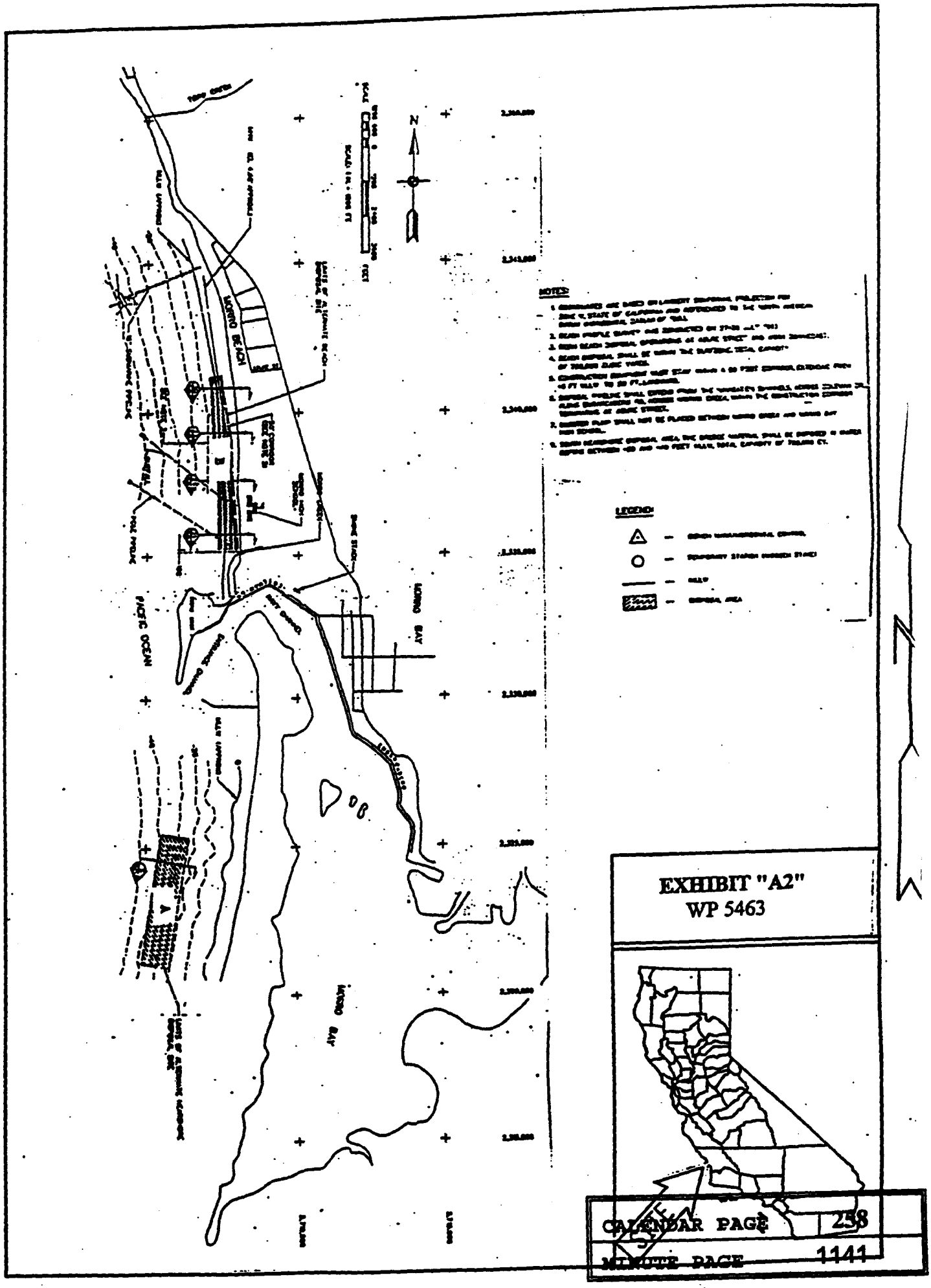


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EXHIBIT "B"

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
FINDING OF NO SIGNIFICANT IMPACT
MORRO BAY HARBOR MAINTENANCE DREDGING
SAN LUIS OBISPO COUNTY, CALIFORNIA

I have reviewed the attached Environmental Assessment that has been prepared for the proposed maintenance dredging of Morro Bay Harbor, located in San Luis Obispo County, California. The proposed project includes the dredging of a total of approximately 1,100,000 cubic yards (cy) of littoral drift material. An estimated 740,000 cy will be dredged for an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment prepared by the U.S. Army Corps of Engineers, Los Angeles District. The remainder will be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor. Dredging is expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. Dredging is scheduled to occur between 1 August 1995 and 15 March 1996. Operations occurring prior to 15 September 1995 will be restricted to nearshore disposal, to avoid impacts to recreational beach use and endangered species.

The proposed project is required in order to maintain Federally-authorized channel configurations, and to restore and assure safe navigability within the harbor. All excavated material will be discharged in one or more potential disposal sites:

Site A, Nearshore Disposal: between 5,000 and 10,000 feet south of the entrance to Morro Bay Harbor, with nearshore disposal in waters no deeper than -40 feet MLLW;

Site B, Surf-Zone Disposal: along the beach north of Morro Bay, between Morro Creek and Azure Street. Disposal operations would begin at the northern limit and work south.

Significant resources potentially affected by the proposed project include: cultural, biological (including endangered wildlife species), water, air, navigation, and recreation. Potential adverse environmental impacts have been avoided or minimized to negligible levels through the implementation of environmental constraints and special conditions that have been outlined in the attached Environmental Assessment. Beneficial impacts would include increased navigation safety.

I have considered the available information contained in the Environmental Assessment and it is my determination that the impacts resulting from the construction of the proposed project will not have a significant adverse effect upon the existing

environment or the quality of the human environment; preparation of an Environmental Impact Statement (EIS), therefore, is not required.

17 MAY 95
DATE

Michal Robinson
Colonel, Corps of Engineers
District Engineer

US Army Corps
of Engineers
Los Angeles District

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
FINAL ENVIRONMENTAL ASSESSMENT

MORRO BAY HARBOR
MAINTENANCE DREDGING
SAN LUIS OBISPO COUNTY, CALIFORNIA

May 1995

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
FINAL ENVIRONMENTAL ASSESSMENT

MORRO BAY HARBOR
MAINTENANCE DREDGING
SAN LUIS OBISPO COUNTY, CALIFORNIA

May 1995

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT CORPS OF ENGINEERS
FINDING OF NO SIGNIFICANT IMPACT
MORRO BAY HARBOR MAINTENANCE DREDGING
SAN LUIS OBISPO COUNTY, CALIFORNIA

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DATE

Michal Robinson
Colonel, Corps of Engineers
District Engineer

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1.0 INTRODUCTION

Morro Bay Harbor is located in the City of Morro Bay, San Luis Obispo County, California (see Figure 1). The Los Angeles District of the U.S. Army Corps of Engineers (Corps), as part of its Operations and Maintenance (O&M) program for Morro Bay, is proposing to: (1) construct an approved channel modification project as described in the Corps' August 1991 Feasibility Study and Environmental Assessment; and (2) perform routine maintenance dredging operations in the Entrance, Navy, and Morro Channels of Morro Bay Harbor, as well as the small embayment located immediately inside and south of the entrance. Dredging is scheduled to commence on or after 1 August 1995, and will be concluded by 15 March 1996. Operations occurring prior to 15 September 1995 will be restricted to nearshore disposal, to avoid impacts to recreational beach use and endangered species.

1.1 Background

The Corps is mandated by Congress to maintain adequate depths for safe navigation in Morro Bay Harbor. The harbor entrance and navigation channels have routinely developed shoal areas which either severely restrict or endanger navigation of the channels and the entrance to the harbor. Historically, the Corps has dredged some combination of the Entrance, Navy and Morro Channels approximately every 3 to 4 years, with the dredged material placed in the nearshore or surf-zone either downcoast of the harbor on Morro Bay State Park, located on the sandspit that encloses and protects Morro Bay Harbor; or upcoast of the entrance. The most recent maintenance dredging operation conducted by the Corps of Engineers (1993-1994) included excavation (by hopper and cutterhead dredges) of approximately 600,000 cubic yards of material from the Entrance, Navy and Morro Channels. Disposal occurred at two locations, north and south of the harbor.

The Corps' August 1991 Feasibility Report and Environmental Assessment (FR/EA) documented the need for channel modifications to improve navigational safety at the Morro Bay Harbor entrance. Hazardous steep and breaking wave conditions at the harbor entrance have contributed to several boating accidents in the area. Modifications to Morro Bay Harbor were authorized by the Water Resources Development Act of 1992. The final plan includes dredging a deeper and wider fan-shaped extension of the existing Morro Bay Harbor entrance channel (see Figure 2). The modified channel will dogleg westerly from the existing breakwater entrance and open to a width of 950 ft. About 500 ft. of the existing channel will transition from the existing project depth of -16 ft. Mean Lower Low Water (MLLW) to the new design depth of -30 ft. MLLW. The initial dredging will continue down to -45 feet MLLW to provide advanced maintenance for a three year maintenance dredging schedule.

The final design is similar to that proposed in the 1991 FR/EA, and additional environmental documentation for that project is not necessary. Minor adjustments were

made to the final design in response to data from hydraulic modeling studies. The main difference involved the relocation of the advanced maintenance sand trap from outside the breakwaters to inside the harbor and north of the south breakwater. The hydraulic model showed that the sand trap located outside the harbor significantly increased wave heights at the head of the south breakwater, and other studies showed that northerly moving sediment would deposit within the new sand trap. Relocation of the sand trap will result in no adverse impacts to existing structures, improve navigation, and increase the trap's capturing capacity to allow for an average three year dredging cycle.

The 1991 document assumed that channel modification would occur concurrently with routine maintenance dredging operations in 1993, but the schedule was delayed. Maintenance dredging last occurred in the winter of 1993-1994, and would not normally be scheduled again until 1996. It is now proposed to adjust this schedule by dredging all maintenance areas this year, to coincide with the channel modification project, which has now been funded. New and historic areas would then continue to be dredged concurrently, every 3 years. Future quantities associated with this combined project are expected to be approximately 820,000 cy. A multi-year EA for maintenance dredging of Morro Bay does not exist, so this EA analyzes the impacts of performing routine dredging operations of existing channels and maintenance areas in 1995.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Project Description

Morro Bay Harbor is located approximately 12 miles northwest of the City of San Luis Obispo on the central California coast in San Luis Obispo County, California. Morro Bay serves as the only all-weather safe harbor of refuge between Monterey Harbor to the north and Santa Barbara Harbor to the south. Maintenance of the harbor's function as a refuge and as a Coast Guard Cutter base is vital to navigational safety on California's central coast. The proposed project would maintain Federally-authorized channel configurations, and would restore and assure safe navigability within the harbor.

The proposed maintenance dredging project includes dredging a total of approximately 1,100,000 cubic yards (cy) of littoral drift material. An estimated 740,000 cy would be dredged for the channel modification project described above. The remainder would be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor (see Figure 2). The Entrance Channel and the Navy Channel will be dredged to the authorized channel depth of -16 feet MLLW (plus a 2-foot allowable overdepth); Morro Channel to the authorized depth of -12 feet MLLW (plus a 2-foot allowable overdepth); and the small embayment to a depth

of -15 feet MLLW. The small embayment acts as a sand trap, trapping sediment before it migrates into the channels.

Dredging and disposal operations are expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. All excavated material would be discharged at one or more disposal sites (see Figure 3) as follows:

Disposal Site A (Nearshore): a sandy-bottom area located between 5,000 and 10,000 feet south of the entrance to Morro Bay Harbor, immediately offshore of Morro Bay State Park. The landward limit of nearshore discharge would be immediately seaward of the surf break (about -20 feet MLLW). The seaward limit of discharge would be at the -40' MLLW contour line. Hopper and mechanical dredges would utilize this site.

Disposal Site B (Surf-Zone): located along the beach north of the harbor, between Morro Creek and Azure Street. At this site (used by pipeline dredges), disposal operations would begin at the northern limit and work south, as sections of pipe are removed. The pipeline would be placed seaward of small, vegetated "pioneer" dunes, or on those dunes in areas where surf action would otherwise damage the pipe. The outlet would consist of a perpendicular section of pipe extending into the surf-zone. This extension will be moved as needed, as profile specifications are met, and as work continues southward. Pipe would extend from the cutterhead dredge along the side of Embarcadero Road, and then westward at Morro Creek to the disposal area. Temporary ramps would be built over the pipeline at road crossings, and at intervals along the beach, to maintain public access. Activities would be restricted to a corridor immediately adjacent to the pipeline, from +6' MLLW to 50 feet landward, to avoid or minimize impacts to biological resources. Various types of light construction equipment would be used to move and maintain pipe, and build access ramps.

Neither nearshore disposal, nor surf-zone disposal of dredged material would result in removal of material from the overall littoral drift system in Estero Bay, or result in the loss of adjacent beaches due to erosion. Section 30233 of the California Coastal Act would, therefore, be satisfied. Specific method(s) of disposal would depend on the type of dredge to be used. Dredging is scheduled to commence on or after 1 August 1995, and will be concluded by 15 March 1996. Operations occurring prior to 15 September 1995 will be restricted to nearshore disposal, to avoid impacts to recreational beach use and endangered species.

Sediment samples collected in March 1993 from the Entrance, Navy and Morro Channels, and the sand trap, were chemically and mechanically tested to ensure compatibility with sediment samples collected and tested at the same time from areas in close proximity to the proposed disposal sites (see Figure 4 and Appendix C).

The proposed staging area for construction equipment is located in the existing parking lot adjacent to Morro Rock. Equipment will be restricted to the area farthest away from Morro Rock. The dimensions of the staging area are approximately 280' X 225' X 250' X 100'.

2.2 Purpose of Proposed Action

The proposed maintenance dredging activities within Morro Bay Harbor will serve a four-fold purpose: (1) maintenance of authorized channel configurations within the harbor that are periodically shoaled by the accumulation of littoral drift sediment; (2) assurance of continued safe navigation for various private and commercial harbor crafts entering and traversing harbor channels; (3) provision of materials for replenishment of beach sands eroded by littoral drift processes, and (4) advance maintenance dredging of the small embayment located immediately inside and south of the entrance to Morro Bay Harbor to provide a trap for sand which may otherwise cause shoaling in the navigation channels.

2.3 Alternatives

The "No Project" alternative, or that of not dredging this year, would result in continued shoaling of the harbor channels and entrance area. This would eventually render navigation unsafe and, in time, impossible. There is a high potential for danger to life and property if the harbor entrance and navigational channels are not maintained at safe depths. Combining the maintenance dredging with the modification project this year eliminates the need for a second dredging project next year.

Since the U.S. Army Corps of Engineers has been mandated and authorized by Congress to maintain safe navigation in the Entrance, Navy, and Morro Channels, and the proposed action is maintenance of existing channels, the only remaining alternatives involve the selection of a disposal method and location. Four (4) transportation and disposal alternatives have been considered for previous dredging projects: (A) deep ocean disposal, (B) upland disposal, (C) surf-zone disposal, and (D) nearshore disposal. For reasons outlined in previous environmental documents (including the Corps' 1993 Final EA for Morro Bay Dredging), proposed disposal methods are limited to surf-zone and nearshore alternatives.

Information from U.S. Geological Survey (USGS) and Corps of Engineers studies indicates that nearshore disposal of dredged material, in waters less than -40 feet MLLW, would neither result in removal of material from the overall littoral drift system in Estero Bay, nor result in the loss of adjacent beaches due to erosion (Dingler, et al.; Corps 1991 FR/EA). Section 30233 of the California Coastal Act would, therefore, be satisfied. If this material immediately returned to the channels in Morro Bay Harbor, however, the currently proposed project purpose would be significantly compromised. The proposed location for nearshore disposal was chosen, therefore, to maximize

landward transport of material, while minimizing the potential for transport back into the entrance; within the economic limits of the dredge.

The overall sediment transport system responsible for the movement of beach material through the Morro Bay region is only partially understood. Modeling studies, historical data, and analyses of current and wave climate, however, indicate that sedimentation within the channels is caused by both northerly and southerly movements. This information further indicates that on a micro-oceanographic scale, there may also be a small "gyre" operating in the area, which begins offshore and north of Morro Rock, continues south around Morro Rock, turns toward shore some distance south, and returns to the north, completing its movement at the entrance to Morro Bay Harbor. It appears that the northern transport of material is driven by cross-shore currents that exist no deeper than -15 MLLW. Since the southern disposal site is located in -40 feet MLLW, long-shore currents are expected to transport the deposited material southward. The southern nearshore disposal site, therefore, is located far enough outside of this gyre to remove the sediment from any micro-oceanographic system that may ultimately return the sediment immediately back into Morro Bay Harbor; and subsequently defeat the purpose of the proposed project.

Current information also suggests that the sediment budget in the area (approximately 2 to 3 million yds^3/year) is not limited in quantity (in fact, the entire sand spit is available for contribution to the sediment transport system), and that the permanent removal of this material (i.e., disposal at an offshore deep-water site) would neither increase or decrease the rate of channel shoaling in Morro Bay Harbor. In other words, dredging operations do not excavate and transport the same grains of sand each time. The material is generated from many other sources, including erosion of the sand spit itself.

3.0 AFFECTED ENVIRONMENT

3.1 General Marine Environment

Morro Bay contains approximately 2,100 acres of water surface at high tide and approximately 650 acres at low tide, leaving approximately 980 acres of tidal mud flat and approximately 470 acres of salt marsh. At low tide, the major body of water in the bay is found in the three channels: Entrance Channel, Navy Channel and Morro Channel. These extend approximately two nautical miles from the terminal ends of the breakwaters, which form the entrance to Morro Bay Harbor, to a point near White Point, and occur in the order listed. South of Morro Channel, minor tidal channels ranging in depths from -2 feet to -15 feet MLLW contain the majority of the remaining available water at low tide. The total tidal prism in the bay is estimated at 13,500 acre-feet (Gerdes et al., 1974).

Except near stream mouths, bay water salinity is relatively uniform. Due to evaporation it is usually slightly higher than that of the adjacent ocean waters; at approximately 34.5 parts per thousand. Pools in the salt marsh, however, are consistently higher in salinity. In the winter, bay water temperatures range from 50° to 57°F. In the summer, they range from 55° to 64°F. In August, bay water dissolved oxygen (DO) ranges from 4.2 to 7.1 parts per million (Gerdes, et al., 1974). Because of its remoteness from large population centers (i.e., Santa Barbara), and lack of significant industrial development, the waters in the bay are relatively free of pollutants.

Maintenance dredging of Morro Bay Harbor has historically removed sediment of predominantly good quality, fine grain sand of varying particle sizes (poorly sorted) that is mechanically compatible with the material on the selected receiving beaches. Due to the lack of extensive industrial development and remoteness from large metropolitan areas, Morro Bay Harbor is relatively free of pollutants, as supported by testing of core samples collected from Morro Bay in March 1993. Mechanical test results of this material indicated that the material is predominantly sand (at least 90% retained on a #200 screen). Three samples each were collected from the Entrance, Navy and Morro Channels, with a 3- to 4-foot core of material collected in each case. No further analysis was deemed necessary.

3.2 Biological Resources

A variety of terrestrial, wetland, and aquatic habitats are present in and around Morro Bay Harbor. Principle habitats associated with the bay include eelgrass (Zostera marina) beds, intertidal mudflats, wetlands (emergent and submergent), marshes, coastal sand dunes, coastal sage scrub, and rural/urban areas. A wide diversity of plant and animal species occur in these habitats.

A species of particular concern to resource agencies in the Morro Bay area is eelgrass (Zostera marina), a subtidal and intertidal vascular plant that grows in sandy substrates. Eelgrass provides forage base, spawning substrate, nursery values, and protection from predation for many species of fishes and invertebrates. The major eelgrass beds in Morro Bay are located in the southern part of the bay, with some eelgrass beds along the eastern side of the sandspit, and adjacent to Morro Rock.

On 23 August 1990, representatives from the U.S. Army Corps of Engineers and the California Department of Fish and Game (CDFG) conducted an underwater site inspection of the areas in which the U.S. Fish and Wildlife Service, National Marine Fisheries Service (NMFS), and the CDFG had expressed concerns regarding the potential for impacts to eelgrass populations. Previous visual surveys of the Entrance, Navy and Morro Channels had indicated that there are no eelgrass beds within the limits of the Federally-maintained channel; the underwater inspection confirmed these observations. In March 1993, dives were conducted again in several areas of the harbor to obtain sediment samples. Eelgrass was not observed in those locations. Furthermore,

all three channels were dredged in 1993-1994. It is unlikely that significant populations of eelgrass have established in those channels since the previous dredging operation.

Underwater inspections were made of northern and southern disposal sites in 1990, to determine the potential impact to high value hard-bottom resources. Upon completion of the inspections, it was agreed by those agencies present that no hard-bottom resources were expected to be impacted by the proposed disposal activities at the southern disposal site. Side-scan sonar and additional underwater inspections of a proposed northern nearshore disposal site were conducted in March 1993. No rocky habitat was found, but this site is not proposed for use this year.

Surf-zone disposal would require pipeline to be placed on or near small, vegetated dunes on the beach. Vegetation in this area includes saltbush (Atriplex leucophylla), sea rocket (Cakile edentula), beach bur (Ambrosia shamisona), and sand verbena (Abronia sp.). Non-native beach grass occurs on the larger, established dunes to the east.

The project area supports a relatively diverse assemblage of approximately 250 species of invertebrates including annelid and polychaete worms, mollusks, crustaceans, and echinoderms. Nineteen species of clams have been found in the bay, with Washington clams (Saxidomus nutalli), gaper clams (Tresus nutalli), and geoducks (Panope generosa) being the most common. A commercial oyster bed, located in the southern part of the bay, is also considered an important resource.

Morro Bay also provides suitable habitat for approximately 65 known species of fish, including many sport fish species. A fish species of particular concern, although only rarely occurring in this area since Morro Bay is at the northern-most extension of its known range, is the California grunion (Leuresthes tenuis). Grunion, a member of the silversides family (Atherinidae), may occasionally utilize the beaches in the Morro Bay area for spawning from March through mid-September, with an expected peak in activity between April and June. Spawning activity commences when the grunion deposit their eggs in the sand on the high intertidal portions of the beach, during high tides. The eggs subsequently incubate in the sand, and hatch during the ascending series of high tide conditions before the following full or new moon.

Morro Bay is also a major wintering and, or, stopover area for migratory waterfowl and shorebirds. Seventy-five species of birds were counted in the bay by the California Department of Fish and Game during a one-year period from 1966 to 1967. Over 25,000 individual birds have been counted in the bay at one time (Gerdes et al., 1974). Of special interest is the black brant (Branta bernicla), a species of goose which is found in large numbers in the bay and utilizes the eelgrass beds in Morro Bay as a food source.

Approximately 30 species of mammals are also expected to be present in and around Morro Bay, including four species of marine mammals. The most common

marine mammals found in the harbor are the harbor seal and the southern sea otter, but the California sea lion and the Steller sea lion have also been observed.

3.3 Threatened and Endangered Species

Four Federally-listed threatened or endangered animal species regularly occur in or near the project area: southern sea otter (Enhydra lutris nereis), American peregrine falcon (Falco peregrinus anatum), California brown pelican (Pelecanus occidentalis californicus), and Western snowy plover (Charadrius alexandrinus nivosus).

Several other Federally-listed endangered species are occasional visitors to the project area, or are located in the general vicinity, but the USFWS does not anticipate that the project will affect these species. Steller sea lions (Eumetopias jubatus) and California least terns (Sterna antillarum browni) are occasional visitors to the area. The endangered Morro Bay kangaroo rat (Dipodomys heermanni morroensis) occurs in a 4.8 square mile area at the southernmost end of Morro Bay, in the Baywood and Montana de Oro areas. The endangered banded dune snail (Helminthoglypta walkeriana) occurs on the sand spit. Two Federally-listed endangered plant species, the salt marsh bird's beak (Cordylanthus maritimus ssp. maritimus) and the California sea-blite (Suaeda californica), are known to be in the general vicinity, but are not expected to be affected by this project.

A Federally-listed category 2 candidate species, the globose dune beetle (Coelus globosus), is known to inhabit loose sandy areas in association with pioneer dunes species in Morro Bay. This species was not on the U.S. Fish and Wildlife Service's list of potentially occurring threatened, endangered, or candidate species (letter dated July 1, 1993). Its presence was indicated in the 1991 draft Environmental Impact Report for the Cloisters Residential Subdivision Project. Specific population parameters are unknown, but the report did identify general habitat requirements. The adult and larval stages of this flightless beetle are typically found burrowed in the sand about 5 to 10 cm. beneath common dune plants such as sand verbena, beach burr, and sea rocket.

One pair of peregrine falcons utilize Morro Rock as a nesting and roosting site and may be observed between the months of January and July. California brown pelicans forage and rest in the area, and widely varying numbers of sea otters (decreasing from a peak of approximately 60 in 1984 to approximately 7 in 1993) have been observed in the harbor. Snowy plovers occur year-round at Morro Bay. Not all of these birds are permanent residents, however, and a population shift of migrant and over-wintering birds is occurring. Background information on these species is summarized below. Additional details are provided in the Biological Assessment that was previously prepared for the 1986-87 maintenance dredging project, and is hereby incorporated by reference, per 50 CFR 402.21.

A. Southern sea otter (Enhydra lutris nereis). The southern sea otter has been listed by the U.S. Fish and Wildlife Service as a threatened species. Morro Bay is within the known range for sea otters, and although increased numbers were reported in the early 1980's, they have been decreasing in number during the last few years, as reported by the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS). A maximum number of 60 otters were observed in 1984, in contrast to current estimates of 6 to 7; with minimum numbers present in the summer months (FWS, 1989; CDFG, personal communication, 1993). The otters observed are primarily juveniles and non-breeding males and, therefore, do not constitute a breeding population. The sea otters in this area feed on a variety of organisms, but focus primarily on clams found in the sandy substrates of Morro Bay's channels.

B. American peregrine falcon (Falco peregrinus anatum). Peregrine falcons, which are listed on both Federal and State of California endangered species lists, utilize Morro Rock as a nesting and roosting site. The nesting season for peregrine falcons may extend from January to July, with critical parenting periods in May and June. Falcons maintain distinct territories, and forage over vast areas in both wetland and upland locations. They are primarily hunters of birds. DDT-caused eggshell thinning remains a problem for the peregrine falcon. Housing developments along the coast displace falcons from preferred nesting sites and reduce their prey. Collisions with power lines, shootings, and poaching have also contributed to their decline in population.

C. California Brown Pelican (Pelecanus occidentalis californicus). Brown pelicans travel to the Morro Bay area on a year-round basis from nearby nesting colonies in the Channel Islands. They are most abundant on the mainland coast during the months of August to November, and breeding occurs on several California offshore islands between June and October. Brown pelicans primarily forage on surface-feeding fish in nearshore waters. The species is considered to be very tolerant of human activity and readily utilizes various man-made shoreline structures (i.e., piers, breakwaters, groins, marine vessels, buoys) as roosting sites. Brown pelicans are relatively common in the nearshore waters of the project area, particularly when schools of suitable fish prey species are present at, or very near, the surface. Although frequently foraging in waters greater than one mile from the coast, they commonly roost on the buoys, rock groins and jetties in the nearshore waters of the project area. Activities of brown pelicans in these waters are generally restricted to feeding, overflying, or temporary resting.

D. Western Snowy Plover (Charadrius alexandrinus nivosus). The western snowy plover is listed as threatened by the USFWS (U.S. Department of the Interior, 1993). Nest sites typically occur in flat, open areas with sandy or saline substrates. Vegetation and driftwood are usually sparse or absent. Nest site selection and pair bond formation occur from early to mid-March, and eggs of the first clutch

are usually laid by early April. Snowy plovers forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone; in dry, sandy areas above the high tide; on salt pans; and along the edges of salt marshes and salt ponds.

Studies in California, Oregon, and Washington indicate that the coastal breeding population has declined significantly in recent years (Page and Stenzel 1978; Wilson 1984). Fewer than 1500 birds, and 28 nesting sites, remain in the three states. The subspecies of plover has disappeared as a breeding bird from most of California beaches south of Los Angeles, and development has eliminated the plover as a breeding species from many other coastal areas, as well. Dune stabilization by introduced beach grass has also modified much formerly open coastal sand flat habitat. Evidence exists that human activity (i.e. recreation, beach cleaning), is responsible for some of the coastal decline, as well as predation by pet dogs, crows, foxes, skunks, and other animals.

Snowy plovers inhabit the sand spit at Morro Bay and are dispersed along the entire length of spit. Sand spit habitats have the highest densities of snowy plovers (Page and Stenzel, 1981) along the California coast. Plovers also roost and nest on the proposed disposal beach, north of the harbor. Preferred nesting areas on this beach are primarily on the foredunes south of Azure Street (the northern limit for surf-zone disposal) to Highway 41. Successful nesting in this area occurred following the Corps' 1993-1994 maintenance dredging and beach disposal project. Approximately 46 nests were established, and the winter population exceeded 100 birds. Plovers at Morro Bay usually produce two clutches, with unfledged young cared for until the end of August.

3.4 Air Quality and Ambient Noise Levels

Air quality is determined primarily by meteorological conditions, the type and amount of pollutants emitted, and their subsequent dispersion into the atmosphere. The single, largest source of oxides of nitrogen (NOx) emissions in the county is the Pacific Gas & Electric's (PG&E) Morro Bay Power Plant, which generated 4200 tons of NOx in 1987 (APCD, 1990). There are few other industrial sources of air pollution at Morro Bay. The major additional sources are the automobile, followed by recreational facilities and related vehicles (boats, campers, etc.). In addition to air pollution, most of these sources contribute to the ambient noise environment at Morro Bay Harbor. Both air quality and noise levels tend to increase during heavy recreational summer utilization. Noise levels are also elevated in the area by operations of the PG&E Power Plant, which is located adjacent to the bay; and by occasionally heavy marine-related traffic (commercial and recreational boats) in the bay. Wind and surf break also contribute greatly to ambient noise levels in the area.

The San Luis Obispo Air Pollution Control District has been designated as a nonattainment area for the state ozone and PM^{10} standards. Standards for other monitored air pollutants are generally achieved. The Air Quality Maintenance Plan (AQMP) of 1991 reports the characteristics of the County's air basin and the historical trend of pollution. It proposes corrective and preventative measures to reduce emissions of nonattainment pollutants until the standards are achieved. April through October are peak months of ozone formation in the county. Large diesel engines, like those proposed for use, have the potential to emit significant amounts of nitrogen oxides (NOx); a primary precursor to ozone.

3.5 Land Use and Recreation

Morro Bay Harbor is a significant commercial and recreational resource on the central coast of California. The Morro Bay Harbor complex includes a small marina, campground, natural history museum, golf course, restaurants, resort hotels, parking areas, public launch ramp, sportfishing center, boat repair yard, and marine hardware stores. The harbor is used by about 180 commercial and sport fishing boats, and by about 350 small recreational boats. During the fishing season, approximately 200 boats based at other ports land fish at Morro Bay. Fishing, hunting, boating, hiking, nature photography, and bird-watching are important recreational activities in the area.

3.6 Aesthetics

The aesthetic and visual resources of the Morro Bay Harbor are a great attraction for year-round visitors, and include its famous landmark, Morro Rock; which stands 578 feet high and dominates the entrance to Morro Bay. The bay and wetlands have an abundance of wildlife, including a great variety of birds, which are viewed and photographed by both tourists and bird-watchers.

3.7 Cultural Resources

The area of potential effects (APE) has been assessed three times for this combined project (channel modification plus maintenance dredging). A survey for routine maintenance dredging was conducted in 1990, and a survey for the channel deepening feasibility report was done in 1991. The work done for the channel deepening was completed over the course of two contracts: (1) the initial survey that identified three anomalies; and (2) a negative assessment of the three anomalies. All investigations were negative.

4.0 ENVIRONMENTAL EFFECTS

The purpose of this Environmental Assessment is to address probable impacts that may result from continuation of operation and maintenance dredging of the

Entrance, Navy, and Morro Channels. Since these maintenance dredging operations have been frequently performed for at least the past 37 years, recent assessments of environmental impacts have been typically limited to those project features which change from one dredging episode to the next, or evaluations necessitated by changes in environmental legislation or policy that may result in previously unidentified significant adverse impacts.

Construction of the channel modification project has been authorized, and is scheduled to occur with or without a maintenance dredging project. The limited quantities associated with the maintenance dredging project are expected to have little effect on environmental resources, in comparison with the channel modification project. Deleting the maintenance dredging portion of the project would reduce the area of effect (only the entrance channel and disposal areas would be affected), but dredging of other channels would likely be necessary next year.

4.1 General Marine Environment

Temporary physical and chemical changes in water quality characteristics may result due to resuspension of bottom sediments during proposed dredging activities. Any contaminants present in the sediments could potentially become ecologically active, and available, upon disturbance by the proposed dredging activities. Due to the relatively clean source of the material to be dredged (littoral drift), the general absence of pollutant sources typical of larger commercial harbors, and the historical beach-compatible grain size of the littoral drift material (as determined from compatibility analyses), short-term effects to water quality resulting from these activities are expected to be insignificant.

Dredging and disposal impacts may also include temporary increases in turbidity and suspended solids, along with associated decreases in dissolved oxygen. These water column conditions may contribute to a decrease in light penetration. They may also cause a general decline in aquatic primary productivity due to temporary loss of phytoplankton populations. Any appreciable turbidity increase may also clog the respiratory and feeding apparatuses of fish and filter feeders. Motile organisms, however, would most probably evacuate and avoid the dredging area, or temporarily relocate to adjacent undisturbed areas. Maintenance dredging activities, nonetheless, most probably contribute only a small percentage to the total turbidity found in nearshore waters when compared with: 1) turbidity created by natural beach erosion, and 2) resuspension of material by waves, currents, tidal action, and boat traffic. Moreover, most such impacts would be confined to the immediate vicinity of dredging activities, with turbidity levels dissipating rapidly through resettlement. The high percentage of sand, relative to silts, would cause most sediments to settle, rather than to remain suspended in the water column.

Specific data on the extent of turbidity plumes is not available for dredging and disposal activities in Morro Bay Harbor. Most of the data that has been gathered across the country involves deeper locations and finer sediments that create higher levels of suspended solids. An average of this data yields an estimated "worse-case" turbidity plume diameter of about 1000 ft, at 100% depth, for a clamshell dredge. The visible surface plume usually dissipates within an hour or two after the operation ceases, depending upon the type of material being dredged (LaSalle, 1991). The maximum turbidity plume associated with hopper dredge operations is expected to be 100 feet at the surface. Turbidity plumes are not normally associated with cutterhead dredges. The proposed dredging and disposal project is not expected to cause significant impacts to water quality within the harbor, since these actions must also adhere to the regulatory requirements and controls set forth by the California Regional Water Quality Control Board.

4.2 Biological Resources

Both sedentary and slow-moving benthic flora and fauna within the immediate project area are expected to be eliminated by proposed dredging activities due to either site excavation or burial. Among such potentially affected organisms are gaper clams, Washington clams, geoducks, annelid & polychaete worms, and benthic fish species. Upon completion of the project, the areas dredged would be expected to be devoid of the species originally comprising the benthic fauna. These actions, however, would also provide a newly denuded substrate available for immediate recolonization by these invasive organisms. The planktonic stage of these organism's life cycles is expected to contribute greatly to the recolonization of this newly exposed substrate, as will contributions by the migration of juvenile and adult individuals from adjacent undisturbed areas.

Field studies of dredged areas have shown that recolonization occurs within 2 weeks to 3 years after dredging stops (McCauley, Parr, and Hancock 1977; Oliver et al 1977; Rosenberg 1977). Recovery of the benthos in Morro Bay Harbor would be expected to be at the shorter end of this range. Oliver et al (1977) found that shallow water communities inhabiting naturally highly variable and frequently disrupted physical environments rebounded or recovered more quickly from experimental disturbances than those found in less variable and more benign conditions. Studies have shown, again, that this recolonization begins immediately following the completion of dredging activities; with most population parameters (i.e., species density, biomass, and abundance) reaching approximately 80% of those values recorded prior to the initiation of dredging operations.

Eelgrass, a plant species of particular concern in the Morro Bay area, may be present in small, sparse, isolated quantities in the general dredging vicinity. However, since the major concentrations of eelgrass are considerably removed from the dredging area, eelgrass has not been recently observed in the dredging areas, and the channels

were dredged last year, eelgrass populations are not expected to be affected by the proposed project. Previously identified eelgrass beds (such as those near Morro Rock) will be avoided. A commercial oyster bed is also maintained in the southern end of Morro Bay Harbor, located at least 1/2 mile from the inner-most extent of the currently proposed dredging operations. Turbidity is not expected to extend to this area.

Seals, sea lions, birds, and other motile species are expected to avoid the immediate dredging area, and thus to avoid direct impacts. Some species would be attracted to the disposal site, to feed on the benthic organisms dredged from the bay.

Potential biological and physical effects of using dredged material for beach nourishment, through either nearshore or surf-zone disposal, include coverage and disturbance of benthic fauna, and temporary turbidity increases within the beach replenishment areas. Turbidity may alter fish distribution and behavior. The fish may dive deep or scatter and become unavailable to foraging pelicans and least terns, who depend on concentrated forage fish. Although some fish may avoid the immediate disposal area due to increases in suspended sediments, other fish and avian species would probably be attracted to the area to feed on remains of any mollusks, crustaceans, and other organisms removed along with the dredged material. Sea otters, for example, have been observed actively foraging in the vicinity of previous disposal operations. Recovery within the benthic community is expected to be rapid and complete, and turbidity levels are expected to subside to ambient levels almost immediately after completion of the nearshore or surf-zone disposal operations (LaSalle, 1991).

California grunion (Leuresthes tenuis) may occasionally utilize beaches in the Morro Bay area for spawning. Potential impacts of surf-zone disposal of dredged material during the grunion spawning season would include eggs being washed prematurely out to sea by the sand slurry; burial of eggs too deep to allow successful hatching and subsequent return of fry to the sea during the upcoming high tides; and avoidance of the beach disposal area by spawning fish due to the elevated turbidity levels associated with operations of this type. Nearshore disposal activities, in contrast, would not be expected to affect this species' reproductive behavior. Due to the scheduling of the project, moreover, potential effects on this species are expected to be minimal since, first, disposal operations will be concluded early in the spawning season, and second, grunion are not common in the area (Miller and Lea, 1972).

Placement of the pipeline, and other activities associated with surf-zone disposal, would temporarily impact beach habitat. Pipe placed on the small foredunes would damage or destroy vegetation, and slow-moving or buried fauna, in those areas. This community is expected to recover, however, through expansion of adjacent, undisturbed habitat. This adjacent habitat would also provide a barrier to possible infiltration of non-native beach grass, from nearby dunes, into disturbed areas. Recent beach profiles indicate that sufficient space exists for the pipeline and corridor between the surf and the foredunes, so that operations will not impact vegetation in the areas surveyed. It is

possible that in other areas the transportation corridor will slightly overlap the dunes, but the contractor will be instructed to avoid vegetated areas whenever possible. The area of impact will also include seaward extensions of pipe, into the surf-zone. This method of operation is less obtrusive, however, than direct beach disposal, and would not significantly change the profile of the beach, including the size and shape of the dunes. The profile of the beach would be changed to the extent that the beach is widened by disposal operations, but large mounds of material are not expected to form.

Impacts to Morro Creek would be avoided by creating a berm about 50 feet from the creek's centerline, thereby preventing disposed material from blocking flows. If temporary dams are formed despite these efforts, natural runoff from winter storms is expected to quickly remove blockades. Disposal, however, is expected to be concluded well before discharge operations approach Morro Creek.

4.3 Threatened and Endangered Species

A. Southern sea otter (Enhydra lutris nereis). In order to more carefully evaluate and minimize any potential future effects on the sea otters, the U.S. Army Corps of Engineers engaged in formal Section 7 Consultation (of the Endangered Species Act) with the U.S. Fish and Wildlife Service's Endangered Species Office in Sacramento, during the 1986-1987 dredging episode. As a result of this consultation, and based on numerous conversations with the staff of the Endangered Species Office in Sacramento, the Corps of Engineers agreed to fund a 5-year study by the U.S. Fish and Wildlife Service, to evaluate the effects of dredging operations on southern sea otters in the area. The study consisted of two parts: a behavioral monitoring program for southern sea otters, and an underwater diving survey of clam populations in and adjacent to the dredged navigation channels.

Based on information represented in the annual reports generated for this study (Bodkin and Rathbun, 1988; Bodkin and Rathbun, 1989), dredging operations do not appear to have an effect upon the continued existence of the southern sea otter. Specifically, based on an analysis of activity budgets of foraging sea otters immediately following the 1986-87 maintenance dredging episode, the FWS stated in both annual reports that "estimates of activity budgets for sea otters in Morro Bay most closely resemble the model for a population where food resources may not be a limiting factor," and that "dredging operations appear to have little effect upon the overall abundance and distribution of Washington or gaper clams in the bay." Furthermore, the otter population has declined in recent years, and in 1993 there were only about 7 animals in the bay (CDFG, personal communication). As a result, the proposed project is not expected to have an effect on the southern sea otter.

B. American peregrine falcon (Falco peregrinus anatum). Dredging operations are scheduled to be completed before the critical parenting period (May-June) in the peregrine falcons' nesting season. In addition, the falcons have been nesting on Morro Rock since at least the late 1960's, and have proven tolerant of the noise and activities associated with typical harbor operations, including numerous previous maintenance dredging activities. It is likely that they would be tolerant of any short-term increase in the activity and noise associated with dredging activities, since dredging has been undertaken in the area several times since 1949; including 1971, 1974, 1979, 1984, and 1986, when the peregrine falcons were present and successfully brooded. Helicopters will not be used to lay or remove pipe. As a result, the proposed project is not expected to have an effect upon the peregrine falcon.

C. California Brown Pelican (Pelecanus occidentalis californicus). The brown pelican is often present in the Morro Bay Harbor and beach areas, especially between August and November. Since this species is highly tolerant of human activities in general, and because its activities in Morro Bay Harbor are confined to foraging and resting, rather than breeding, the dredging activities are not expected to have an effect upon the brown pelican.

D. Western Snowy Plover (Charadrius alexandrinus nivosus). Dredging operations, and nearshore disposal, are not expected to affect the western snowy plover. Specific measures shall be taken to avoid impacts to nesting and wintering plovers, if beach disposal occurs. These measures include: completion of all surf-zone disposal activity by March 15; surf-zone rather than beach disposal, to avoid direct impacts to the beach profile in the nesting areas; restriction of pipeline placement, vehicle use, and other disposal activities to a 50-foot corridor; and initiation of operations at the north end of the disposal area, working south, to allow more time between the end of disposal activities and the beginning of breeding season at the primary nesting areas. With the inclusion of these measures, surf-zone disposal will not affect this species. Coordination with resource agencies, including the Fish and Wildlife Service, will be re-initiated if and when it appears that surf-zone disposal would continue beyond March 15.

Representatives from the California Department of Parks and Recreation and the Audubon Society have expressed concern regarding possible impacts from surf-zone disposal to the wintering populations of the snowy plover. The U.S. Fish and Wildlife Service, however, has agreed that the project, with the environmental commitments described above, will not affect the plover, and that formal consultation (pursuant to Section 7 of the Endangered Species Act) is not required.

The Corps of Engineers has conducted several beach and surf-zone disposal operations within plover habitat, during both nesting and roosting seasons, without

negative impact. Approximately 46 nests were observed on Morro Strand State Beach in the months following the 1993/1994 disposal operation. Several years of beach disposal activities in Santa Barbara have not resulted in noticeable impacts to roosting or foraging plovers. In fact, monitoring revealed that the plovers tend to congregate near the disposal site, perhaps due to limited public access at that point. The 1992-1993 beach disposal operation in Ventura was followed by the first plover nesting in that area in recent years. This, of course, is not conclusive evidence of a beneficial result, but it does indicate that winter beach disposal does not have a negative impact on nesting success.

Finally, surf-zone disposal occurred on the Morro Bay Sand Spit from February to June 1987. Plovers and nests were closely monitored during disposal activities, and through the rest of the nesting season. Plovers were observed using the entire length of the ocean beach for roosting and foraging. The clutch-hatching rate could not be accurately determined, but estimates were comparable to, or significantly higher than, those at other plover nesting locations. There was no evidence that the dredging operation (including pipeline removal) decreased the snowy plover's breeding success at the sand spit.

As a result of the above analysis, and as further documented in the previously prepared Biological Assessment, incorporated by reference (per 50 CFR 402.21), the proposed dredging and disposal activities will not affect any threatened or endangered species, or their designated critical habitat. Formal consultation pursuant to the Endangered Species Act, therefore, is not required.

The globose dune beetle, a category 2 candidate species, may inhabit the foredunes near the proposed beach disposal site. Impacts to the vegetated foredunes, and any associated animal life, will be avoided whenever possible. Recent beach profiles indicate that there is sufficient space for the pipeline and corridor between the surf and the foredunes, so that operations will not impact vegetation in the areas surveyed. It is possible that in other areas the transportation corridor will slightly overlap the dunes, but the contractor will be instructed to avoid vegetated areas whenever possible. The globose dune beetle, therefore, is not expected to be affected by this project.

4.4 Air Quality and Ambient Noise Levels

Dredging and disposal operations are expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. Bulldozers, workboats, and other construction equipment would also be used for such work as moving pipe and building access ramps. Emissions from dredging equipment and dust and debris from disposal activities are expected to cause minor short-term adverse impacts on air quality. The overall impact of the project on local ambient air quality, however, is not expected to be significant, for the following reasons:

a) The proposed dredging activities in Morro Bay Harbor will be temporary in nature, and subject to Federal, State, and County air quality regulations and standards. The air quality standards established and enforced by the San Luis Obispo County Air Pollution Control District (APCD) will be observed by the Corps' contractor. The contractor will be responsible for complying with all applicable APCD rules and regulations (including performing a risk assessment of carcinogenic emissions, if necessary), and shall obtain necessary permits before construction begins.

b) Construction equipment will be properly maintained, to reduce emissions. Appropriate measures will be taken to reduce fugitive dust caused by beach operations. Vehicle speed on the beach, for example, will be kept at a minimum to avoid the formation of dust clouds. Should a dust problem arise at the equipment staging area due to construction activity, water or other stabilization techniques would be applied.

c) The contractor will provide the APCD with a list of all construction equipment to be operated in the project area, including that which does not require an air quality permit. This procedure was coordinated with Mr. Larry Allen of the San Luis Obispo APCD for the 1993-1994 project, since specific emissions information is not currently available for review. (Emission levels from different dredges could vary substantially, even if they are the same dredge type, due to differences in size, engine type, and other parameters). If the APCD expects that emissions from this equipment would have a significant impact, that agency would inform the Corps, and recommend specific mitigation measures to reduce emissions. The APCD has required the following measures, for example, to reduce emissions of NO_x and sulfur dioxide: 1) use of diesel fuel with sulfur content not exceeding 0.05% sulfur by weight; 2) assurance that air contaminants discharged into the atmosphere, for a period or periods aggregated more than 3 minutes an hour, do not exceed Ringlemann 1 or equivalent 20% opacity; 3) a 2° injection timing retard; 4) installation of high pressure injectors; 5) use of reformulated diesel fuel; and 6) use of selective catalytic reduction to control emissions from the diesel engines (if necessary to satisfy Best Available Control Technology requirements).

d) Significant emissions do not normally occur from the few vehicles and equipment used to maneuver and maintain disposal pipelines, and are not expected on this project. The contractor will be responsible, however, for monitoring air quality during operations.

Morro Bay Harbor is located in an area of many established and varied noise sources (primarily automobiles and marine harbor craft). Ambient noise levels within the harbor complex are such that the diesel dredge will not significantly decrease noise quality. Although increases in ambient noise levels due to project-generated noise will occur as a result of dredging activities, these increases are considered insignificant. Both

air quality and noise levels will return to ambient conditions upon project completion. Although use of a diesel dredge will result in increased noise levels during all periods of the day and night, even the worst case scenario is not expected to exceed limits established by local noise ordinances. If surf-zone disposal occurs, pipeline boosters will not be used from Morro Creek to Morro Bay High School, to avoid impacts to the school and a nearby trailer park.

4.5 Land Use and Recreation

Modifications to existing bottom topography are expected as a result of the proposed dredging of the harbor, since excavation of this area is the stated project purpose. Local, but minor, changes to bathymetry will result due to relocation of marine sediments. In addition, minor physiographic and topographic changes to existing land forms will result from activities associated with the disposal of dredged materials in the nearshore or surf-zone environment. The potential impacts of the proposed activities affecting the existing land use will be localized to the immediate project vicinity and are considered minor and insignificant in nature. The environmental impact and disturbance to recreation-related activities due to the project are also expected to be minimal and insignificant, with an ultimately positive effect of producing probable enhancement in beach and harbor recreational uses following completion of the project.

Recreational activities in the proposed project area include swimming, surfing, boating, fishing, and camping. These recreational uses are heaviest in the early summer. Significant adverse effects associated with the proposed project are not expected, since activities are scheduled to occur between 1 August 1995 and 15 March 1996, and beach operations would not occur until after 15 September 1995. As a result, the environmental impact and disturbance to recreational activities due to dredging operations are expected to be short-term and insignificant. In the long term, recreational boating activities will be enhanced due to improved navigability in the channels, and recreational uses of the beach will be improved due to replenishment of beach sand.

4.6 Aesthetics

Presence of a dredge and pipeline is expected to be the only degradation of aesthetic quality in Morro Bay during dredging operations. Since the vessel and its operational equipment are well kept and maintained, the environmental impact to aesthetic quality is expected to be minimal, temporary, localized, and therefore insignificant.

4.7 Cultural Resources

Inasmuch as the various cultural research identification efforts did not locate any cultural resources, the combined projects as planned will not involve any historic properties.

5.0 COORDINATION

The principle agencies with which this project has been, and will continue to be coordinated include: U.S. Fish and Wildlife Service, National Marine Fisheries Service, State Historic Preservation Office, California Coastal Commission, California Department of Fish and Game, California State Resources Agency (State Parks and Recreation), California Regional Water Quality Control Board (Central Coast Region), Air Pollution Control District (County of San Luis Obispo), and the Morro Bay Harbor District. The 1990 and 1992 survey results were coordinated with the State Historic Preservation Officer (SHPO) in letters dated 27 November, 1990 and 26 March, 1992.

Pertinent written records of coordination effected to date are included in Appendix C. The California Coastal Commission has concurred with consistency determinations the Corps prepared for previous projects, including the 1993 Maintenance Dredging Projects and the 1991 FR/EA (CD-44-93 and CD-81-91). The Corps has therefore determined that a Statement of Negative Determination is appropriate for this project, which is similar to those previously authorized projects. In a letter dated May 3, 1995, the CCC concurred with this determination. An updated list of Federally-listed endangered, threatened, and candidate species that could occur in the project area has been requested from the U.S. Fish and Wildlife Service. A response has not yet been received; the Corps, therefore, assumes that the existing list contained in this document are adequate. Due to the aforementioned absence of an effect to any Federally-listed threatened or endangered species, no formal Section 7 consultation process is required.

6.0 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

6.1 Clean Water Act - Section 404(b)(1) Guidelines

Since the primary purpose of the fill activities are for the purposes of beach nourishment, the proposed project has been evaluated pursuant to Section 404(b)(1) of the Clean Water Act. The proposed project complies with the guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b)(1) of the Clean Water Act (33 USC 1344). This evaluation is provided as Appendix A.

6.2 Coastal Zone Management Act of 1972

The proposed project activities have been reviewed by the U.S. Army Corps of Engineers as required by the Coastal Zone Management Act of 1972. The California Coastal Commission has concurred with consistency determinations the Corps prepared for previous projects, including the 1993 Maintenance Dredging Projects and the 1991 FR/EA (CD-44-93 and CD-81-91). The Corps has therefore determined that a

Statement of Negative Determination is appropriate for this project, which is similar to those previously authorized projects. In a letter dated May 3, 1995, the CCC concurred with this determination.

6.3 Endangered Species Act of 1972, Section 7(c)

As discussed above, and following informal consultation with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers (the action agency) has determined that the proposed maintenance dredging operations will have no effect upon any species listed as threatened or endangered by the USFWS or its critical habitat, and therefore formal consultation pursuant to Section 7(c) of this Act is not required.

6.4 National Historic Preservation Act

The Corps is in compliance with Section 106 of the National Historic Preservation Act for the channel deepening and maintenance dredging projects. Letters from the SHPO dated 27 November, 1990 and 26 march, 1992 concur with the Corps' determination that the projects as planned will not involve National Register eligible or listed properties. The two letters were for the 1990 maintenance dredging survey and the 1991 channel deepening project respectively.

6.5 Other Applicable Environmental Laws and Regulations

The proposed project has been reviewed and determined to be in compliance with the following applicable laws and regulations:

1. National Environmental Policy Act
2. Fish and Wildlife Coordination Act
3. Clean Air Act
4. Marine Protection, Research and Sanctuaries Act

7.0 ENVIRONMENTAL COMMITMENTS

The Corps and contractors commit to avoiding, minimizing, or mitigating for adverse effects during dredging and disposal activities.

7.1 Water Quality - The contractor will stay within the boundaries of the identified construction zones. There will be no dumping of fill or material outside of the project area or within any adjacent aquatic community. **Environmentally sensitive areas, such as estuaries, will be avoided.** If necessary, the contractor shall construct a berm at least 50 feet from the center of Morro Creek, to prevent blockage by disposal material. The Corps and its contractor will comply with all provisions and reporting requirements of the Waste Discharge Requirements, issued by the California Regional Water Quality

Control Board (except the requirement to limit all disposal activities to the period from November 1 through May 30 - see Appendix B, Response to Comments).

The City or the Corps will continue to monitor the beach for total and fecal coliforms during disposal operations. This monitoring will ensure that bacterial levels are within acceptable limits and do not pose a health risk to the public. If levels exceed acceptable limits, coordination will be re-initiated with the CRWQCB to determine an appropriate response (such as the placement of warning signs).

The contractor is responsible for cleaning up all trash and debris, as soon as possible. The Corps' contracting representative will make it clear to the contractor that this must be done on a daily basis, and will inspect the beach disposal site whenever he/she visits the site to ensure this is done.

7.2 Transportation and Navigation - The Corps' contractor shall provide maximum public access to roads, streets and highways that might be utilized for hauling and construction. Ramps will be constructed over all road crossings, and at intervals along the beach, to maintain public access. Dredging and disposal activities will be coordinated with the U.S. Coast Guard, and with Chevron. The dredge operator shall move the dredge equipment for Coast Guard and Harbor Patrol law enforcement and rescue vessels.

7.3 Scheduling - In order to avoid conflicts with the nesting season of the peregrine falcon and the snowy plover, dredging operations shall be completed by 15 March 1994. Should, due to unforeseen complications, dredging operations need to be continued beyond that date, coordination of such actions shall be immediately initiated with the appropriate wildlife agencies. Should the Corps determine that further dredging or disposal activities may have an effect upon the continued existence of any threatened or endangered species, those activities shall be immediately terminated until such time as dredging and disposal would not have said effect upon these species, as determined by the Corps following informal consultation with the U.S. Fish & Wildlife Service.

7.4 Noise - Haul trucks and construction equipment will be properly maintained and scheduled in order to minimize unsafe and nuisance noise effects to sensitive biological resources, residential areas, and the socio-economic environment. Sensitive receptors, such as schools and hospitals, will be avoided whenever possible. Pipeline boosters will not be used between Morro Creek and Morro Bay High School.

7.5 Air Quality - Haul trucks and construction equipment will be properly maintained in order to minimize release of diesel and hydrocarbon effluent into the atmosphere. The contractor will follow all air quality standards, including those regarding emissions, fuel use and fuel consumption. Appropriate measures will be taken to reduce fugitive dust caused by beach operations. Vehicle speed on the beach will be kept at a minimum to avoid the formation of dust clouds. Should a dust problem arise

at the equipment staging area due to construction activity, water or other stabilization techniques will be applied. The contractor shall obtain a permit from the San Luis Obispo County Air Pollution Control District, pay all associated fees, and follow all permit requirements.

The contractor will provide the APCD with a list of all construction equipment to be operated in the project area, including that which does not require an air quality permit. If the APCD expects that emissions from this equipment would have a significant impact, that agency will inform the Corps, and recommend mitigation measures to reduce emissions. The contractor will be responsible for monitoring air quality during operations.

If necessary, the contractor will use Best Available Control Technology (BACT) for all permitted emission sources for which the potential to emit 25 lb/day or more of any criteria pollutant is expected. The large diesel engines associated with dredging are capable of emitting NOx over this threshold and are thus subject to BACT requirements. The applicant is responsible for submitting a proposal detailing the measures taken to satisfy BACT requirements. The last dredging project in Morro Bay harbor, for instance, utilized selective catalytic reduction to control emissions from the diesel engines.

7.6 Ecological Commitments - The contractor shall not harass any marine mammal, bird, or fish in the project area. There shall be no recreational use of all-terrain vehicles by the contractor. Stockpiling of construction materials on shore shall be confined to authorized staging areas. Helicopters shall not be used to place or remove pipe, to avoid possible impacts to peregrine falcons. Specific measures shall be taken to avoid impacts to nesting plovers, if beach disposal occurs. These measures include: completion of surf-zone disposal by March 15; surf-zone rather than beach disposal, to avoid direct impacts to the beach profile in the nesting areas; restriction of pipeline placement, vehicle use, and other disposal activities to a 50-foot corridor; and initiation of operations at the north end of the disposal area, working south, to allow more time between the end of disposal activities and the beginning of the breeding season at primary nesting areas. Coordination with resource agencies, including the Fish and Wildlife Service, will be re-initiated if and when it appears that surf-zone disposal would continue beyond March 15. To avoid impacts to beach dune vegetation, pipeline shall be placed seaward of vegetated areas, unless wave-action would damage the pipe. If the allotted corridor overlaps the foredunes in any location, the contractor shall further restrict activities to avoid direct impacts to vegetation, whenever possible.

8.0 CONCLUSION

The maintenance dredging operations proposed for Morro Bay Harbor have been designed and scheduled to avoid, minimize, and mitigate the probable effects on the environment. During the period of proposed beach disposal, recreational uses of the

area near a minimum, and dredging operations will be completed before 15 March 1996 to avoid impacts to threatened or endangered wildlife.

This Final Environmental Assessment, and formal coordination with the appropriate public agencies, indicates that the proposed activity will not have a significant impact upon the existing environment or the quality of the human environment. As a result, preparation of an Environmental Impact Statement (EIS) is not required.

9.0 LIST OF PREPARERS

This Final EA was prepared by:

Hayley Lovan, Environmental Coordinator and Ecologist
Richard Perry, Archeologist

This document was reviewed by:

Stephen Dibble, Senior Archeologist
Rey Farve, Senior Marine Ecologist
Nedenia Kennedy, Chief, Environmental Support Section

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FIGURES

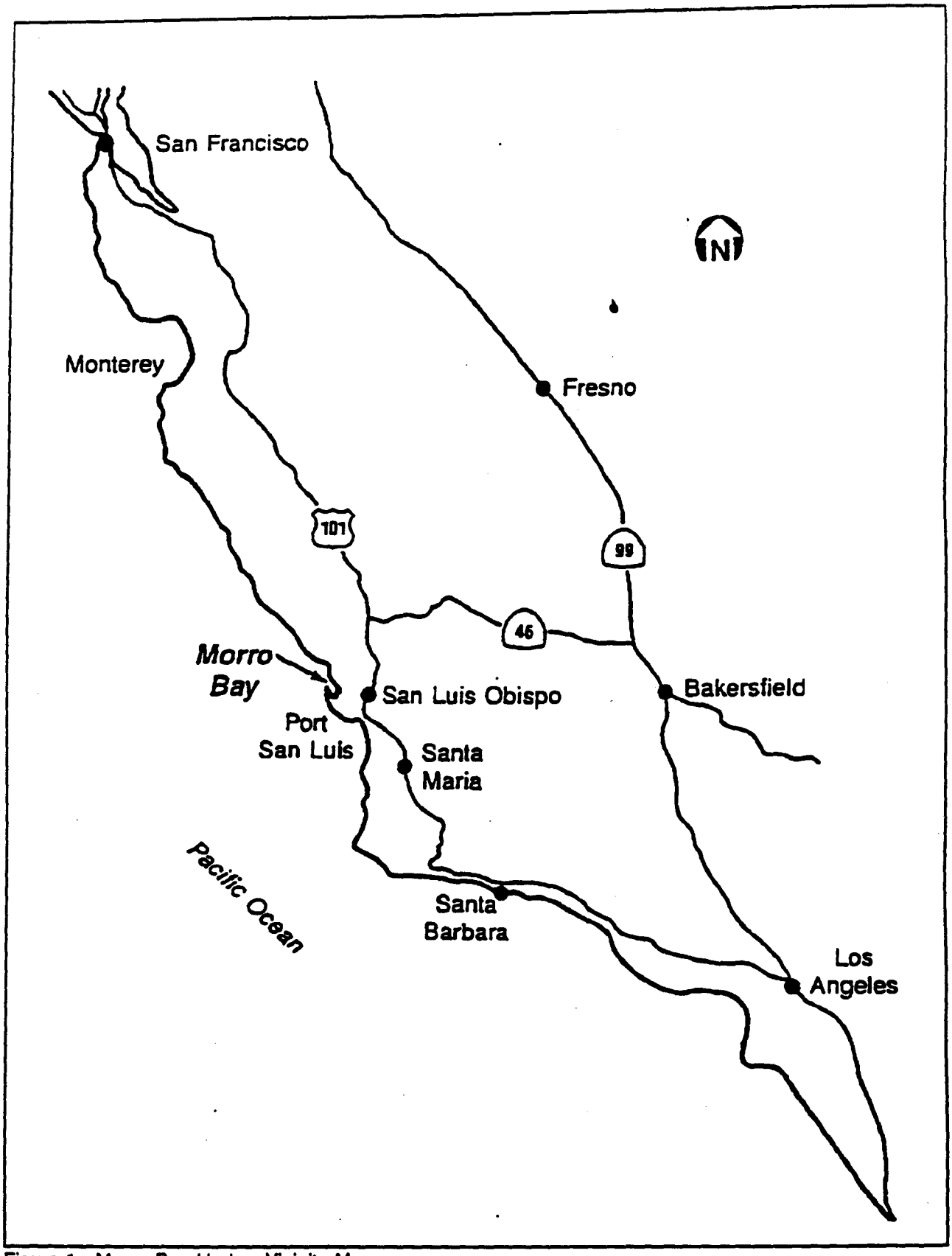

Figure 1: Morro Bay Harbor Vicinity Map.

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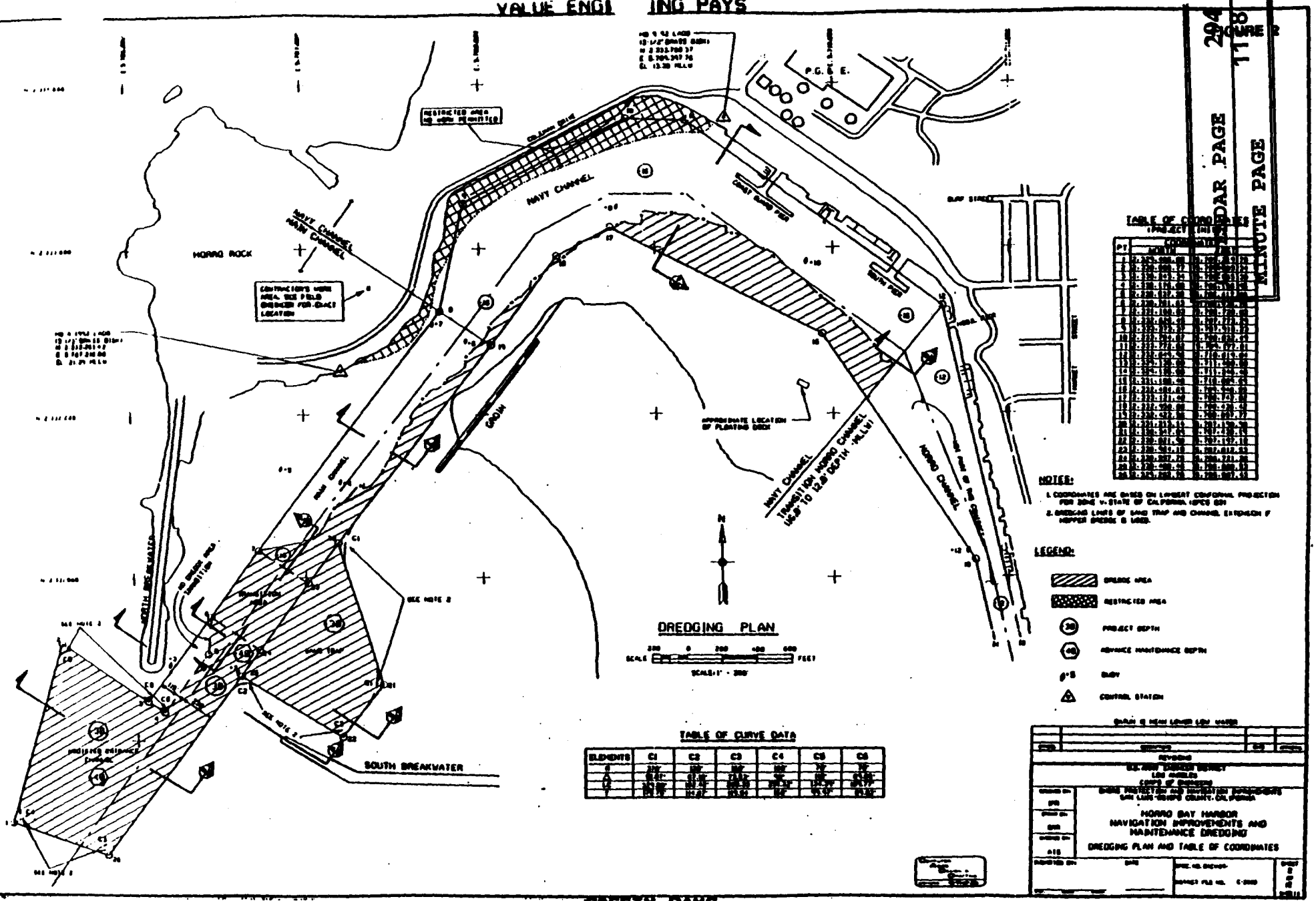
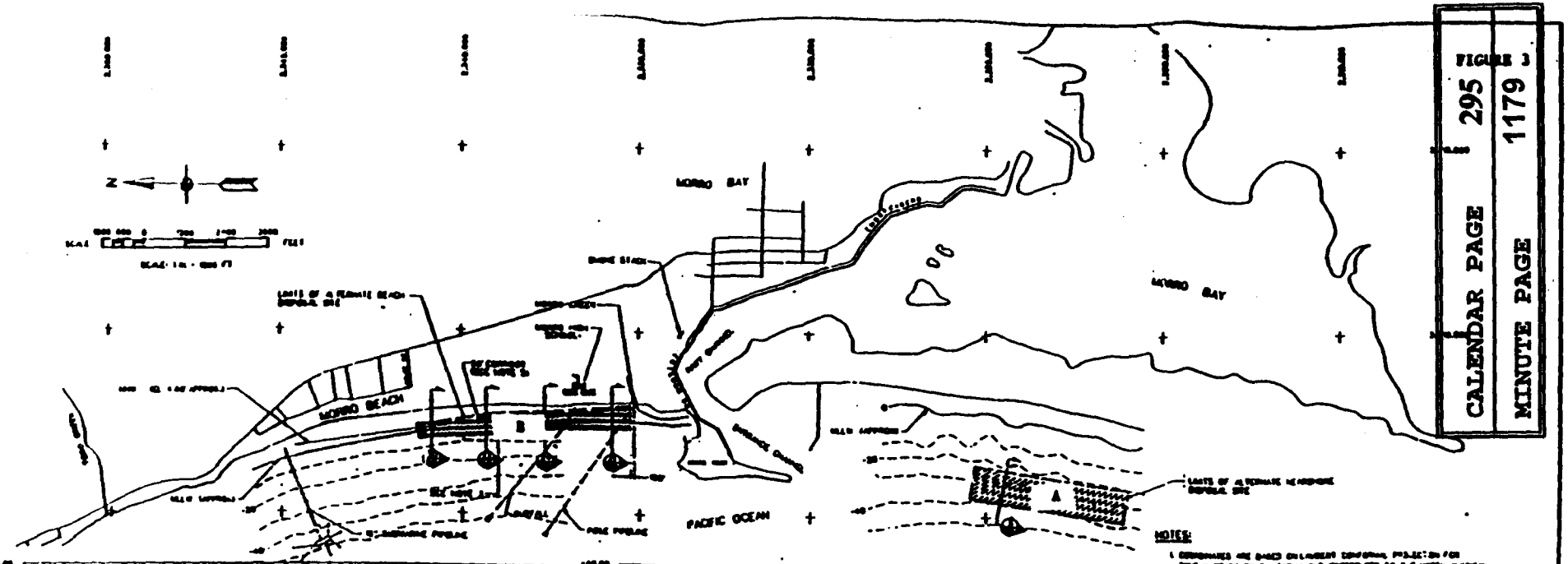
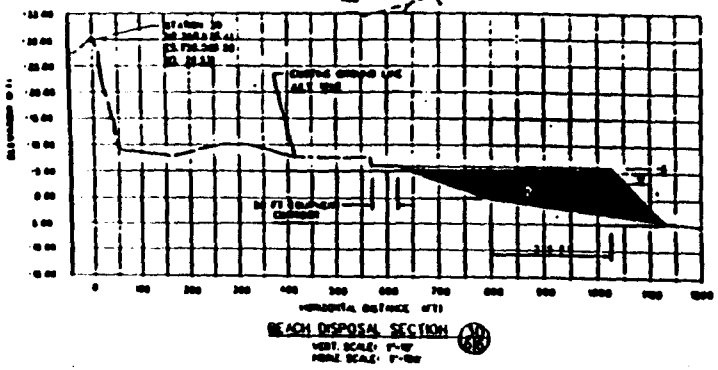
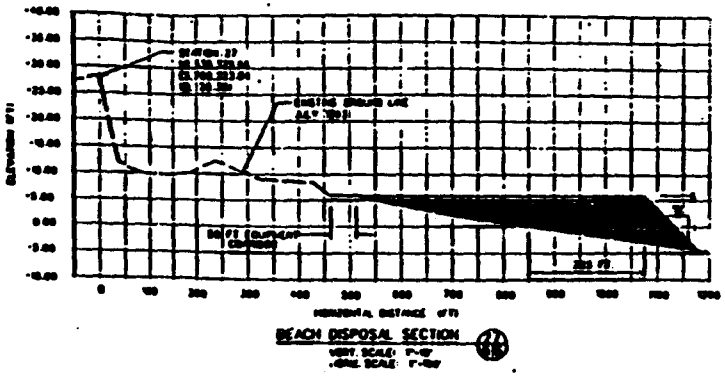
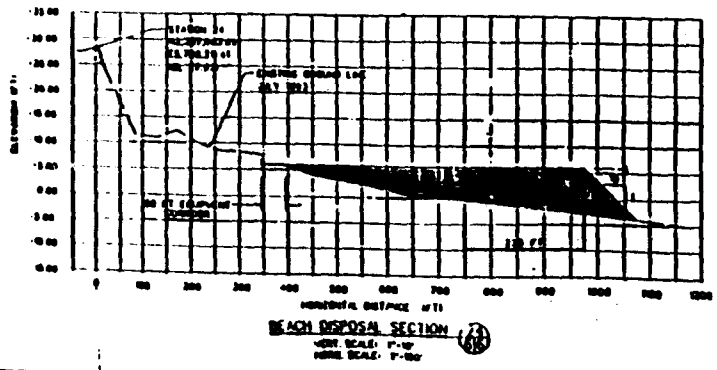
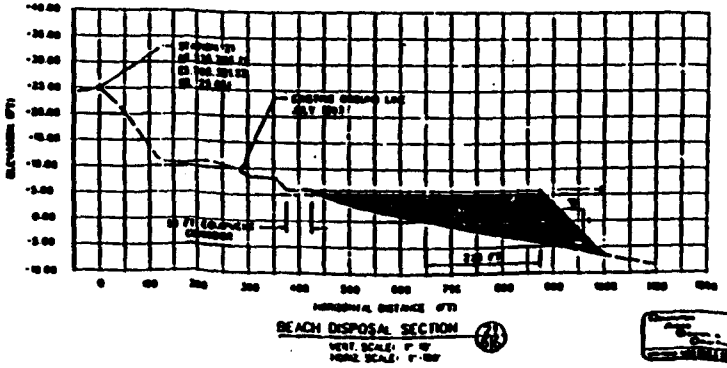

MORRO ROCK
NAVY CHANNEL
MAIN CHANNEL
SOUTH BREAKWATER
P.G. & E.
BAY STREET
MORRO CHANNEL
APPROXIMATE LOCATION OF FLOATING DOCK
DREDGING PLAN
SCALE 1" = 200'
TABLE OF CURVE DATA
TABLE OF COORDINATES
NOTES:
LEGEND:
PROJECT DEPTH
ADVANCE MAINTENANCE DEPTH
CONTROL STATION
MORRO BAY HARBOR
NAVIGATION IMPROVEMENTS AND
MAINTENANCE DREDGING
DREDGING PLAN AND TABLE OF COORDINATES











NOTES:

1. COORDINATES ARE BASED ON LAMBERT CONFORMAL PROJECTION FOR ZONE V, STATE OF CALIFORNIA AND REFERENCED TO THE NORTH AMERICAN DATUM HORIZONTAL DATUM OF 1983.
2. BEACH PROFILE SURVEY WAS CONDUCTED ON 27-30 JULY 1981.
3. BEACH DISPOSAL OPERATIONS AT ARUBA STREET AND MORRO CREEK.
4. BEACH DISPOSAL SHALL BE WITHIN THE DARKENED TOTAL CAPACITY OF 750,000 CUBIC YARDS.
5. CONSTRUCTION EQUIPMENT MUST STAY WITHIN A 50 FOOT CORRIDOR EXTENDING FROM 10 FT VALLEY TO 50 FT LANDWARD.
6. DISPOSAL PIPELINE SHALL EXTEND FROM THE NAVIGATION CHANNEL ACROSS STATION 20 ALONG ENGINEERING DR. ACROSS MORRO CREEK, WITHIN THE CONSTRUCTION CORRIDOR TERMINATING AT ARUBA STREET.
7. BOOSTER PUMP SHALL NOT BE PLACED BETWEEN MORRO CREEK AND MORRO BAY FOR DISPOSAL.
8. BEACH NOURISHMENT DISPOSAL AREA FINE SANDY MATERIAL SHALL BE DISPOSED IN WATER DEPTHS BETWEEN -30 AND +10 FEET MLLW, TOTAL CAPACITY OF 750,000 CY.

LEGEND:

△ – BEACH MONUMENTATION CONTROL
○ – TEMPORARY STATION PROBLEM STAKE
——— – VALVE
▭ – DISPOSAL AREA

DATUM IS MEAN LOWER LOW WATER

DESIGNED BY			
DRAWN BY			
CHECKED BY			
QUANTITIES BY			
DATE			

REVISIONS

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SHORE PROTECTION AND NAVIGATION IMPROVEMENTS
SAN LUIS OBISPO COUNTY, CALIFORNIA

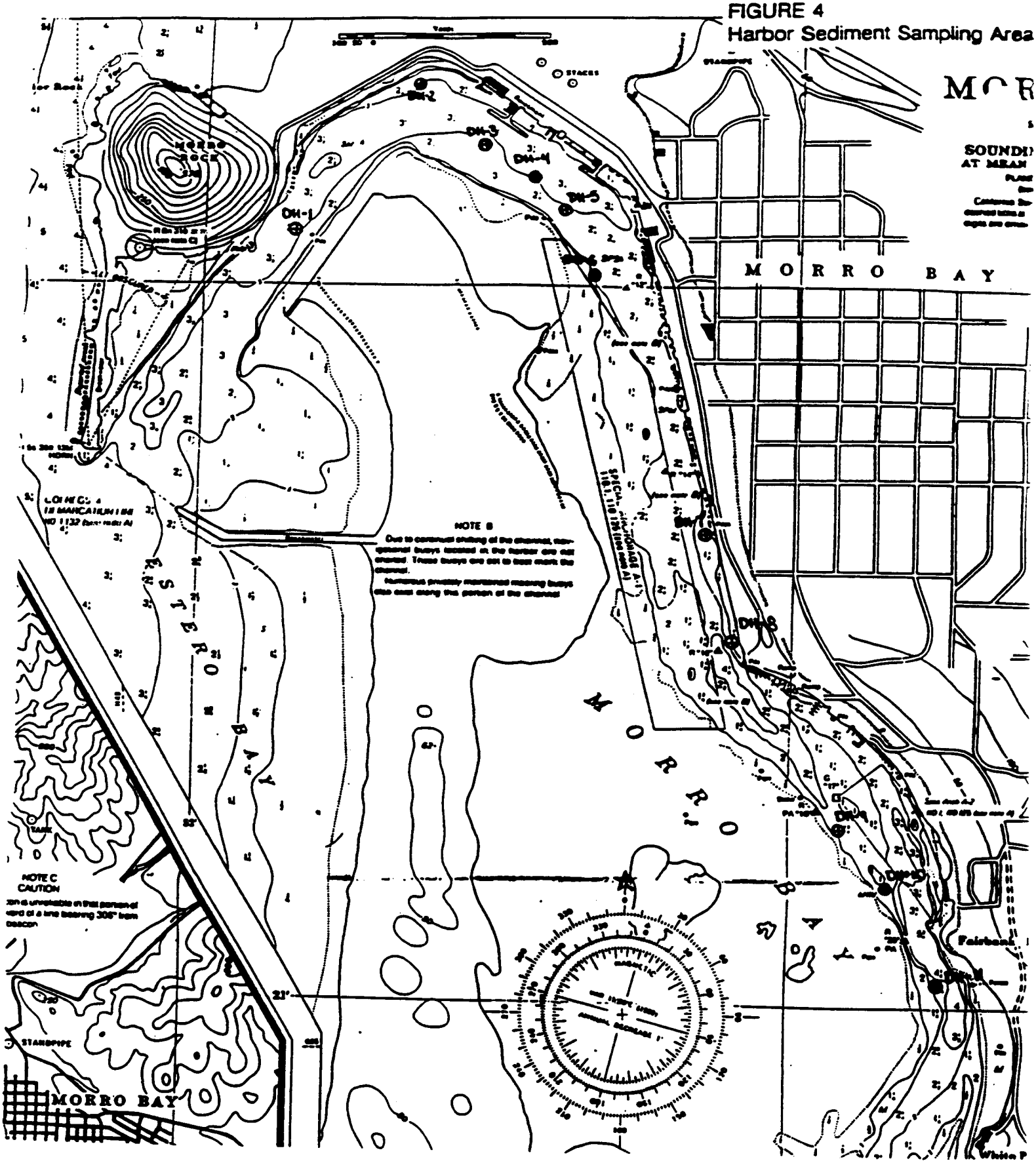
MORRO BAY HARBOR
MAINTENANCE DREDGING
DISPOSAL AREAS AND SECTIONS

SUBMITTED BY | DATE SUBMITTED | SPEC. NO. | CONTRACT NO.

APPROVED BY | DATE APPROVED | DRAWING FILE NO.

SAFETY DAYS

FIGURE 4
Harbor Sediment Sampling Area



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APPENDIX A

Section 404(b)(1) Water Quality Evaluation
Morro Bay Harbor Maintenance Dredging
San Luis Obispo County, California

March 1995

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THE EVALUATION OF THE EFFECTS OF THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THE WATERS OF THE UNITED STATES IN THE NEARSHORE VICINITY OF MORRO BAY SAN LUIS OBISPO COUNTY, CALIFORNIA

I INTRODUCTION. The following evaluation is provided in accordance with Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), as amended by the Clean Water Act of 1977 (Public Law 95-217).

II PROJECT DESCRIPTION.

a. Location: Morro Bay Harbor is located approximately 12 miles northwest of the City of San Luis Obispo on the central California coast in San Luis Obispo County (see Figure 1 in the attached Environmental Assessment).

b. General Description: In order to maintain authorized channel configurations and assure safe navigation within the harbor complex, the proposed maintenance dredging project involves the removal by dredge, of approximately 1,100,000 cubic yards of littoral drift material. An estimated 740,000 cy will be dredged for an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment. The remainder will be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor.

c. Authority and Purpose: This evaluation has been prepared pursuant to Section 404(b)(1) of the Clean Water Act of 1977 (33 USC 1344) which applies to the discharge of dredged or fill material into navigable waters of the United States of America. The primary purpose of disposal is beach nourishment. The landward limit of jurisdiction in tidal waters (in the absence of adjacent wetlands) is the Mean Higher High Water (MHHW) line.

d. General Description of Dredged or Fill Material: The four source areas within maintenance dredging boundaries in Morro Bay Harbor are: 1) Entrance Channel, 2) Navy Channel, 3) Morro Channel, and 4) the advance maintenance area located at the harbor entrance (see Figure 2 of the attached Environmental Assessment). All four of these areas have traditionally generated sediments characterized as predominantly sand and silty sand, with less than 10% fines passing a #200 sieve. Seasonal and annual changes in the distribution of the

sediment among the various size classes has been observed and can continue to be anticipated.

e. Description of the Proposed Discharge Sites: Dredged material will be discharged at one or more of the following locations (see Figure 3 in the attached EA): 1) nearshore disposal at a site between 5,000 and 10,000 feet downcoast of the harbor entrance, in waters between -20 and -40' MLLW, or 2) surf-zone disposal along the beach north of Morro Bay, between Morro Creek and Azure Street. The characteristic habitat type subject to impact by dredge material discharge is open-coast sandy beach (through natural beach replenishment) and nearshore subtidal soft-bottom sandy habitat. Discharge will occur beginning about 1 August 1995 and will conclude no later than 15 March 1996.

f. Description of Dredging and Disposal Methods: Dredging and disposal operations are expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge.

III FACTUAL DETERMINATIONS.

a. Physical Substrate Determinations: Core samples from each of the channels were taken in March 1993. The subsequent test results indicated that the majority of the material was predominately sand, with at least 90% retained on a No. 200 screen. Grain size analysis indicated that the materials were fine to medium grained, poorly sorted sands. Surface grab samples were also taken from the vicinity of each of the proposed disposal sites in the depth range of +12 to -30 feet MLLW. These samples were also found to be fine to medium grained, poorly sorted sands. As a result of this analysis, the grain size distribution of the material to be dredged is compatible with the grain size distribution in each of the proposed disposal areas (see Appendix C of the attached Environmental Assessment). Chemical analysis indicated that the material to be dredged is relatively clean and free from pollutants.

b. Water Circulation, Fluctuation, and Salinity Determinations:

1) Water. The proposed project will not adversely affect the salinity of the receiving waters, as waters used in slurring the dredge material is of the same salinity as the receiving waters. Receiving waters immediately adjacent to the selected discharge site may be subject to changes in pH should dredging of unanticipated anaerobic sediments occur. Water clarity is expected to be adversely affected during dredging disposal at each of the two disposal sites. Since the disposal sites are within high energy areas, rapid dispersion and oxygenation of sediments is expected to occur.

Dissolved oxygen may be rapidly depleted from waters immediately adjacent to the discharge sites if anaerobic sediments are encountered. Localized nutrient enrichment of seawater may also occur. These impacts are not expected to be significant due to their temporary nature.

2) Current Patterns and Circulation. Currents in the discharge areas are predominantly parallel to shore. The currents reverse direction seasonally and occasionally even daily. Velocities around the two breakwaters that define the entrance to Morro Bay are on the order of three to five knots, with visual observation of maximum ebb tide currents in the approach channel occasionally exceeding five knots. The proposed project will not have a significant effect upon current patterns or circulation, either along the shore or within the harbor.

3) Normal Water Level Fluctuations. Tidal flows are expected to disperse suspended dredge materials not entrained in the sand slurry or discharged from the dredge to adjacent areas within the harbor. Tide data from waters in the vicinity of Morro Bay range from -2.6 feet (lowest tide observed) to 7.6 feet (highest tide observed). The proposed project will not have a significant effect upon normal water level fluctuations.

c. Suspended Particulate/Turbidity Determinations:

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites: Increases in local turbidity will occur at the receiving site during discharge operations. Construction-related increases in turbidity will be of short duration and are not expected to be significant. Temporary increases in local turbidity may also be expected in the local vicinity of the dredge. Considering the grain size distribution and ambient turbidity caused by existing tidal actions, these increases are expected to be insignificant.

2) Effects on Chemical and Physical Properties of the Water Column: The effects of construction-related turbidity will be a reduction in light penetration and a reduction in dissolved oxygen (the latter due to the discharge of reduced sediments). No release of toxic metals or organic materials is expected. The fraction of fine sediments is relatively small and no known source of toxic metals or organics is known to occur in the area.

3) Effects of Turbidity on Biota: No significant reduction in phytoplankton production is expected due to project generated turbidity. There are no kelp or eelgrass beds in near enough proximity to any of the proposed discharge sites to be significantly affected by the anticipated turbidity. The effect of project related turbidity on local suspension and

filter-feeding invertebrate and fish populations is unknown, but even complete loss would result in immediate recolonization, and impacts would be expected to be short-term and insignificant. Any appreciable turbidity increase may cause clogging of respiratory and feeding apparatuses of sedentary bottom fish and filter feeders. Motile organisms, however, would evacuate and avoid the dredging area and temporarily relocate to adjacent undisturbed areas. Most of the impacts would be confined to the immediate vicinity of dredging and disposal activities. Sight-dependent bird species are expected to be adversely affected due to reduced surface-water visibility in the immediate area of dredging activities, but these impacts are considered temporary and insignificant.

d. Contaminant Determination: No contaminants are known or expected to be present in the dredge material. Chemical analysis of sediment in proposed dredge areas was conducted in 1993.

e. Aquatic Ecosystem and Organism Determinations: Adverse effects of the proposed project on local benthic organisms will include the elimination of all organisms inhabiting the 1,100,000 cubic yards of dredge material to be excavated, and direct burial of all organisms inhabiting the benthic habitat at the selected receiving sites, as well as decreased feeding efficiency due to the increase in turbidity in nearby areas not physically dredged or buried.

Four Federally-listed threatened or endangered species occur in or near the project area. These include the southern sea otter (Enhydra lutris nereis), the American peregrine falcon (Falco peregrinus anatum), the California brown pelican (Pelecanus occidentalis californicus), and the Western Snowy Plover (Charadrius alexandrinus nivosus). These species are not expected to be affected by this project. See Section 4.3 of the attached EA for further information.

California grunion (Leuresthes tenuis), a member of the silversides family (Atherinidae), may occasionally utilize the beaches in the Morro Bay area for spawning from mid-March through mid-September, with a peak in activity occurring between April and June. Spawning activity initiates with the grunion depositing their eggs in the sand on the high intertidal portions of the beach during high tides. The eggs are subsequently incubated in the sand, and hatched during the ascending series of high tide conditions before the following full or new moon. Potential impacts of surf-zone disposal of dredged material during the grunion spawning season would include eggs washed prematurely out to sea by the sand slurry, and the burial of the eggs so deep so as to not allow successful hatching and the subsequent return to the sea during the upcoming high tides. Nearshore disposal, however, would not be expected to affect this species. Any potential effects on this species are further expected to be minimal due to the fact

that disposal operations are scheduled to be concluded early in grunion season. and that grunion are not common in the area.

f. Proposed Disposal Site Determinations: The dredge materials are substantially the same as those identified on each of the proposed receiving sites due to the littoral nature of the sediments to be dredged. Grain size and chemical analyses of the dredge materials indicate compatibility with the selected receiving beach. No known or suspected pollutants have previously or presently occurred in the dredge areas, and no source of pollutants is known to discharge into the dredge area. All sources of the sediment to be excavated already contribute to the receiving sites. The proposed project will not affect any municipal or private water supply. Water sports inshore of the disposal sites are not expected to be impacted by the disposal activities.

g. Determination of Cumulative Effects on the Aquatic Ecosystem: No significant cumulative adverse effects on the aquatic ecosystem are expected.

IV FINDING OF COMPLIANCE.

a. Adaptation of the Section 404 (b)(1) Guidelines to this Evaluation: No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: There are no alternative disposal sites available for this project which would be 1) more consistent with the project authorization which mandates disposal into the littoral drift system, or 2) would have a less environmentally damaging resultant.

c. Compliance with Applicable State Water Quality Standards: The proposed project will comply with State water quality standards promulgated by the California Regional Water Quality Control Board, Central Coast Region, in Order Number 85-07.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act: No toxic materials are known or likely to occur in the project area.

e. Compliance with the Endangered Species Act of 1973: As discussed in the attached Environmental Assessment, and following informal consultation with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers (herein the action agency) has determined that the proposed maintenance dredging operations will not have an effect upon the continued existence of any species listed as

threatened or endangered by the Service, and therefore formal consultation pursuant to Section 7(c) of this act is not required.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972: No sanctuaries as designated by the Marine Protection, Research and Sanctuaries Act of 1972 will be affected by the proposed project.

g. Evaluation of Extent of Degradation of the Waters of the United States: No significant degradation of municipal or private water supplies, special aquatic sites, or plankton resources will occur. The project will have a short-term effect upon fish and invertebrates due to project-related turbidity and the burial of organisms. Grunion populations are not expected to be adversely affected.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem: Specific environmental commitments are outlined in the attached Enviornmental Assessment. These include scheduling operations to avoid potential impacts to Federally-listed threatened or endangered species, and compliance with all provisions and reporting requirements of the Waste Discharge Requirements, issued by the California Regional Water Quality Control Board.

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is: in compliance with Section 404 (b)(1) guidelines, with the inclusion of appropriate conditions to minimize pollution or adverse effects on the aquatic ecosystem. All dredge material will be transported to one or more disposal sites (see Figure 3 in the attached EA):

Disposal Site A (Nearshore): a sandy-bottom area located between 5,000 and 10,000 feet south of the entrance to Morro Bay Harbor, immediately offshore of Morro Bay State Park;

Disposal Site B (Surf-zone): between 5,000 and 11,000 feet north of Morro Bay, with surf-zone disposal between Morro Creek and Azure Street.

APPENDIX B

Documentation of Coordination and Response to Comments

Morro Bay Harbor Maintenance Dredging
San Luis Obispo County, California

May 1995

SUMMARY OF COMMENTS AND CORPS RESPONSES

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
(Telephone coordination - letter pending.)

COMMENT: The CRWQCB expressed concern regarding potential effects of beach disposal of dredged material on wastewater discharge monitoring sites. Elevated levels of total and fecal coliforms in the dredged material, if present, could interfere with monitoring results. It would not be clear whether the bacteria was present due to the disposal project or to the wastewater discharge, located about 3/4 mile offshore.

RESPONSE: In 1993 and again in 1995, the Corps sent draft EA's to the City Public Works Department, the City Engineer, the CRWQCB, and the EPA. These EA's described the proposed projects (including beach disposal) and requested comments. These projects were designed to avoid all known monitoring sites. In 1993, the Corps received a letter from the CRWQCB, signed by the Executive Officer, approving the proposed beach disposal site. This is the same site that the Corps is proposing to use again this year. During recent telephone conversations, however, Ms. Sorrel Marks of the CRWQCB referred to samples obtained from the designated surf-zone sites monitored by the City of Morro Bay, during the 1993-1994 dredging operations. These samples contained elevated levels of total and fecal coliforms. Specific levels were not known at the time of those conversations, but it is likely that if bacteria levels were high enough to pose a health risk, the Corps would have been informed at the time of the operations. As discussed with Ms. Marks, the best solution appears to be that either the City or the Corps will continue to monitor the beach for total and fecal coliforms during disposal operations. This monitoring will ensure that bacterial levels are within acceptable limits and do not pose a health risk to the public. If levels exceed acceptable limits, coordination will be re-initiated with the CRWQCB to determine an appropriate response (such as the placement of warning signs).

COMMENT: The CRWQCB is concerned with the deposition of trash and debris on the beach that occurred during the 1993-1994 beach disposal operation. Trash and debris deposited by the beach disposal operation must be removed from the beach daily.

RESPONSE: A standard clause in the Corps' Specifications to the contractor states that the contractor is responsible for cleaning up all trash and debris from work areas, as soon as possible. The Corps' contracting representative will make it clear to the contractor that this must be done on a daily basis, and will inspect the beach disposal site whenever he/she visits the site to ensure this is done. According to City of Morro Bay representatives, excess debris noticed during the 1993-1994 operations was likely deposited by storms, rather than by disposal operations. Nevertheless, the contractor removed this debris.

COMMENT: Existing Waste Discharge Requirements (Order No. 85-07) state that discharge shall be limited to the time between November 1 through May 30. This

limitation was likely set to avoid sensitive time periods for fish and wildlife, and to avoid impacts to recreation-use of the beach. The CRWQCB understands that resource agencies have expressed no concern with initiating operations sooner (impacts to environmental resources would still be avoided), and the CRWQCB also has expressed no concern that the operation as proposed would affect water quality, fish and wildlife, or recreation. However, that agency has requested that the Corps formally apply for a revision of the Waste Discharge Requirements by submitting the appropriate application for Waste Discharge (Form 200). The CRWQCB requested this action in several letters sent to the Corps since 1990, and in subsequent telephone conversations.

RESPONSE: Coordination with the U.S. Fish and Wildlife, the California Department of Fish and Game, the California Coastal Commission, the State Parks Department, the City of Morro Bay, and other agencies indicates no concerns with revising the November 1 start date to the times proposed in the EA (August for nearshore disposal, September 15 for beach disposal). The issue appears to be one of procedure; namely, whether the Corps is required to formally apply for revised Waste Discharge Requirements, or whether the CRWQCB will revise those requirements in response to the Corps' 1995 Draft EA and letter requesting review, comment, and letter of approval.

In a letter dated February 7, 1991, the Corps agreed to revise the Waste Discharge Requirements before initiating any disposal operation prior to November 1. Subsequent review of this matter by our legal staff, however, has revealed that Waste Discharge Requirements do not apply to federal dredging projects, and the Corps is not authorized to submit such applications for the discharge of dredged material, or to pay the associated fees. The deposition of dredged or fill material is covered by Section 404 of the Clean Water Act. It is our understanding that Reports of Waste Discharge Requirements pertain to NPDES-regulated activities, under Section 402 of the Clean Water Act, and not to Section 404-regulated activities.

The Corps is required to apply to the CRWQCB for "401 Certification," or a waiver of 401 Certification, in compliance with Section 401 of the Clean Water Act. Corps regulations state that the act of sending a draft environmental document to the CRWQCB and requesting their review constitutes an application for 401 Certification. The Corps sent the Draft EA for the proposed Morro Bay dredging project on March 29, 1995.

The Corps is also required to abide by all reasonable mitigation measures required by the CRWQCB. In the past, several Regional Boards have issued these mitigation requirements in the form of Waste Discharge Requirements, and the Corps has complied with the monitoring and reporting requirements included therein. Other Regional Boards have issued requirements in the form of a letter of comment in response to the Draft EA. The Corps will continue to comply with all reasonable requirements issued in any format by the CRWQCB, Central Coast Region, except for the requirement to limit disposal activities between November 1 and May 30. The Corps continues to believe that this change is insignificant, and that implementation of the protective measures specified in this Final EA would avoid adverse impacts to water quality, recreation, and

other environmental resources. If the CRWQCB issues revised Waste Discharge Requirements or requires additional, reasonable mitigation measures before or during construction, the Corps will comply with those requirements.

AIR POLLUTION CONTROL DISTRICT

COMMENT: The APCD reviewed the Draft EA and recommended several measures to mitigate the impacts of dredging and disposal activities to a level of insignificance. (See letter of comment.)

RESPONSE: Most of these mitigation measures were already included in the Draft EA (Sections 4.4 and 7.5) and in the Specifications to the contractor. Additional measures required by the APCD are summarized below:

> Best Available Control Technology (BACT). The use of BACT is required for all permitted emission sources for which the potential to emit 25 lb/day or more of any criteria pollutant is expected. The large diesel engines associated with dredging are capable of emitting NOx over this threshold and are thus subject to BACT requirements. The applicant is responsible for submitting a proposal detailing the measures taken to satisfy BACT requirements. Please note that the last dredging project in Morro Bay harbor utilized selective catalytic reduction to control emissions from the diesel engines.
>
> Dust Abatement. Should a dust problem arise at the equipment staging area due to construction activity, water or other stabilization techniques may need to be applied.

The EA and the Specifications have been revised to incorporate these measures. As stated in the EA, the contractor is responsible for obtaining a permit from the APCD, and complying with all requirements. In the unlikely event that emission offsets are required, this would be the responsibility of the City of Morro Bay.

March 29, 1995

Office of the Chief
Environmental Resources Branch

Ms. Judy Hohman, Acting Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
Ecological Enhancement Office
2140 Eastman Ave. Suite 100
Ventura, CA 93003

Dear Ms. Hohman,

Please provide a current list of any endangered, threatened, proposed or candidate species, pursuant to the Endangered Species Act of 1973, that may be affected by the proposed 1995 Morro Bay Harbor Maintenance Dredging Project. Morro Bay Harbor is located in San Luis Obispo County, California. The proposed project includes the dredging of approximately 1,100,000 cubic yards of littoral drift material. An estimated 740,000 cy will be dredged for an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment (FR/EA). The remainder will be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor.

The proposed project is required in order to maintain Federally-authorized channel configurations, and to restore and assure safe navigability within the harbor. Dredging is expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. All material will be discharged in the nearshore or surf-zone environment. Dredging is scheduled to commence on or after 1 August 1995, and will be concluded by 15 March 1996. Beach disposal would not be allowed until after 15 September 1995, to avoid potential impacts to recreation and endangered species.

Please respond to this species list request and provide comments on the enclosed Environmental Assessment, within thirty (30) days of receipt of this letter. Comments should be forwarded to:

Mr. Robert S. Joe
Chief, Planning Division
U.S. Army Corps of Engineers
P.O. Box 2711
Los Angeles, California 90053-2325
ATTN: CESPL-PD-RQ (Stephanie Hall)

Should you require additional information or have any questions, please contact Ms. Hayley Lovan, Project Environmental Coordinator, at (213) 894-0237. Thank you for your assistance in this matter.

Sincerely,

Robert S. Joe
Chief, Planning Division

Enclosure

March 29, 1995

Office of the Chief
Environmental Resources Branch

Mr. Peter Douglas
Executive Director
California Coastal Commission
45 Freemont, Suite 2000
San Francisco, California 94105-2219

Dear Mr. Douglas:

Enclosed for your review and comment is a copy of the Draft Environmental Assessment (EA) for the 1995 Morro Bay Harbor Maintenance Dredging Project. Morro Bay Harbor is located in San Luis Obispo County, California. The proposed project includes the dredging of approximately 1,100,000 cubic yards of littoral drift material. An estimated 740,000 cy will be dredged for an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment (FR/EA). The remainder will be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor.

The proposed project is required in order to maintain Federally-authorized channel configurations, and to restore and assure safe navigability within the harbor. Dredging is expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. All material will be discharged in the nearshore or surf-zone environment. Dredging is scheduled to commence on or after 1 August 1995, and will be concluded by 15 March 1996. Beach disposal would not be allowed until after 15 September 1995, to avoid potential impacts to recreation and endangered species.

The California Coastal Commission has concurred with Consistency Determinations the Corps prepared for previous projects, including the 1993 Maintenance Dredging Project and the 1991 FR/EA (CD-44-93 and CD-81-91). The Corps has therefore determined that a Statement of Negative Determination is appropriate for this project, which is similar to those previously authorized projects, and is requesting the CCC's concurrence. Pursuant to a conversation with Mr. Jim Raives of your staff, this letter, with the enclosed EA, is intended to serve as that Negative Determination.

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Should you have any comments on the proposed project or the Draft Environmental Assessment, please respond within thirty (30) days to:

Mr. Robert S. Joe
Chief, Planning Division
U.S. Army Corps of Engineers
Attn: Ms. Hayley Lovan
P.O. Box 2711
Los Angeles, California 90053-2325

If you have any questions regarding the project, please contact Ms. Hayley Lovan, Project Environmental Coordinator, Environmental Support Section, at (213) 894-0237.

Thank you for your attention to this document.

Sincerely,

Robert S. Joe
Chief, Planning Division

Ecologist

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

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

May 3, 1995

Mr. Robert S. Joe
Chief, Planning Division
U.S. Army Corps of Engineers
Attn: Ms. Hayley Lovan
P.O. Box 2711
Los Angeles, CA 90053

RE: ND-28-95, Negative Determination for the maintenance of navigational channels within Morro Bay Harbor, San Louis Obispo County

Dear Mr. Joe:

The Coastal Commission has received and reviewed the above-referenced negative determination. The proposed project includes the dredging of approximately 1,100,000 cubic yards of littoral drift material from existing channels, with disposal within the nearshore or surf zone areas. Approximately 740,000 cubic yards of that material will be dredged for a channel modification project. The Commission approved that project, CD-81-91, in 1991. The remainder of the project, 360,000 cubic yards, is from littoral material that has accumulated since the last maintenance dredge of the channels. The Commission has not approved this portion of the project, and this project is the subject of this negative determination.

The proposed project is similar to a consistency determination previously reviewed and approved by the Commission, CD-44-93. Both projects involve maintenance dredging of sand with disposal in either the nearshore or surf zone environments. Additionally, both projects include protections for endangered species and recreational resources.

In conclusion, the Coastal Commission staff agrees that the proposed project is similar to or the same as a previously approved consistency determination. We, therefore,

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concur with the negative determination made pursuant to 15 C.F.R. Section 930.35(d). If you have any questions, please contact James Raives of the Coastal Commission staff at (415) 904-5292.

Sincerely,

PETER M. DOUGLAS
Executive Director

cc: Central Coast Area Office
OCRM
NOAA Assistant Administrator
Assistant General Counsel for Ocean Services
Department of Water Resources
Governor's Washington D.C. Office

PMD/JRR
ND-28-95.DOC

March 29, 1995

Office of the Chief
Environmental Resources Branch

Mr. William R. Leonard
Executive Director
Regional Water Quality Control Board
Central Coast Region
1102-A Laurel Lane
San Luis Obispo, CA 93401

Dear Mr. Leonard:

Enclosed for your review and comment is a copy of the Draft Environmental Assessment (EA) for the 1995 Morro Bay Harbor Maintenance Dredging Project. Morro Bay Harbor is located in San Luis Obispo County, California. The proposed project includes the dredging of approximately 1,100,000 cubic yards of littoral drift material. An estimated 740,000 cy will be dredged for an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment (FR/EA). The remainder will be dredged from routine maintenance dredging areas located in the Entrance, Navy, and Morro Channels, and in the small embayment immediately inside and south of the entrance to Morro Bay Harbor.

The proposed project is required in order to maintain Federally-authorized channel configurations, and to restore and assure safe navigability within the harbor. Dredging is expected to be performed by one or more of the following dredge types: cutterhead hydraulic pipeline dredge, hopper dredge, or mechanical (clamshell) dredge. All material will be discharged in the nearshore or surf-zone environment. Dredging is scheduled to commence on or after 1 August 1995, and will be concluded by 15 March 1996. Beach disposal would not be allowed until after 15 September 1995, to avoid potential impacts to recreation and endangered species. Specific information on the quality of dredge materials, and the locations of the proposed disposal sites, may be found in the EA and its appendices.

This letter, and the enclosed Draft Environmental Assessment (including a 404(b)(1) Evaluation), satisfies the requirements of the Clean Water Act to request Section 401 Water Quality Certification, pursuant to 33 CFR 336.1(a)(1). This letter is also to request the Executive Officer's written approval of this project, including approval

to initiate dredging on 1 August 1995. This date was approved by the U.S. Fish and Wildlife Service in a Coordination Act Report prepared for the FR/EA.

Section 404(t) of the Clean Water Act authorizes or requires the Corps to comply with the State or Regional Boards' substantive and procedural requirements pertaining to the discharge of dredged or fill material. However, this Section does not authorize the payment of fees as a condition of compliance with these requirements. Fundamentally, it is our position that the Federal government is only authorized to pay fees where Congress has clearly and unambiguously waived Federal supremacy.

Please respond with comments on the Environmental Assessment, and written approval of the proposed activities, within sixty (60) days of receipt of this letter. If your office does not respond within that time frame, we will consider this project to be in full compliance with the Clean Water Act. Correspondence may be sent to:

Mr. Robert S. Joe
Chief, Planning Division
U.S. Army Corps of Engineers
P.O. Box 2711
Los Angeles, California 90053-2325
Attn: Ms. Hayley Lovan

If you have any questions regarding the project, please contact Ms. Hayley Lovan, Project Ecologist, Environmental Support Section, at (213) 894-0237.

Thank you for your attention to this document.

Sincerely,

Robert S. Joe
Chief, Planning Division

Enclosure

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
1102-A Laurel Lane
San Luis Obispo, California 93401

ORDER NO. 85-07

WASTE DISCHARGE REQUIREMENTS
FOR
UNITED STATES CORPS OF ENGINEERS
AND CITY OF MORRO BAY
HARBOR DREDGING OPERATIONS
SAN LUIS OBISPO COUNTY

The California Regional Water Quality Control Board, Central Coast Region (hereafter Board), finds:

1. United States Army Corps of Engineers (Corps) periodically conducts dredging operations in the federal (main) channel of Morro Bay Harbor. The Corps dredging operations are regulated under this Board's Order No. 80-02.

2. The City of Morro Bay (City) also has occasion to periodically conduct dredging in the harbor mooring area.

3. Dredging operations in the federal channel are conducted periodically by the Corps for the purpose of keeping the main channel navigable. The total volume of material to be dredged will vary, but is estimated to be 500,000 cubic-yards-per-operation.

4. Corps and City contract dredging of Morro Bay Harbor and disposal of dredge materials to qualified private contractors. Contracts are usually separate, but they may be combined. Most dredging has been performed with a barge-mounted suction dredge. Disposal of spoils is usually via pipeline into the beach-littoral zone, for down-coast beach enhancement.

5. The Environmental Protection Agency has formulated "Guidelines for Specification of Disposal Sites for Dredge or Fill Material." Supplemental regional procedures have been published by U.S. Corps of Engineers, San Francisco District, which specifies information required for selecting disposal sites and testing of dredge materials.

6. The Water Quality Control Plan, Central Coastal Basin, (Basin Plan) was adopted by the Board on March 14, 1975, and approved by the State Water Resources Control Board on March 20, 1975. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State waters.

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7. The present and anticipated beneficial uses of the Pacific Ocean in the general vicinity of Morro Bay Harbor include:

   a. Contact and non-contact water recreation
   b. Industrial service supply
   c. Navigation
   d. Marine habitat
   e. Shellfish harvesting
   f. Commercial and sport fishing
   g. Preservation of rare and endangered species

8. The Corps conducted an Environmental Assessment in 1979. It indicated long-range impacts on water quality from dredging and disposal operations would be minimal. The Corps reviews and updates the Environmental Assessment periodically and has found that water quality impacts continue to consist of temporary disruption of intertidal habitat and recreational beach activities and water turbidity. The beneficial impact of the discharge is the replenishment of eroded beaches downcoast.

9. Discharge of waste is a privilege, not a right, and authorization to discharge is conditional upon the discharge complying with provisions of Division 7 of the California Water Code and any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure this and mitigate any potential adverse changes in water quality due to the discharge.

10. On November 13, 1984, the Board notified the discharger and interested agencies and persons of its intent to adopt waste discharge requirements for the discharge and has provided them with a copy of the proposed order and an opportunity to submit written views and comments.

11. After considering all comments pertaining to this discharge during a public hearing on February 8, 1985, this Order was found consistent with the above findings.

IT IS HEREBY ORDERED, the U.S. Corps of Engineers, and the City of Morro Bay, or their contractor, in conducting dredging operations in Morro Bay Harbor, shall comply with the following:

A. Discharge Limitations

   1. Location for disposal of unpolluted dredge material is not specified but will be based on most recent information concerning availability of sites and data on ocean currents. Written approval from the Executive Officer must be received each year before dredging can begin.

2. Discharge shall be limited to the time between November 1 through May 30.

3. Discharge to the beach shall be above Mean High Water (MHW) level and graded daily to obtain near natural beach contour.

4. The discharge shall not cause excessive discoloration of ocean waters.

5. The discharge to the beach of materials other than unpolluted dredge spoils is prohibited.. Written permission must be received from the Executive Officer as to a disposal site for material determined by the monitoring program to be polluted.

B. Provisions

1. This order supersedes the requirements prescribed by Order 80-02, adopted February 8, 1980. Order 80-02 is hereby rescinded.

2. Discharger shall comply with "Monitoring and Reporting Program No. 85-07", as specified by the Executive Officer.

3. Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated January, 1984; except A.1., 4., 5., 6., 8., 10., 11., 12.-15., 17., 24., 25.; B.2.; C.8., 9., 11., 16., 17., 18.; and D.1. and 2.

I, KENNETH R. JONES, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on February 8, 1985.

Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM NO. 85-07
FOR
MORRO BAY HARBOR DREDGING OPERATIONS

CORPS OF ENGINEER'S DISCHARGE MONITORING

Before an area is dredged, core samples shall be collected of the undisturbed material which will be dredged. Cores shall extend to the final channel depth. Sediment samples shall be taken with a core sampler in a manner designed to ensure that their characteristics are representative of the proposed dredging site. A minimum of three sampling stations shall include known or suspected areas of high contamination as well as more representative areas. The samples shall be placed in airtight linear polyethylene containers. Care shall be taken to ensure that the containers are completely filled by the samples and that air bubbles are not trapped in the containers. The samples shall be stored immediately at 2 to 4°C. The samples must never be frozen or dried. The storage period shall be a maximum of two weeks before processing to minimize changes in the characteristics of the dredged material.

The project proponent shall notify the regional board staff at least a week in advance so that it may observe the cores, either as they are being collected or after they have all been collected and preserved, but before shipping to the laboratory. At that time, staff will determine which portion of each core (if any) is to be analyzed.

CITY OF MORRO BAY DISCHARGE MONITORING

Before an area is dredged, core samples shall be collected of the undisturbed material which will be dredged. Core samples shall be taken at the sampling stations nearest the area to be dredged no more than 120 days prior to commencement of dredging operations in that area. Upon submission to the Board of areas and amounts of material to be dredged, staff will determine the locations and number (not to exceed three) of samples to be taken and analyzed. Sample collection and handling shall be the same as above.

SAMPLE ANALYSES

If staff determines it necessary, cores will be analyzed for the following constituents and results reported on a dry weight basis (mg/kg):

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1. Oil and Grease*
2. Organic Matter (Volatile Solids or TOC)
3. Free Sulfides (pH 7)
4. Zinc
5. Copper
6. Lead
7. Cadmium
8. Mercury
9. Arsenic
10. Chromium
11. Particle size distribution (incl. total % retained on #200 sieve)

Chemical extractions are to be run for 24 hours with dilute HCL (.5N) using guidelines recommended by the SWRCB. Subsequent analysis shall be conducted in accordance with the current edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants," promulgated by the United States Environmental Protection Agency. Any variations must be reported with the test results.

*Elemental sulfur may be present in some sediments and will interfere with this determination. The sulfur should be removed by precipitation with mercury after initial extraction and before final evaporation.

In addition, records shall be kept of at least the following operational information:

- Quantity dredged (cubic yards) and disposal location on a daily basis
- Hours of operation, 24-hr. clock, daily

REPORTING

Results of the sampling program shall be submitted to the Regional Board one month prior to beginning the seasonal dredging operations. Operational data shall be supplied to the Board monthly by the 15th of the following month.

ORDERED BY _____
Executive Officer

February 8, 1985
Date

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

April 11, 1995

Mr. Robert S. Joe
Chief, Planning Division
U.S. Army Corps of Engineers
Attn: Ms. Hayley Lovan
P.O. Box 2711
Los Angeles, California 90053-2325

SUBJECT: Morro Bay Harbor Maintenance Dredging

Dear Robert:

The District has reviewed the Morro Bay Harbor Maintenance Dredging Draft Environmental Assessment. The proposed project includes dredging of 1,100,000 cubic yards (cy) of littoral drift material; an estimated 740,000 coming from an approved channel modification project as described in the August 1991 Feasibility Study and Environmental Assessment, and the remainder coming from routine dredging maintenance areas.

General Comments

As mentioned in the environmental assessment (EA), San Luis Obispo County has been designated a nonattainment area for the state ozone and PM_{10} standards and is thus required to reduce the emissions of these nonattainment pollutants (and their precursors) in order to meet these standards. Protective and corrective measures are proposed in the 1991 Air Quality Maintenance Plan (AQMP) to reduce emissions of ozone and PM_{10}.

Large diesel engines, like those aboard dredges and heavy equipment such as bulldozers have the potential to emit significant amounts of nitrogen oxides (NOx) and reactive organic gases (ROG), both of which are precursor components in the formation of ozone. The scheduled work plan for the dredging of the harbor (August 1 through March 15) overlaps the period of peak ozone formation in the county (April through October), thereby prompting the District to impose controls on potential ozone forming activities associated with this project.

Additionally, sulfur oxides (SOx) implicated in the formation of the acid rain (H_2SO_4) by reaction with water vapor in the atmosphere are produced during the combustion of fuels containing organicly bound sulfur. Geographic and atmospheric conditions in the Morro Bay and adjoining areas facilitate the conversion of SOx to H_2SO4, impacting down wind receptors and overall air quality. The large diesel engines associated with dredging operations are potentially significant contributors of oxidized sulfur to the atmosphere.

Air borne particulate matter of the respirable size (<10um) can be produced in significant quantities from construction activities. The use of vehicles on the beach to move pipe and to build public access ramps will need to be limited to avoid the excess production of fugitive dust. The combustion of fuels also produces particulate emissions as components of the hot post-burn

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exhaust cool and condense. The condensed particulate from diesel combustion is potentially quite toxic and therefore subject to control.

The District expects that emissions from dredging, construction equipment and related activities will cause short-term adverse impacts on air quality. The impacts of dredging and construction activity will be mitigated to a level of insignificance by adopting the following specific comments.

Specific Comments

1. *Permit to Operate (PTO).* The engines aboard dredging units, excluding the propulsion engines, are subject to permit according to the Federal Clean Air Act. The District will require an Authority to Construct (A/C) permit be obtained prior to operation of any dredging engines.

1a. *Best Available Control Technology (BACT).* The use of BACT is required for allpermitted emission sources for which the potential to emit 25lb/day or more of any criteria pollutant is expected. The large diesel engines associated with dredging are capable of emitting NOx over this threshold and are thus subject to BACT requirements. The applicant is responsible for submitting a proposal detailing the measures taken to satisfy BACT requirements. Please note that the last dredging project in Morro Bay harbor utilized selective catalytic reduction to control emissions from the diesel engines.

1b. *Emission Offsets.* Emission offsets are necessary if the potential to emit ROG, NOx, PM_{10} or SOx exceeds 25 tons per year, or in the case of CO emissions, 250tons per year.

2. *Equipment Inventory.* The Army Corps of Engineers or its contractor shall supply a list of all construction equipment to be used on the project, including that which does not require an air quality permit. The inventory should include a description of the engines being operated on the dredges, their power/fuel ratings, and projected duration of use in both hours per day (hr/day) and total hours for the project.

3. *Fuel.* All diesel powered construction equipment shall use reformulated, low sulfur content diesel fuel (<0.05% sulfur by weight). The use of low sulfur diesel fuel will limit the formation of SOx.

4. *Engine Modifications.* All diesel engines should be modified by applying a 2° injection timing retard and installation of high pressure injectors. Engine modifications as stated above are standard mitigation measures applied to construction projects by the District.

5. *Opacity.* Assurances that contaminants emitted to the atmosphere, for a period or periods of three minutes or more within 1 hour shall not exceed Ringlemann 1 or equivalent 20% opacity.

6. *Maintenance.* All construction and work related equipment shall be properly maintained to reduce emissions.

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7. *Vehicles.* The number and speed of vehicles used on the beach shall be kept to a minimum so as to limit the production of dust clouds.

8. *Dust Abatement.* Should a dust problem arise at the equipment staging area due to construction activity, water or other stabilization techniques may need to be applied.

Summary

The District expects that adverse air quality impacts associated with dredging and construction activities from the Morro Bay Harbor Maintenance Dredging Project can be mitigated to a level of insignificance by adopting the above mentioned specific recommendations. Limiting the formation of 1) ozone through control of precursors (NOx, ROG), 2) respirable particulate matter (PM10) and 3) acid deposition forming SOx are the primary objectives of the District regarding this project and its impact on attainment of federal air quality standards.

Thank you for the opportunity to comment on this project. Please feel free to call me at (805) 781-5743 if you have need of further information.

Sincerely,

Barry Lajoie
Air Quality Specialist

C:\BPL\WP60\ACEMBH.BPL

2156 Sierra Way, Suite B • San Luis Obispo, CA 93401 • 805 781 5[illegible] FAX 805 781 1035

STATE OF CALIFORNIA — THE RESOURCES AGENCY
PETE WILSON, Go
OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO 94256-0001
(916) 445-8006
FAX: (916) 322-6377

26 March 1992

Reply to: CoE 920302A

Col. Charles Thomas, District Engineer
U.S. Army Corps of Engineers
P.O. Box 2711
LOS ANGELES CA 90053-2325

Subject: Dredging of Morro Bay Channel

Dear Col. Thomas

Thank you for requesting my review of the undertaking noted above and for including the underwater archaeological survey report which justifies your determination.

I concur in your determination that there are no historic properties in the Area of Potential Effects for this undertaking. Accordingly, you have fulfilled federal agency responsibilities pursuant to 36 CFR 800, the regulations implementing Section 106 of the National Historic Preservation Act. Please note that you agency may have additional responsibilities under 36 CFR 800 under any of the following circumstances:

1. If any person requests that the Advisory Council on Historic Preservation review your findings in accordance with 36 CFR 800.6(e);
2. If this undertaking changes in ways that could affect historic properties [36 CFR 800.5(c)];
3. If previously undocumented properties are discovered during the implementation of this undertaking or if a known historic property will be affected in an unanticipated manner [36 CFR 800.11];
4. If a property that was to be avoided has been inadvertently or otherwise affected [36 CFR 800.4(c);800.5];
5. If any condition of the undertaking, such as a delay in implementation or implamentation in phases over time, may justify reconsideration of the current National Register status of properties within the undertaking's Area of potential Effects [36 CFR 800.4(c)].

Thank you for considering historic properties during project planning. If you have any questions, please call staff archaeologist Nicholas Del Cioppo at (916) 653-9696.

Sincerely,

Steade R. Craigo, AIA, Acting
State Historic Preservation Officer

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APPENDIX C

Geotechnical Report

Morro Bay Harbor Maintenance Dredging
San Luis Obispo County, California

April 1993

CESPL-CO-ON

15 June 1993

MEMORANDUM FOR THE RECORD

SUBJECT: Morro Bay Harbor Sediment Chemistry Analysis.

1. Sediment samples were taken from the potential dredge and receiving sites at Morro Bay during the week of 8 Mar 93. Beach samples north and south of the harbor were collected by personnel from the Corps of Engineers, Los Angeles District. Dive samples of the potential nearshore disposal site north of the harbor and the proposed dredge sites within the harbor were collected by personnel from the Corps of Engineers, San Francisco District.

2. A total of 55 sediment samples were collected during the week of 8 Mar 93. The breakdown of the number of samples taken and the type of tests performed for each location are as follows (attached is the list of the specific chemical constituents):

Location	Number	Tests
Nearshore (North)	8	Physical, Conventional, Metals, Pesticides
Beach (North)	20	Physical, Conventional, Metals, Pesticides
Beach (South)	16	Physical
Entrance Channel	1	Physical
Navy Channel	4	Physical
Morro Channel	6	Physical, Conventional, Metals, Pesticides, Organotins

3. There were four (4) transects (TR 1 through 4) south of the harbor from which sediment samples were retrieved. Samples were taken between +12 ft MLLW and -6 ft MLLW at elevation increments of 6 ft. An attempt was made to collect samples from -12 ft MLLW to -30 ft MLLW, however, hazardous wave conditions prevented sediment sampling in the nearshore environment south of the harbor. Samples for each transect were composited into one sample for testing purposes. A total of four (4) consolidated samples were tested.

4. There were five (5) transects (TR 5 through 9) north of the harbor from which sediment samples were retrieved. Samples were taken between +12 ft MLLW and -6 ft MLLW at elevation increments of 6 ft. Dive samples were also collected at -24 ft MLLW and -30 ft MLLW for transects #5 through #7 (TR 5 through 7) and -30 ft for TR 8 and TR 9. Rough wave conditions prevented sampling in the shallower depths. Beach samples (-6 ft MLLW to +12 ft MLLW) for each transect were consolidated into one sample for testing purposes. Nearshore samples (-30 ft to -24 ft) for TR 5 through TR 7 were consolidated into one sample for testing purposes. A total of ten (10) samples, of which five (5) were composited samples, were tested.

5. A total of 11 dive samples were collected from the navigation channels (Entrance, Navy, and Morro). Compositing did not occur for these samples. Each sample was tested separately.

6. Analysis of the sediment chemistry results indicate that the levels of chemical constituents detected for the proposed dredged area are below possible effects range (NOAA-NOS/OMA 1990). Discrepancies were noted for Mercury test results for samples DH-8, DH-9, and DH-11. The level of mercury for these three samples were below the detection limit, however numeric values were reported in the test results. In addition, detection limits for PCB's were set well above specified limits, restricting an accurate analysis of the effects, if any, total PCB's may have on the receiving sites.

ESPL-CO-ON
SUBJECT: Morro Bay Harbor Sediment Chemistry Analysis.

7. Chemical testing of the materials sampled from the Entrance and Navy channels were not conducted because of the frequency of dredging and the dynamic nature of these areas.

8. Despite the discrepancies described in the paragraph (6), all sediments sampled (total of 11 samples) from the proposed dredge areas were composed of a poorly graded sand material with less than 10% fines. Because of the overall coarse nature of the material proposed to be dredged and the physical compatibility of this material with the potential receiving sites, it is anticipated that the dredged material from the Morro Bay navigation channels, will not have an adverse chemical impact to the potential disposal sites.

Anthony J. Risko
Navigation Section

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MORRO BAY HARBOR
SEDIMENT CHEMICAL TESTING
17 March 1993

Parameter	Detection Limits* Sediments	Units	Method
CONVENTIONALS (10 Composites TR5 to TR9, 6 Long Tubes):			
Total Organic Carbon	0.1	%	9060
Oil & Grease	20.0	mg/kg	(wet) 413.2
Total Petroleum Hydrocarbons (TPH)	20.0	mg/kg	418.1
Total Sulfides	0.1	mg/kg	Plumb 1981
METALS (10 Composites TR5 to TR9, 6 Long Tubes):			
Arsenic (As)	0.1	mg/kg	7060/7061
Cadmium (Cd)	0.1	mg/kg	7130/7131
Chromium (Cr)	0.1	mg/kg	7190/7191
Copper (Cu)	0.1	mg/kg	7210
Lead (Pb)	0.1	mg/kg	7420/7421
Mercury (Hg)	0.02	mg/kg	7471
Nickel (Ni)	0.1	mg/kg	7520
Selenium (Se)	0.1	mg/kg	7740/7741
Silver (Ag)	0.1	mg/kg	7760
Zinc (Zn)	0.1	mg/kg	7950
POLYCHLORINATED BIPHENYLS (10 Composites TR5 to TR9, 6 Long Tubes):			
Individual Arochlors (1016, 1221, 1232, 1242, 1248, 1254, 1260)	20.0	ug/kg	8080
Total PCBs	20.0	ug/kg	8080
PESTICIDES (10 Composites TR5 to TR9, 6 Long Tubes):			
Aldrin	20.0	ug/kg	8080
Chlordane and Derivatives	25.0	ug/kg	8080
Dieldrin	20.0	ug/kg	8080
DDT and Derivatives	20.0	ug/kg	8080
Endosulfan and Derivatives	25.0	ug/kg	8080
Endrin and Derivatives	20.0	ug/kg	8080
Heptachlor and Derivatives	20.0	ug/kg	8080
Lindane and Derivatives	250.0	ug/kg	8080
Methoxychlor	20.0	ug/kg	8080
Toxaphene	30.0	ug/kg	8080
ORGANOTINS (For Long Tubes #6 thru #11 only)			
Monobutyltin	1.0	ug/kg	
Dibutyltin	1.0	ug/kg	
Tributyltin	1.0	ug/kg	
Tetrabutyltin	1.0	ug/kg	

* **Based on dry weight, unless specified otherwise.**

METHOD EPA 6010 ACCEPTABLE FOR METALS
WITH THE EXCEPTION OF MERCURY (Hg).

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
LABORATORY
25 LIBERTY SHIP WAY, SAUSALITO, CALIFORNIA 94965-1768

REPLY TO
ATTENTION OF

CESPD-ED-GL (1110-1-8100b)

MEMORANDUM FOR Commander, Los Angeles District,
ATTN: CESPL-CO-O/T. Risko

SUBJECT: Morro Bay Harbor

1. Reference DD Form 448, Number E86 93 0057, dated 14 April 93.

2. Attached test results were completed on subject project.

3. Billing will be made by the Sacramento District Finance and Accounting Branch.

4. Significant Findings: None

Encl

Dennis Thuet
DENNIS THUET
Director, SPD Laboratory

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U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIV...ON LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
93-0160	IR 1	MLLW -6			Poorly graded sand (SP)											100	79	40	12	1	0	0			
93-0161	IR 1	MLLW 0			Poorly graded sand (SP)					100	99	99	98	97	95	92	80	45	18	1	0	0			
93-0162	IR 1	MLLW +6			Poorly graded sand (SP)									100	99	99	97	56	15	2	0	0			
93-0163	IR 1	MLLW +12			Poorly graded sand (SP)											100	99	47	13	1	0	0		NP	
93-0164	IR 2	MLLW -6			Poorly graded sand (SP)				100	98	98	98	97	97	96	95	89	63	25	1	0	0		NP	
93-0165	IR 2	MLLW 0			Poorly graded sand (SP)							100	99	99	99	99	96	47	14	1	0	0		NP	
93-0166	IR 2	MLLW +6			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	97	65	15	2	0	0		NP	
93-0167	IR 2	MLLW +12			Poorly graded sand (SP)											100	97	51	15	1	0	0		NP	
93-0168	IR 3	MLLW -6			Poorly graded sand (SP)							100	99	98	98	96	91	55	18	1	0	0		NP	
93-0169	IR 3	MLLW 0			Poorly graded sand (SP)											100	96	48	12	1	0	0		NP	
93-0170	IR 3	MLLW +6			Poorly graded sand (SP)												100	74	25	3	1	0		NP	
93-0171	IR 3	MLLW +12			Poorly graded sand (SP)												100	94	31	3	1	0		NP	
93-0172	IR 4	MLLW -6			Poorly graded sand (SP)									100	99	99	97	72	26	1	0	0		NP	
93-0173	IR 4	MLLW 0			Poorly graded sand (SP)											100	99	78	31	1	0	0		NP	
93-0174	IR 4	MLLW +6			Poorly graded sand (SP)											100	99	81	29	2	1	0		NP	
93-0175	IR 4	MLLW +12			Poorly graded sand (SP)											100	99	77	27	2	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plasticity Index	Water Content
93-0176	IR 5	MLLW -6			Poorly graded sand (SP)			100	99	99	99	98	97	96	95	92	89	78	44	3	0	0		NP	
93-0177	IR 5	MLLW 0			Poorly graded sand (SP)			100	84	70	64	62	59	56	53	48	42	29	11	1	0	0		NP	
93-0178	IR 5	MLLW +6			Poorly graded sand (SP)												100	96	33	5	1	0		NP	
93-0179	IR 5	MLLW +12			Poorly graded sand (SP)												100	96	51	3	1	0		NP	
93-0180	IR 6	MLLW -6			Poorly graded sand (SP)					100	99	99	97	95	91	80	58	27	10	1	0	0		NP	
93-0181	IR 6	MLLW 0			Poorly graded sand (SP)				100	99	99	98	98	97	96	92	78	43	17	2	1	1		NP	
93-0182	IR 6	MLLW +6			Poorly graded sand (SP)												100	93	37	3	1	0		NP	
93-0183	IR 6	MLLW +12			Poorly graded sand (SP)												100	97	34	4	1	0		NP	
93-0184	IR 7	MLLW -6			Poorly graded sand (SP)								100	99	99	98	96	83	37	3	0	0		NP	
93-0185	IR 7	MLLW 0			Poorly graded sand (SP)											100	99	83	28	2	0	0		NP	
93-0186	IR 7	MLLW +6			Poorly graded sand (SP)												100	97	55	5	1	0		NP	
93-0187	IR 7	MLLW +12			Poorly graded sand (SP)												100	98	48	6	1	0		NP	
93-0188	IR 8	MLLW -6			Poorly graded sand with silt (SP-SM)											100	99	94	56	18	15	15		NP	
93-0189	IR 8	MLLW 0			Poorly graded sand (SP)												100	98	40	7	2	0		NP	
93-0190	IR 8	MLLW +6			Poorly graded sand (SP)												100	91	36	5	2	0		NP	
93-0191	IR 8	MLLW +12			Poorly graded sand (SP)												100	99	52	9	2	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
93-0192	IR 9	MLLW -6			Poorly graded sand (SP)									100	99	98	95	70	29	3	0	0		NP	
93-0193	IR 9	MLLW 0			Poorly graded sand (SP)									100	99	99	96	82	39	4	0	0		NP	
93-0194	IR 9	MLLW +6			Poorly graded sand (SP)											100	99	80	29	1	0	0		NP	
93-0195	IR 9	MLLW +12			Poorly graded sand (SP)										100	98	94	69	20	1	0	0		NP	
93-0196	IR 5	-24			Poorly graded sand (SP)												100	98	74	10	1	0		NP	
93-0197	IR 5	-30			Poorly graded sand (SP)												100	98	63	10	1	0		NP	
93-0198	IR 6	-24			Poorly graded sand (SP)								100	99	99	99	99	98	88	23	2	0		NP	
93-0199	IR 6	-30			Poorly graded sand (SP)				100	97	97	97	97	96	96	96	96	95	89	26	2	1		NP	
93-0200	IR 7	-30			Poorly graded sand with silt (SP-SM)			100	99	98	98	98	98	98	98	98	98	96	84	37	26	25		NP	
93-0201	IR 8	-30			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	98	68	14	4	1		NP	
93-0202	IR 9	-30			Poorly graded sand (SP)												100	99	87	18	1	0		NP	
93-0203	IR 7	-24			Poorly graded sand (SP)												100	99	74	11	1	0		NP	
93-0204	Site 1				Poorly graded sand (SP)												100	99	91	29	9	7		NP	
93-0205	Hole 2				Poorly graded sand (SP)										100	99	98	76	19	1	0	0		NP	
93-0206	Hole 3				Poorly graded sand (SP)												100	96	48	3	0	0		NP	
93-0207	Hole 4				Poorly graded sand (SP)												100	99	60	5	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND PERCENT FINER #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
93-0208	Hole 5				Poorly graded sand (SP)												100	98	49	3	0	0			
93-0209	Hole 6				Poorly graded sand (SP)							100	99	99	98	98	97	87	47	4	1	1			
93-0210	Hole 7				Poorly graded sand (SP)						100	99	99	99	99	99	98	98	53	6	1	1		NP	
93-0211	Hole 8				Poorly graded sand (SP)											100	99	98	55	6	2	1		NP	
93-0212	Hole 9				Poorly graded sand (SP)													100	74	14	3	2		NP	
93-0213	Hole 10				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	73	10	3	2		NP	
93-0214	Hole 11				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	43	4	1	1		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content
93-0160	TR 1	MLLW -6			Poorly graded sand (SP)											100	79	40	12	1	0	0		NP	
93-0161	TR 1	MLLW 0			Poorly graded sand (SP)					100	99	99	98	97	95	92	80	45	18	1	0	0		NP	
93-0162	TR 1	MLLW +6			Poorly graded sand (SP)									100	99	99	97	56	15	2	0	0		NP	
93-0163	TR 1	MLLW +12			Poorly graded sand (SP)											100	99	47	13	1	0	0		NP	
93-0164	TR 2	MLLW -6			Poorly graded sand (SP)				100	98	98	98	97	97	96	95	89	63	25	1	0	0		NP	
93-0165	TR 2	MLLW 0			Poorly graded sand (SP)							100	99	99	99	99	96	47	14	1	0	0		NP	
93-0166	TR 2	MLLW +6			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	97	65	15	2	0	0		NP	
93-0167	TR 2	MLLW +12			Poorly graded sand (SP)											100	97	51	15	1	0	0		NP	
93-0168	TR 3	MLLW -6			Poorly graded sand (SP)							100	99	98	98	96	91	55	18	1	0	0		NP	
93-0169	TR 3	MLLW 0			Poorly graded sand (SP)											100	96	48	12	1	0	0		NP	
93-0170	TR 3	MLLW +6			Poorly graded sand (SP)												100	74	25	3	1	0		NP	
93-0171	TR 3	MLLW +12			Poorly graded sand (SP)												100	94	31	3	1	0		NP	
93-0172	TR 4	MLLW -6			Poorly graded sand (SP)									100	99	99	97	72	26	1	0	0		NP	
93-0173	TR 4	MLLW 0			Poorly graded sand (SP)											100	99	78	31	1	0	0		NP	
93-0174	TR 4	MLLW +6			Poorly graded sand (SP)											100	99	81	29	2	1	0		NP	
93-0175	TR 4	MLLW +12			Poorly graded sand (SP)											100	99	77	27	2	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plasticity Index	Water Content %
93-0176	IR 5	MLLW -6			Poorly graded sand (SP)			100	99	99	99	98	97	96	95	92	89	78	44	3	0	0		NP	
93-0177	IR 5	MLLW 0			Poorly graded sand (SP)			100	84	70	64	62	59	56	53	48	42	29	11	1	0	0		NP	
93-0178	IR 5	MLLW +6			Poorly graded sand (SP)												100	96	33	5	1	0		NP	
93-0179	IR 5	MLLW +12			Poorly graded sand (SP)												100	96	51	3	1	0		NP	
93-0180	IR 6	MLLW -6			Poorly graded sand (SP)					100	99	99	97	95	91	80	58	27	10	1	0	0		NP	
93-0181	IR 6	MLLW 0			Poorly graded sand. (SP)				100	99	99	98	98	97	96	92	78	43	17	2	1	1		NP	
93-0182	IR 6	MLLW +6			Poorly graded sand (SP)												100	93	37	3	1	0		NP	
93-0183	IR 6	MLLW +12			Poorly graded sand (SP)												100	97	34	4	1	0		NP	
93-0184	IR 7	MLLW -6			Poorly graded sand (SP)								100	99	99	98	96	83	37	3	0	0		NP	
93-0185	IR 7	MLLW 0			Poorly graded sand (SP)											100	99	83	28	2	0	0		NP	
93-0186	IR 7	MLLW +6			Poorly graded sand (SP)												100	97	55	5	1	0		NP	
93-0187	IR 7	MLLW +12			Poorly graded sand (SP)												100	98	48	6	1	0		NP	
93-0188	IR 8	MLLW -6			Poorly graded sand with silt (SP-SM)											100	99	94	56	18	15	15		NP	
93-0189	IR 8	MLLW 0			Poorly graded sand (SP)												100	98	40	7	2	0		NP	
93-0190	IR 8	MLLW +6			Poorly graded sand (SP)												100	91	36	5	2	0		NP	
93-0191	IR 8	MLLW +12			Poorly graded sand (SP)												100	99	52	9	2	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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MINUTE PAGE 1223

Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
93-0192	IR 9	MLLW -6			Poorly graded sand (SP)									100	99	98	95	70	29	3	0	0		NP	
93-0193	IR 9	MLLW 0			Poorly graded sand (SP)									100	99	99	96	82	39	4	0	0		NP	
93-0194	IR 9	MLLW +6			Poorly graded sand (SP)											100	99	80	29	1	0	0		NP	
93-0195	IR 9	MLLW +12			Poorly graded sand (SP)										100	98	94	69	20	1	0	0		NP	
93-0196	IR 5	-24			Poorly graded sand (SP)												100	98	74	10	1	0		NP	
93-0197	IR 5	-30			Poorly graded sand (SP)												100	98	63	10	1	0		NP	
93-0198	IR 6	-24			Poorly graded sand (SP)								100	99	99	99	99	98	88	23	2	0		NP	
93-0199	IR 6	-30			Poorly graded sand (SP)				100	97	97	97	97	96	96	96	96	95	89	26	2	1		NP	
93-0200	IR 7	-30			Poorly graded sand with silt (SP-SM)			100	99	98	98	98	98	98	98	98	98	96	84	37	26	25		NP	
93-0201	IR 8	-30			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	98	68	14	4	1		NP	
93-0202	IR 9	-30			Poorly graded sand (SP)												100	99	87	18	1	0		NP	
93-0203	IR 7	-24			Poorly graded sand (SP)												100	99	74	11	1	0		NP	
93-0204	Site 1				Poorly graded sand (SP)												100	99	91	29	9	7		NP	
93-0205	Hole 2				Poorly graded sand (SP)										100	99	98	76	19	1	0	0		NP	
93-0206	Hole 3				Poorly graded sand (SP)												100	96	48	3	0	0		NP	
93-0207	Hole 4				Poorly graded sand (SP)												100	99	60	5	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content
93-0208	Hole 5				Poorly graded sand (SP)												100	98	49	3	0	0		NP	
93-0209	Hole 6				Poorly graded sand (SP)							100	99	99	98	98	97	87	47	4	1	1		NP	
93-0210	Hole 7				Poorly graded sand (SP)						100	99	99	99	99	99	98	98	53	6	1	1		NP	
93-0211	Hole 8				Poorly graded sand (SP)											100	99	98	55	6	2	1		NP	
93-0212	Hole 9				Poorly graded sand (SP)													100	74	14	3	2		NP	
93-0213	Hole 10				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	73	10	3	2		NP	
93-0214	Hole 11				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	43	4	1	1		NP	

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U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Wat Cont %
93-0160	TR 1	MLLW -6			Poorly graded sand (SP)											100	79	40	12	1	0	0		NP	
93-0161	TR 1	MLLW 0			Poorly graded sand (SP)					100	99	99	98	97	95	92	80	45	18	1	0	0		NP	
93-0162	TR 1	MLLW +6			Poorly graded sand (SP)									100	99	99	97	56	15	2	0	0		NP	
93-0163	TR 1	MLLW +12			Poorly graded sand (SP)											100	99	47	13	1	0	0		NP	
93-0164	TR 2	MLLW -6			Poorly graded sand (SP)				100	98	98	98	97	97	96	95	89	63	25	1	0	0		NP	
93-0165	TR 2	MLLW 0			Poorly graded sand (SP)							100	99	99	99	99	96	47	14	1	0	0		NP	
93-0166	TR 2	MLLW +6			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	97	65	15	2	0	0		NP	
93-0167	TR 2	MLLW +12			Poorly graded sand (SP)											100	97	51	15	1	0	0		NP	
93-0168	TR 3	MLLW -6			Poorly graded sand (SP)							100	99	98	98	96	91	55	18	1	0	0		NP	
93-0169	TR 3	MLLW 0			Poorly graded sand (SP)											100	96	48	12	1	0	0		NP	
93-0170	TR 3	MLLW +6			Poorly graded sand (SP)												100	74	25	3	1	0		NP	
93-0171	TR 3	MLLW +12			Poorly graded sand (SP)												100	94	31	3	1	0		NP	
93-0172	TR 4	MLLW -6			Poorly graded sand (SP)									100	99	99	97	72	26	1	0	0		NP	
93-0173	TR 4	MLLW 0			Poorly graded sand (SP)											100	99	78	31	1	0	0		NP	
93-0174	TR 4	MLLW +6			Poorly graded sand (SP)											100	99	81	29	2	1	0		NP	
93-0175	TR 4	MLLW +12			Poorly graded sand (SP)											100	99	77	27	2	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND PERCENT FINER #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plasticity Index	Water Content %
93-0176	IR 5	MLLW -6			Poorly graded sand (SP)			100	99	99	99	98	97	96	95	92	89	78	44	3	0	0		NP	
93-0177	IR 5	MLLW 0			Poorly graded sand (SP)			100	84	70	64	62	59	56	53	48	42	29	11	1	0	0		NP	
93-0178	IR 5	MLLW +6			Poorly graded sand (SP)												100	96	33	5	1	0		NP	
93-0179	IR 5	MLLW +12			Poorly graded sand (SP)												100	96	51	3	1	0		NP	
93-0180	IR 6	MLLW -6			Poorly graded sand (SP)					100	99	99	97	95	91	80	58	27	10	1	0	0		NP	
93-0181	IR 6	MLLW 0			Poorly graded sand (SP)				100	99	99	98	98	97	96	92	78	43	17	2	1	1		NP	
93-0182	IR 6	MLLW +6			Poorly graded sand (SP)												100	93	37	3	1	0		NP	
93-0183	IR 6	MLLW +12			Poorly graded sand (SP)												100	97	34	4	1	0		NP	
93-0184	IR 7	MLLW -6			Poorly graded sand (SP)								100	99	99	98	96	83	37	3	0	0		NP	
93-0185	IR 7	MLLW 0			Poorly graded sand (SP)											100	99	83	28	2	0	0		NP	
93-0186	IR 7	MLLW +6			Poorly graded sand (SP)												100	97	55	5	1	0		NP	
93-0187	IR 7	MLLW +12			Poorly graded sand (SP)												100	98	48	6	1	0		NP	
93-0188	IR 8	MLLW -6			Poorly graded sand with silt (SP-SM)											100	99	94	56	18	15	15		NP	
93-0189	IR 8	MLLW 0			Poorly graded sand (SP)												100	98	40	7	2	0		NP	
93-0190	IR 8	MLLW +6			Poorly graded sand (SP)												100	91	36	5	2	0		NP	
93-0191	IR 8	MLLW +12			Poorly graded sand (SP)												100	99	52	9	2	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

PROJECT: Morro Bay Harbor

DATE: April 1993

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MINUTE PAGE 1227

Division Number	Hole Number	Field Sample No.	Depth or Elevation From	Depth or Elevation To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND PERCENT FINER #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
93-0192	IR 9	MLLW -6			Poorly graded sand (SP)									100	99	98	95	70	29	3	0	0			
93-0193	IR 9	MLLW 0			Poorly graded sand (SP)									100	99	99	96	82	39	4	0	0			
93-0194	IR 9	MLLW +6			Poorly graded sand (SP)											100	99	80	29	1	0	0		NP	
93-0195	IR 9	MLLW +12			Poorly graded sand (SP)										100	98	94	69	20	1	0	0		NP	
93-0196	IR 5	-24			Poorly graded sand (SP)												100	98	74	10	1	0		NP	
93-0197	IR 5	-30			Poorly graded sand (SP)												100	98	63	10	1	0		NP	
93-0198	IR 6	-24			Poorly graded sand (SP)								100	99	99	99	99	98	88	23	2	0		NP	
93-0199	IR 6	-30			Poorly graded sand (SP)				100	97	97	97	97	96	96	96	96	95	89	26	2	1		NP	
93-0200	IR 7	-30			Poorly graded sand with silt (SP-SM)			100	99	98	98	98	98	98	98	98	98	96	84	37	26	25		NP	
93-0201	IR 8	-30			Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	98	68	14	4	1		NP	
93-0202	IR 9	-30			Poorly graded sand (SP)												100	99	87	18	1	0		NP	
93-0203	IR 7	-24			Poorly graded sand (SP)												100	99	74	11	1	0		NP	
93-0204	Site 1				Poorly graded sand (SP)												100	99	91	29	9	7		NP	
93-0205	Hole 2				Poorly graded sand (SP)										100	99	98	76	19	1	0	0		NP	
93-0206	Hole 3				Poorly graded sand (SP)												100	96	48	3	0	0		NP	
93-0207	Hole 4				Poorly graded sand (SP)												100	99	60	5	1	0		NP	

U.S. ARMY CORPS OF ENGINEERS, SOUTH PACIFIC DIVISION LABORATORY, SAUSALITO, CALIFORNIA

SOIL TEST RESULT SUMMARY

OJECT: Morro Bay Harbor

DATE: April 1993

vision lumber	Hole Number	Field Sample No.	Depth or Elevation From	To	Laboratory Descriptive Classification	GRAVEL PERCENT FINER 3.0	1.5	3/4	3/8	SAND #4	#7	#10	#14	#18	#25	#35	#45	#60	#80	#120	#170	FINE #200	Liquid Limit	Plastic Index	Water Content %
3-0208	Hole 5				Poorly graded sand (SP)												100	98	49	3	0	0		NP	
3-0209	Hole 6				Poorly graded sand (SP)							100	99	99	98	98	97	87	47	4	1	1		NP	
3-0210	Hole 7				Poorly graded sand (SP)						100	99	99	99	99	99	98	98	53	6	1	1		NP	
3-0211	Hole 8				Poorly graded sand (SP)											100	99	98	55	6	2	1		NP	
3-0212	Hole 9				Poorly graded sand (SP)													100	74	14	3	2		NP	
3-0213	Hole 10				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	73	10	3	2		NP	
3-0214	Hole 11				Poorly graded sand (SP)				100	99	99	99	99	99	99	99	99	99	43	4	1	1		NP	

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DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
LABORATORY
25 LIBERTY SHIP WAY, SAUSALITO, CALIFORNIA 94965-1768

REPLY TO
ATTENTION OF

CESPD-ED-GL (1110-1-8100b)

APR 27 1993

MEMORANDUM FOR Commander, Los Angeles District,
ATTN: CESPL-CO-ON/Tony Risko

SUBJECT: Morro Bay Test Results

1. Reference Form MIPR, No. E86-93-0057 dated 14 April 1993.

2. Enclosed is a report prepared on subject project.

3. Billing will be made by the Sacramento District Finance and Accounting Branch.

4. Significant Findings: Oil and Grease found in samples TR7 (93-0184 - 87QS Composite) and TR8 (93-0188 - 91QS Composite) at 54 mg/kg and 62 mg/kg respectively. Sample TR8 contained 33 mg/kg TRPH. This value is slightly above detection limits.

Dennis Thuet

DENNIS THUET
Director, SPD Laboratory

Encl

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SOUTH PACIFIC DIVISION LABORATORY

SUMMARY OF RESULTS

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

COE Sample	Field ID	Matrix	Method/Analysis		Positive Hit Concentrations		Page
93-0184 - 87QS	TR7	Soil	418.1/413.2	Oil & Grease	54	mg/kg	9-15
93-0188 - 91QS	TR8	Soil	418.1/413.2	TRPH	33	mg/kg	9-15
				Oil and Grease	62	mg/kg	9-15

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93
Page: 1

EPA METHOD: 8080

COE Sample ID:		93-176 - 79QS	93-0180 - 83QS	93-0184 - 87QS
Field ID:		TR5	TR6	TR7
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/22/93	03/22/93	03/22/93
Sample Analyzed:		03/31/93	03/31/93	03/31/93
Dilution Factor:		1	1	1
Units:		ug/kg	ug/kg	ug/kg
Parameter	Reporting Limits	Results	Results	Results
BHC-A	0.3	ND	ND	ND
Lindane	1.2	ND	ND	ND
BHC-B	0.3	ND	ND	ND
Heptachlor	3	ND	ND	ND
BHC-D	0.3	ND	ND	ND
Aldrin	1.2	ND	ND	ND
Hept-epo	3	ND	ND	ND
Endo I	3	ND	ND	ND
Dieldrin	3	ND	ND	ND
DDE	3	ND	ND	ND
Endrin	3	ND	ND	ND
DDD	3	ND	ND	ND
Endo II	3	ND	ND	ND
Endrin Aldehyde	3	ND	ND	ND
DDT	3	ND	ND	ND
Endo Sulfate	3	ND	ND	ND
Methoxychlor	5	ND	ND	ND
Toxaphene	60	ND	ND	ND
Chlordane	60	ND	ND	ND
Polychlorinated Biphenyls:				
Arochlor 1016	100	ND	ND	ND
Arochlor 1221	500	ND	ND	ND
Arochlor 1232	200	ND	ND	ND
Arochlor 1242	100	ND	ND	ND
Arochlor 1248	100	ND	ND	ND
Arochlor 1254	50	ND	ND	ND
Arochlor 1260	50	ND	ND	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID:		93-0188 - 91QS	93-0192 - 95QS	93-196QS - 97QS
Field ID:		TR8	TR9	TR5,-24 & TR5,-30
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/22/93	03/22/93	03/22/93
Sample Analyzed:		03/31/93	03/31/93	03/31/93
Dilution Factor:		1	1	1
Units:		ug/kg	ug/kg	ug/kg
Parameter	Reporting Limits	Results	Results	Results
BHC-A	0.3	ND	ND	ND
Lindane	1.2	ND	ND	ND
BHC-B	0.3	ND	ND	ND
Heptachlor	3	ND	ND	ND
BHC-D	0.3	ND	ND	ND
Aldrin	1.2	ND	ND	ND
Hept-epo	3	ND	ND	ND
Endo I	3	ND	ND	ND
Dieldrin	3	ND	ND	ND
DDE	3	ND	ND	ND
Endrin	3	ND	ND	ND
DDD	3	ND	ND	ND
Endo II	3	ND	ND	ND
Endrin Aldehyde	3	ND	ND	ND
DDT	3	ND	ND	ND
Endo Sulfate	3	ND	ND	ND
Methoxychlor	5	ND	ND	ND
Toxaphene	60	ND	ND	ND
Chlordane	60	ND	ND	ND
Polychlorinated Biphenyls:				
Arochlor 1016	100	ND	ND	ND
Arochlor 1221	500	ND	ND	ND
Arochlor 1232	200	ND	ND	ND
Arochlor 1242	100	ND	ND	ND
Arochlor 1248	100	ND	ND	ND
Arochlor 1254	50	ND	ND	ND
Arochlor 1260	50	ND	ND	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID:	93-0198 - 99QS	93-0200 & 203QS	93-0201QS
Field ID:	TR6,24 & TR6,-30	TR7,-30 & TR7-24	TR8,-30
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Extracted:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/31/93	03/31/93	03/31/93
Dilution Factor:	1	1	1
Units:	ug/kg	ug/kg	ug/kg

Parameter	Reporting Limits	Results	Results	Results
BHC-A	0.3	ND	ND	ND
Lindane	1.2	ND	ND	ND
BHC-B	0.3	ND	ND	ND
Heptachlor	3	ND	ND	ND
BHC-D	0.3	ND	ND	ND
Aldrin	1.2	ND	ND	ND
Hept-epo	3	ND	ND	ND
Endo I	3	ND	ND	ND
Dieldrin	3	ND	ND	ND
DDE	3	ND	ND	ND
Endrin	3	ND	ND	ND
DDD	3	ND	ND	ND
Endo II	3	ND	ND	ND
Endrin Aldehyde	3	ND	ND	ND
DDT	3	ND	ND	ND
Endo Sulfate	3	ND	ND	ND
Methoxychlor	5	ND	ND	ND
Toxaphene	60	ND	ND	ND
Chlordane	60	ND	ND	ND
Polychlorinated Biphenyls:				
Arochlor 1016	100	ND	ND	ND
Arochlor 1221	500	ND	ND	ND
Arochlor 1232	200	ND	ND	ND
Arochlor 1242	100	ND	ND	ND
Arochlor 1248	100	ND	ND	ND
Arochlor 1254	50	ND	ND	ND
Arochlor 1260	50	ND	ND	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID:	93-202QS	93-209QS	93-210QS
Field ID:	TR9,-30	HOLE 6	HOLE 7
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Extracted:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/31/93	03/31/93	03/31/93
Dilution Factor:	1	1	1
Units:	ug/kg	ug/kg	ug/kg

Parameter	Reporting Limits	Results	Results	Results
BHC-A	0.3	ND	ND	ND
Lindane	1.2	ND	ND	ND
BHC-B	0.3	ND	ND	ND
Heptachlor	3	ND	ND	ND
BHC-D	0.3	ND	ND	ND
Aldrin	1.2	ND	ND	ND
Hept-epo	3	ND	ND	ND
Endo I	3	ND	ND	ND
Dieldrin	3	ND	ND	ND
DDE	3	ND	ND	ND
Endrin	3	ND	ND	ND
DDD	3	ND	ND	ND
Endo II	3	ND	ND	ND
Endrin Aldehyde	3	ND	ND	ND
DDT	3	ND	ND	ND
Endo Sulfate	3	ND	ND	ND
Methoxychlor	5	ND	ND	ND
Toxaphene	60	ND	ND	ND
Chlordane	60	ND	ND	ND
Polychlorinated Biphenyls:				
Arochlor 1016	100	ND	ND	ND
Arochlor 1221	500	ND	ND	ND
Arochlor 1232	200	ND	ND	ND
Arochlor 1242	100	ND	ND	ND
Arochlor 1248	100	ND	ND	ND
Arochlor 1254	50	ND	ND	ND
Arochlor 1260	50	ND	ND	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID:		93-0211QS	93-0212QS	93-0213QS
Field ID:		HOLE 8	HOLE 9	HOLE 10
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/22/93	03/22/93	03/22/93
Sample Analyzed:		03/31/93	03/31/93	03/31/93
Dilution Factor:		1	1	1
Units:		ug/kg	ug/kg	ug/kg
Parameter	Reporting Limits	Results	Results	Results
BHC-A	0.3	ND	ND	ND
Lindane	1.2	ND	ND	ND
BHC-B	0.3	ND	ND	ND
Heptachlor	3	ND	ND	ND
BHC-D	0.3	ND	ND	ND
Aldrin	1.2	ND	ND	ND
Hept-epo	3	ND	ND	ND
Endo I	3	ND	ND	ND
Dieldrin	3	ND	ND	ND
DDE	3	ND	ND	ND
Endrin	3	ND	ND	ND
DDD	3	ND	ND	ND
Endo II	3	ND	ND	ND
Endria Aldehyde	3	ND	ND	ND
DDT	3	ND	ND	ND
Endo Sulfate	3	ND	ND	ND
Methoxychlor	5	ND	ND	ND
Toxaphene	60	ND	ND	ND
Chlordane	60	ND	ND	ND
Polychlorinated Biphenyls:				
Arochlor 1016	100	ND	ND	ND
Arochlor 1221	500	ND	ND	ND
Arochlor 1232	200	ND	ND	ND
Arochlor 1242	100	ND	ND	ND
Arochlor 1248	100	ND	ND	ND
Arochlor 1254	50	ND	ND	ND
Arochlor 1260	50	ND	ND	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID:	93-214QS
Field ID:	HOLE 11
Sample Received:	03/16/93
Sample Extracted:	03/23/93
Sample Analyzed:	03/31/93
Dilution Factor:	1
Units:	ug/kg

Parameter	Reporting Limits	Results
BHC-A	0.3	ND
Lindane	1.2	ND
BHC-B	0.3	ND
Heptachlor	3	ND
BHC-D	0.3	ND
Aldrin	1.2	ND
Hept-epo	3	ND
Endo I	3	ND
Dieldrin	3	ND
DDE	3	ND
Endrin	3	ND
DDD	3	ND
Endo II	3	ND
Endrin Aldehyde	3	ND
DDT	3	ND
Endo Sulfate	3	ND
Methoxychlor	5	ND
Toxaphene	60	ND
Chlordane	60	ND
Polychlorinated Biphenyls:		
Arochlor 1016	100	ND
Arochlor 1221	500	ND
Arochlor 1232	200	ND
Arochlor 1242	100	ND
Arochlor 1248	100	ND
Arochlor 1254	50	ND
Arochlor 1260	50	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080

COE Sample ID: METHOD BLANK
Sample Analyzed: 03/31/93
Units: ug/l

Parameter	Reporting Limits	Results
BHC-A	0.3	ND
Lindane	1.2	ND
BHC-B	0.3	ND
Heptachlor	3	ND
BHC-D	0.3	ND
Aldrin	1.2	ND
Hept-epo	3	ND
Endo I	3	ND
Dieldrin	3	ND
DDE	3	ND
Endrin	3	ND
DDD	3	ND
Endo II	3	ND
Endrin Aldehyde	3	ND
DDT	3	ND
Endo Sulfate	3	ND
Methoxychlor	5	ND
Toxaphene	60	ND
Polychlorinated Biphenyls:		
Arochlor 1016	100	ND
Arochlor 1221	500	ND
Arochlor 1232	200	ND
Arochlor 1242	100	ND
Arochlor 1248	100	ND
Arochlor 1254	50	ND
Arochlor 1260	50	ND

Analyst: Brenda Gainey

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/02/93

EPA METHOD: 8080 - QUALITY CONTROL DATA

COE QC Sample ID: 93-0180QS

Parameter	Reporting Limits	Units	Blank	Spike Conc	Spike % Rec	Spike Dup % Rec	RPD
DECA	-	% Rec	ND	50.0	108	87	22.2
Lindane	0.3	ug/kg	ND	25.0	84	83	1.8
Heptachlor	3	ug/kg	ND	25.0	96	93	2.5
Aldrin	1	ug/kg	ND	25.0	*	*	24.5
Dieldrin	3	ug/kg	ND	50.0	85	95	11.1
Endrin	3	ug/kg	ND	50.0	72	84	16.4
DDT	3	ug/kg	ND	50.0	48	51	7.8

* UNKNOWN COMPONENT ELUTED IN THE VICINITY OF ALDRIN WHICH OVERSHADOWED THE SPIKE AND SPIKE DUPLICATE VALUES OF ALDRIN. STANDARD ADDITON OF ALDRIN SHOWED THAT COMPONENT WAS NOT ALDRIN. RPD VALUES OF ALDRIN BASED ON AREA COUNTS OF UNKNOWNED COMPONENT AND ALDRIN COMBINED TOGETHER.

CONTROL LIMITS

Parameter	Method Blank	LCS % Rec	Method Standard	RPD %
Lindane	<0.3	30-120	46-127	<50
Heptachlor	<3	30-120	35-130	<31
Aldrin	<1	30-120	35-130	<43
Dieldrin	<3	30-120	31-134	<38
Endrin	<3	30-120	42-139	<45
DDT	<3	30-120	23-134	<50
DBC	—	30-120		
DECA	—	30-120		

Analyst: Brenda Gainey

QC Manager: [illegible]
4/20/93

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2

COE Sample ID:		93-0176 - 79QS	93-0180 - 83QS	93-0184 - 87QS
Field ID:		TR5	TR6	TR7
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/30/93	03/30/93	03/30/93
Sample Analyzed:		03/30/93	03/30/93	03/30/93
Dilution Factor:		1	1	1
Units:		mg/kg	mg/kg	mg/kg
Parameter	Reporting Limits	Results	Results	Results
TRPH	25	ND	ND	ND
Oil and Grease	25	ND	ND	54

Analyst: Sam Taormina

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2

COE Sample ID:		93-0188 - 91QS	93-0192 - 95QS	93-0196 - 97QS
Field ID:		TR8	TR9	TR5,-24 & TR5,-30
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/30/93	03/30/93	03/30/93
Sample Analyzed:		03/30/93	03/30/93	03/30/93
Dilution Factor:		1	1	1
Units:		mg/kg	mg/kg	mg/kg
Parameter	Reporting Limits	Results	Results	Results
TRPH	25	33	ND	ND
Oil and Grease	25	62	ND	ND

Analyst: Sam Taormina

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2

COE Sample ID:	93-0198 - 99QS	93-0200 - 203QS	93-0201QS
Field ID:	TR6,-24 & TR6,-30	TR7,-30 & TR7-24	TR8,-30
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Extracted:	03/30/93	03/30/93	03/30/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Reporting Limits	Results	Results	Results
TRPH	25	ND	ND	ND
Oil and Grease	25	ND	ND	ND

Analyst: Sam Taormina

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2

COE Sample ID:		93-0202QS	93-0209QS	93-0210QS
Field ID:		TR9-30	HOLE 6	HOLE 7
Sample Received:		03/16/93	03/16/93	03/16/93
Sample Extracted:		03/30/93	03/30/93	03/30/93
Sample Analyzed:		03/30/93	03/30/93	03/30/93
Dilution Factor:		1	1	1
Units:		mg/kg	mg/kg	mg/kg
Parameter	Reporting Limits	Results	Results	Results
TRPH	25	ND	ND	ND
Oil and Grease	25	ND	ND	ND

Analyst: Sam Taormina

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2

COE Sample ID:	93-0211QS	93-0212QS	93-0213QS
Field ID:	HOLE 8	HOLE 9	HOLE 10
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Extracted:	03/30/93	03/30/93	03/30/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Reporting Limits	Results	Results	Results
TRPH	25	ND	ND	ND
Oil and Grease	25	ND	ND	ND

Analyst: Sam Taormina

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93
Page: 14

EPA METHOD: 418.1/413.2

COE Sample ID:	93-0214QS
Field ID:	HOLE 11
Sample Received:	03/16/93
Sample Extracted:	03/30/93
Sample Analyzed:	03/30/93
Dilution Factor:	1
Units:	mg/kg

Parameter	Reporting Limits	Results
TRPH	25	ND
Oil and Grease	25	ND

Analyst: Sam Taormina

Manager:

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MINUTE PAGE 1244

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/05/93

EPA METHOD: 418.1/413.2 - QUALITY CONTROL DATA

COE QC Sample ID: 93-0214QS

Parameter	Reporting Limits	Units	LCS % Rec	Blank	Spike Conc	Spike % Rec	Spike Dup % Rec	RPD
TRPH	25	mg/kg	95	ND	200	86	95	10
Oil and Grease	25	mg/kg	95	ND	200	86	95	10

CONTROL LIMITS

Parameter	Method Blank	LCS % Rec	Method Standard	RPD %
TRPH	ND	80-120	80-120	25
Oil and Grease	ND	80-120	80-120	25

Analyst: Sam Taormina

QC Manager:

CALENDAR PAGE	360
MINUTE PAGE	1245

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:	93-0176 - 79QS	93-0180 - 83QS	93-0184 - 87QS
Field ID:	TR5	TR6	TR7
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Digested:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results	Results
Silver (Ag)	6010	1	ND	ND	ND
Arsenic (As)	6010	5	ND	ND	ND
Cadmium (Cd)	6010	1	ND	ND	ND
Mercury (Hg)	7470	0.1	ND	ND	ND
Nickel (Ni)	6010	5	24.7	37.0	25.5
Lead (Pb)	6010	5	ND	ND	ND
Selenium (Se)	6010	10	ND	ND	ND
Zinc (Zn)	6010	5	12.0	13.5	13.5

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:	93-0188 - 91QS	93-0192 - 95QS	93-0196 - 97QS
Field ID:	TR8	TR9	TR5,-24 & TR5,-30
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Digested:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results	Results
Silver (Ag)	6010	1	ND	ND	ND
Arsenic (As)	6010	5	ND	ND	ND
Cadmium (Cd)	6010	1	ND	ND	ND
Mercury (Hg)	7470	0.1	ND	ND	ND
Nickel (Ni)	6010	5	24.0	21.7	38.6
Lead (Pb)	6010	5	ND	ND	ND
Selenium (Se)	6010	10	ND	ND	ND
Zinc (Zn)	6010	5	14.3	8.85	15.5

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:	93-0198-99QS	93-0200 & 203QS	93-0201QS
Field ID:	TR6,-24 & TR6,-30	TR7,-30 & TR7-24	TR8,-30
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Digested:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results	Results
Silver (Ag)	6010	1	ND	ND	ND
Arsenic (As)	6010	5	ND	ND	ND
Cadmium (Cd)	6010	1	ND	ND	ND
Mercury (Hg)	7470	0.1	ND	ND	0.03
Nickel (Ni)	6010	5	44.1	47.2	44.6
Lead (Pb)	6010	5	ND	ND	ND
Selenium (Se)	6010	10	ND	ND	ND
Zinc (Zn)	6010	5	18.8	17.6	19.7

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:	93-0202QS	93-0209QS	93-0210QS
Field ID:	TR9,-30	HOLE 6	HOLE 7
Sample Received:	03/16/93	03/16/93	03/16/93
Sample Digested:	03/22/93	03/22/93	03/22/93
Sample Analyzed:	03/30/93	03/30/93	03/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results	Results
Silver (Ag)	6010	1	ND	ND	ND
Arsenic (As)	6010	5	ND	ND	ND
Cadmium (Cd)	6010	1	ND	ND	ND
Mercury (Hg)	7470	0.1	ND	ND	ND
Nickel (Ni)	6010	5	50.6	25.8	33.7
Lead (Pb)	6010	5	ND	ND	ND
Selenium (Se)	6010	10	ND	ND	ND
Zinc (Zn)	6010	5	16.8	10.5	15.5

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:	93-0211QS	93-0212QS	93-0213QS
Field ID:	HOLE 8	HOLE 9	HOLE 10
Sample Received:	3/16/93	3/16/93	3/16/93
Sample Digested:	3/22/93	3/22/93	3/22/93
Sample Analyzed:	3/30/93	3/30/93	3/30/93
Dilution Factor:	1	1	1
Units:	mg/kg	mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results	Results
Silver (Ag)	6010	1	ND	ND	ND
Arsenic (As)	6010	5	ND	ND	ND
Cadmium (Cd)	6010	1	ND	ND	ND
Mercury (Hg)	7470	0.1	0.07	0.05	ND
Nickel (Ni)	6010	5	17.1	60.5	46.6
Lead (Pb)	6010	5	ND	ND	ND
Selenium (Se)	6010	10	ND	ND	ND
Zinc (Zn)	6010	5	6.73	19.1	17.9

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID:		93-0214QS	93-0214QS DUP
Field ID:		HOLE 11	HOLE 11
Sample Received:		3/16/93	3/16/93
Sample Digested:		3/22/93	3/22/93
Sample Analyzed:		3/30/93	3/30/93
Dilution Factor:		1	1
Units:		mg/kg	mg/kg

Parameter	Method	Reporting Limits	Results	Results
Silver (Ag)	6010	1	ND	ND
Arsenic (As)	6010	5	ND	ND
Cadmium (Cd)	6010	1	ND	ND
Mercury (Hg)	7470	0.1	0.02	-
Nickel (Ni)	6010	5	23.6	23.5
Lead (Pb)	6010	5	ND	ND
Selenium (Se)	6010	10	ND	ND
Zinc (Zn)	6010	5	11.5	12.9

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470

COE Sample ID: METHOD BLANK
Sample Analyzed: 03/30/93
Units: mg/l

Parameter	Method	Reporting Limits	Results
Silver (Ag)	6010	0.01	ND
Aluminum (Al)	6010	0.1	ND
Arsenic (As)	6010	0.05	ND
Boron (B)	6010	0.1	ND
Barium (Ba)	6010	0.05	ND
Beryllium (Be)	6010	0.05	ND
Calcium (Ca)	6010	0.1	ND
Cadmium (Cd)	6010	0.01	ND
Cobalt (Co)	6010	0.05	ND
Chromium (Cr)	6010	0.1	ND
Copper (Cu)	6010	0.01	ND
Iron (Fe)	6010	0.01	ND
Mercury (Hg)	7470	0.001	ND
Potassium (K)	6010	5	ND
Magnesium (Mg)	6010	0.01	ND
Manganese (Mn)	6010	0.01	ND
Molybdenum (Mo)	6010	0.01	ND
Sodium (Na)	6010	1	ND
Nickel (Ni)	6010	0.05	ND
Lead (Pb)	6010	0.05	ND
Antimony (Sb)	6010	0.05	ND
Selenium (Se)	6010	0.1	ND
Silicon (Si)	6010	0.05	ND
Thallium (Tl)	6010	0.2	ND
Vanadium (V)	6010	0.01	ND
Zinc (Zn)	6010	0.05	ND

Analyst: Teri Davis

Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470 - QUALITY CONTROL DATA

COE QC Sample ID: 93-0214QS
Units: mg/kg

Parameter	Method	Reporting Limits	LCS % Rec	Blank	Spike Conc	Spike % Rec	Spike Dup % Rec	RPD
Silver (Ag)	6010	1	93	ND	10 PPM	100	98	2
Arsenic (As)	6010	5	117	ND	10 PPM	106	105	1
Cadmium (Cd)	6010	1	109	ND	10 PPM	104	102	2
Mercury (Hg)	7470	0.1	94	ND	0.5	92	95	3
Nickel (Ni)	6010	5	111	ND	10 PPM	106	105	1
Lead (Pb)	6010	5	112	ND	10 PPM	105	103	2
Selenium (Se)	6010	10	114	ND	10 PPM	106	104	2
Zinc (Zn)	6010	5	110	ND	10 PPM	104	103	1

Analyst: Teri Davis

QC Manager:

SOUTH PACIFIC DIVISION LABORATORY

Client Name: CESPL
Project Name: Morro Bay
Date Collected: 03/16/93
Reference: Pending

Date Reported: 04/01/93

EPA METHOD: 6010/7060/7470 - CONTROL LIMITS

CONTROL LIMITS

Parameter	EPA Method	Method Blank	LCS % Rec	Spike % Rec
Silver (Ag)	6010	ND	80-120	70-120
Arsenic (As)	6010	ND	94-112	70-120
Cadmium (Cd)	6010	ND	95-101	70-120
Mercury (Hg)	7470	ND	80-120	80-120
Nickel (Ni)	6010	ND	96-112	70-120
Lead (Pb)	6010	ND	93-111	70-120
Selenium (Se)	6010	ND	90-108	70-120
Zinc (Zn)	6010	ND	95-105	70-120

Analyst: Teri Davis

Manager:

DEPARTMENT OF THE ARMY
South Pacific Division, Corps of Engineers
Division Laboratory
Sausalito, California

PAC. ENV.
DUE 4-7-93

pg 1 of [illegible]

CHAIN OF CUSTODY RECORD

PROJECT NAME
MORRO BAY HARBOR

SAMPLERS: (signature)

LAB ID	DATE	TIME	COMP.	GRAB	FIELD IDENTIFICATION	NO. OF CONTAINERS	TOC (9060)	TOTAL SULFIDES	ORGANOTINS	REMARKS
93-0176 AS / 93-0177 AS	3-8-93				TR5-6 TO +12 MLLW	1	X	X		ORGANOTINS
93-01[illegible] AS / 93-01[illegible] AS	↓				TR6-6 TO +12 MLLW	1	X	X		MONO-, DI-, TRI-,
93-01[illegible] AS / 93-0187 AS	↓				TR7-6 TO +12 MLLW	1	X	X		TETRABUTYLTIN
93-01[illegible] AS / 93-0191 AS	↓				TR8-6 TO +12 MLLW	1	X	X		
93-01[illegible] AS / 93-0195 AS	↓				TR9-6 TO +12 MLLW	1	X	X		
93-0196 AS / 93-0197 AS	3-11-93				TR5 -24 & -30	1	X	X		
93-0198 AS / 93-0199 AS	↓				TR6 -24 & -30	1	X	X		
93-0203 AS / 93-0200 AS	↓				TR7-24 & -30	1	X	X		[illegible] FOR LAB ID OUT OF SEQUENCE BUT OK
93-0201 AS	↓				TR8 -30	1	X	X		
93-0202 AS	↓				TR9 -30	1	X	X		
93-0209 AS	3-1[illegible]-93				HOLE 6	1	X	X	X	
93-0210 AS	↓				HOLE 7	1	X	X	X	
93-0211 AS	↓				HOLE 8	1	X	X	X	
93-0212 AS	↓				HOLE 9	1	X	X	X	
93-0213 AS	↓				HOLE 10	1	X	X	X	

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	3-17-93	12:22	[signature]				

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:

Relinquished by:	Date	Time	Received for Lab	Date	Time	REMARKS

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MINUTE PAGE 1255

DEPARTMENT OF THE ARMY
South Pacific Division, Corps of Engineers
Division Laboratory
Sausalito, California

PAC ENV.

CHAIN OF CUSTODY RECORD

PROJECT NAME: MORRO BAY HARBOR

SAMPLERS: (signature)

LAB ID	DATE	TIME	COMP.	GRAB	FIELD IDENTIFICATION	NO. OF CONTAINERS	TOC (9060)	TOTAL SULFIDES (PLUMB 1981)	ORGANOTINS						REMARKS
[illegible]	3-10-93				HOLE 11	1	X	X	X						

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
(signature)	3-17-93	12:22	Sonny 657				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:

Relinquished by:	Date	Time	Received for Lab	Date	Time	REMARKS

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MINUTE PAGE 1256

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

APR 12 1993

Ted Nakamura
Kennedy/Jenks/Chilton, Lab. Division
674 Harrison St.
San Francisco, CA 94107

April 9, 1993

Customer Project: 19-MAR-93/TN
Laboratory Job: L9303197

On March 19, 1993 we received 16 sample(s) for analysis. Samples were analyzed by the following method(s):

Moisture, Percent (SM 2540)

Total Organic Carbon (SW 9060)

Deborah Fisher

Project Manager

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MINUTE PAGE	1257

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02698
Lab Id: L9303197-1

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	1400	50.	mg/Kg	1	02-APR-93	02-APR-93

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02699
Lab Id: L9303197-2

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	1700	50.	mg/Kg	1	02-APR-93	02-APR-93

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02700
Lab Id: L9303197-3

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	1500	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02701
Lab Id: L9303197-4

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	1300	50.	mg/Kg	1	02-APR-93	02-APR-93

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D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02702
Lab Id: L9303197-5

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	2800	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02703
Lab Id: L9303197-6

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	2900	50.	mg/Kg	1	02-APR-93	02-APR-93

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02704
Lab Id: L9303197-7

Collected: 03-MAR-93
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	2900	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02705
Lab Id: L9303197-8

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC				1	02-APR-93	02-APR-93

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D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02706
Lab Id: L9303197-9

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	2300	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02707
Lab Id: L9303197-10

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	3100	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02708
Lab Id: L9303197-11

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	2400	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02709
Lab Id: L9303197-12

Collected: 03-MAR-93
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						

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D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02710
Lab Id: L9303197-13

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	3700	50.	mg/Kg	1	02-APR-93	02-APR-93

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D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02711
Lab Id: L9303197-14

Collected: 03-MAR-93
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	4400	50.	mg/Kg	1	02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02712
Lab Id: L9303197-15

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						
EPA 9060 - TOC	3100	50.	mg/Kg	1	02-APR-93	02-APR-93

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D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Kennedy/Jenks/Chilton, Lab. Division
Project Id: 19-MAR-93/TN
Sample Id: DK02713
Lab Id: L9303197-16

Collected:
Received: 19-MAR-93
Reported: 09-APR-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
EPA 9060 - TOC						

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D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG983-1

Reported: 08-APR-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
EPA 9060 TOC COM							
EPA 9060 TOC COM	1331.	mg/Kg				02-APR-93	02-APR-93
-		mg/Kg				02-APR-93	02-APR-93
Comments:		mg/Kg				02-APR-93	02-APR-93

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D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG983-2

Reported: 08-APR-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
EPA 9060 TOC COM							
EPA 9060 TOC COM	1391.	mg/Kg	400	mg/Kg	0 %	02-APR-93	02-APR-93
-		mg/Kg				02-APR-93	02-APR-93
Comments:	Samples were non-homogeneous. The matrix spike and matrix spike duplicate percent						
Comments:	recoveries are not significant due to the high concentration of the analyte in the						
Comments:	sample relative to the amount of spike added. And dry weight corrected.						

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D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG983-3

Reported: 08-APR-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
EPA 9060 TOC COM							
EPA 9060 TOC COM	1806.	mg/Kg	400	mg/Kg	125 %	02-APR-93	02-APR-93
-	-						
Comments:	-						

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D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: UG983-4

Reported: 08-APR-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
EPA 9060 TOC\COM							
EPA 9060 TOC COM	ND <50	mg/Kg				02-APR-93	02-APR-93
-		mg/Kg				02-APR-93	02-APR-93
Comments:		mg/Kg				02-APR-93	02-APR-93

APR 12 1993

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: UG983-5

Reported: 08-APR-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
EPA 9060 TOC COM							
EPA 9060 TOC COM	390	mg/Kg	400	mg/Kg	96 %	02-APR-93	02-APR-93
-		mg/Kg				02-APR-93	02-APR-93
Comments:		mg/Kg				02-APR-93	02-APR-93

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APR 12 1993

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

QUALITY CONTROL REPORT

In order to provide you with the means of assessing the quality of the data in our report, D&M Laboratories reports the results of Quality Control samples analyzed with your samples.

The Quality Control samples provide the following QC information:

The Method Blank (MB) monitors the level of contamination introduced by reagents or glassware. A minimum of one MB is run per batch of 20 samples or less.

The Method Blank Spike (MBS) measures the accuracy of analytical techniques and is not subject to matrix effects. A minimum of one MBS is run per batch of 20 samples or less.

The Matrix Spike (MS) measures the accuracy of the method for a matrix type. Due to the high variability within matrix types and the necessity of batching samples from varied sources,, matrix spike information from one sample is not necessarily relevant to other samples on the batch. A minimum of two matrix spikes, MS and MSD, are run per batch of 20 samples or less. The sample selected for the matrix spike is designated MX, and may or may not have been submitted by the recipient of this report.

The Matrix Spike Duplicate (MSD), along with the MS, is used to monitor the precision (RPD) of the method and to indicate possible non homogeneity of the sample matrix.

Equations used for determining percent recovery and relative percent difference (RPD) are as follows:

$$\text{MBS \% Recovery} = (\text{MBS result} / \text{MBS spike level}) \times 100$$
$$\text{MS \% Recovery} = [(\text{MS result} - \text{MX result}) / \text{MS spike level}] \times 100$$
$$\text{RPD} = \{ | \text{MS result} - \text{MSD result} | \ / [(\text{MS result} + \text{MSD result}) / 2] \} \times 100$$

We continue to strive to improve the quality of service to our clients. We welcome any questions or comments you may have about this information, or about D&M Laboratories in general. Please contact a Project Manager for further information.

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ENVIRONMENTAL

ANALYTICAL CHEMISTS

April 8, 1993

RE: Inorganic Analysis SP 301444

Pacific Environmental Lab
674 Harrison Street
San Francisco , CA 94107

Sampling Site: PEL Lab No. DK02698

Sample Handling Information

ID	Sample Number	Sample Description	Sample Type	Grab or Comp.	Sampled by	Date Sampled	Date Received	Date Completed	Preservatives	Sample Container
1	SP 301444-01	DK02698	Soil	Grab		03/08/93	03/23/93	04/02/93	1	a
2	SP 301444-02	DK02699	Soil	Grab		03/08/93	03/23/93	04/02/93	1	a
3	SP 301444-03	DK02700	Soil	Grab		03/08/93	03/23/93	04/02/93	1	a
4	SP 301444-04	DK02701	Soil	Grab		03/08/93	03/23/93	04/02/93	1	a
5	SP 301444-05	DK02702	Soil	Grab		03/08/93	03/23/93	04/02/93	1	a
6	SP 301444-06	DK02703	Soil	Grab		03/11/93	03/23/93	04/02/93	1	a
7	SP 301444-07	DK02704	Soil	Grab		03/11/93	03/23/93	04/02/93	1	a
8	SP 301444-08	DK02705	Soil	Grab		03/11/93	03/23/93	04/02/93	1	a
9	SP 301444-09	DK02706	Soil	Grab		03/11/93	03/23/93	04/02/93	1	a
10	SP 301444-10	DK02707	Soil	Grab		03/11/93	03/23/93	04/02/93	1	a
11	SP 301444-11	DK02708	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a
12	SP 301444-12	DK02709	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a
13	SP 301444-13	DK02710	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a
14	SP 301444-14	DK02711	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a
15	SP 301444-15	DK02712	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a
16	SP 301444-16	DK02713	Soil	Grab		03/10/93	03/23/93	04/02/93	1	a

Preservatives: (1) Cool 4°C Containers: (a) Plastic

ANALYTICAL RESULTS

ID	Sample Description	Sulfide, Total
	DK 2698	ND
	DK 2699	ND
	DK 2700	ND
	Detection Limit	10
	Units	mg/kg
	Analytical Method	376.2

ND - Not detected at or above the Detection Limit Reported.

Table cont'd next page ...

Corporate Office & Laboratory
[illegible] Harrison Street

Office & Laboratory
2500 Stagecoach
Livermore, CA 945

Field Office

April 8, 1993

Pacific Environmental Lab

RE: Inorganic Analysis SP 301444

Sampling Site: PEL Lab No. DK02698

ANALYTICAL RESULTS Cont'd.

ID	Sample Description	Sulfide, Total
4	DK02701	ND
5	DK02702	ND
6	DK02703	ND
7	DK02704	ND
8	DK02705	ND
9	DK02706	ND
10	DK02707	ND
11	DK02708	ND
12	DK02709	ND
13	DK02710	ND
14	DK02711	ND
15	DK02712	ND
16	DK02713	ND
Detection Limit		10
Units		mg/kg
Analytical Method		376.2

ND = Not Detected at or above the Detection Limit Reported.

If you have any questions please call.

FGL Environmental

Kurt Wilkinson, B.S.
Inorganic Lab Manager

Darrell H. Nelson, B.S.
Laboratory Director

KW/DHN:vt

ToxScan Inc.

42 Hangar Way
Watsonville, CA 95076

(408) 724-4522

FAX (408) 724-3188

APR 05 1993

Pacific Environmental Laboratory
674 Harrison Street
San Francisco, CA 94107

April 1, 1993

Attn: Ted Nakamura

MATERIAL: Soil samples received March 19, 1993
ANALYSIS COMPLETED: March 30, 1993
EXTRACTION DATE: March 29, 1993
IDENTIFICATION: None provided
TOXSCAN NUMBER: T-9598
REPORT: Quantitative chemical analysis for butyltin species by pentyl derivatization using a Gas Chromatograph with a Flame Photometric Detector is as follows, expressed as micrograms per kilogram (parts per billion) on a dry weight basis:

Sample ID	Monobutyltin	Dibutyltin	Tributyltin	Tetrabutyltin	% TPT SUR
DK-02708 (Hole 6)	ND	ND	ND	ND	59
DK-02709 (Hole 7)	ND	ND	ND	ND	54
DK-02710 (Hole 8)	ND	3	3	ND	51
DK-02711 (Hole 9)	ND	ND	ND	ND	57
DK-02712 (Hole 10)	ND	ND	1	ND	52
DK-02713 (Hole 11)	ND	ND	ND	ND	56
Blank	ND	ND	ND	ND	69
Spike (recovery as %)	2	89	78	14	52
SRM,PACS, (recovery as percent)	74	92	75	NA	61

TPT Sur = Tripropyltin surrogate recovery

ND = None detected

NA = Not available

Detection limit = 1 ppb

Philip D. Carpenter
Laboratory Director

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ToxScan Inc.

42 Hangar Way
Watsonville, CA 95076

(408) 724-4522

FAX (408) 724-3188

Pacific Environmental Laboratory
674 Harrison Street
San Francisco, CA 94107

April 1, 1993

Attn: Ted Nakamura

MATERIAL:	Soil samples received March 19, 1993
ANALYSIS COMPLETED:	March 29, 1993
IDENTIFICATION:	None provided
TOXSCAN NUMBER:	T-9598
REPORT:	Quantitative analysis for percent solids is as follows:

Sample Identification	Percent Solids
DK-02708 (Hole 6)	82
DK-02709 (Hole 7)	83
DK-02710 (Hole 8)	75
DK-02711 (Hole 9)	69
DK-02712 (Hole 10)	73
DK-02713 (Hole 11)	80

Philip D. Cesperate
Laboratory Director

DEPARTMENT OF THE ARMY
South Pacific Division, Corps of Engineers
Division Laboratory
Sausalito, California

PAC. ENV.

CHAIN OF CUSTODY RECORD

PROJECT NAME: MORRO BAY HARBOR

SAMPLERS: (signature)

LAB ID	DATE	TIME	GRAB	FIELD IDENTIFICATION	NO. OF CONTAINERS	TOC (9060)	REMARKS
93.0176 05	3-8-93			TM5 -6 TO +12 MLLW	1	X	ORGANOTINS
93.0177 05				TM6 -6 TO +12 MLLW	1	X	MONO-, DI-, TRI-,
93.0178 05				TM7 -6 TO +12 MLLW	1	X	TETRABUTYLTIN
93.0179 05				TM8 -6 TO +12 MLLW	1	X	
93.0180 05				TM9 -6 TO +12 MLLW	1	X	
93.0196 05	3-11-93			TM5 -24 TO -30	1	X	
93.0197 05				TM6 -24 TO -30	1	X	
93.0198 05				TM7 -24 TO -30	1	X	NUMBERS FOR LABEL OUT OF SEQUENCE DUT OK
93.0201 05				TM8 -30	1	X	
93.0202 05				TM9 -30	1	X	
93.0209 05	3-10-93			MACE 6	1	X	
93.0210 05				MACE 7	1	X	
93.0211 05				MACE 8	1	X	
93.0212 05				MACE 9	1	X	
93.0213 05				MACE 10	1	X	

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	3-17-93	12:22	[signature]				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received for Lab	Date	Time	REMARKS	
			[signature]	3/17/93	1530		

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DEPARTMENT OF THE ARMY
South Pacific Division, Corps of Engineers
Division Laboratory
Sausalito, California

PAC. ENV.

CHAIN OF CUSTODY RECORD

PROJECT NAME: MORRO BAY HARBOR						NO. OF CONTAINERS	TOC (9060)	TOTAL SULFIDES (9030)	OIL & GREASE (9071)					REMARKS
SAMPLERS: (signature)														
LAB ID	DATE	TIME	GRAB	COMP	FIELD IDENTIFICATION									
93-0174-01	3-16-93				MOLE 11	1	X	X	X					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	3-17-93	12:22	[signature]				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received for Lab	Date	Time	REMARKS	
			[signature]	3/17/93	1530		

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APPENDIX D

MAILING LIST

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
501 West Ocean Blvd. Suite 4200
Long Beach, CA 90802-4221
ATTN: ROBERT HOFFMAN

U.S. Department of the Interior
Fish and Wildlife Service
Ecological Enhancement Office
2140 Eastman Ave. Suite 100
Ventura, CA 93003
ATTN: NAOMI MITCHELL

Environmental Protection Agency, Region IX
75 Hawthorne St.
San Francisco, CA 94105
ATTN: JOHN AMDUR

Commander
11th Coast Guard District
400 Ocean Gate Blvd.
Long Beach, CA 90822-2399
ATTN: LT. PETE BARNETT

Department of the Navy
Defense Fuel Supply Point
3300 Panorama Drive
Morro Bay, CA 93442

U.S. Army Corps of Engineers
South Pacific Division
630 Sansome St. Room 720
San Francisco, CA 94111-2206

California Department of Fish and Game
Marine Resources
330 Goldenshore Suite 50
Long Beach, CA 90802
ATTN: DICK NITSOS

California Department of Fish and Game
213 Beach
Morro Bay, California 93442
ATTN: BOB HARDY

Executive Officer
Regional Water Quality Control Board
Central Coast Region
81 Higuera St. Suite 200
San Luis Obispo, CA 93401-5427
ATTN: JESSIE NIGHSWONGER

California Coastal Commission
45 Fremont St. Suite 2000
San Francisco, CA 94105
ATTN: JAMES RAIVES

State of California
Department of Parks and Recreation
3220 South Higuera Street, Suite 311
San Luis Obispo, CA 93401
ATTN: VINCE CICERO; DAVID SEARS

State Lands Commission
100 Howe Ave. Suite 100 South
Sacramento, CA 95825
ATTN: BETTY EUBANKS

The Resources Agency of California
1416 Ninth Street
Sacramento, CA 95814

State Clearing House
1400 Tenth Street, Room 121
Sacramento, CA 95814

Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

California Department of Boating & Waterways
1629 S Street
Sacramento, CA 95814

State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001

Morro Bay State Park
Museum of Natural History

Morro Bay, CA 93442
ATTN: RANGER

Air Pollution Control District
San Luis Obispo County
2156 Sierra Way, Suite B
San Luis Obispo, CA 93401
ATTN: LARRY ALLEN

Director
Department of Parks and Beaches
County of San Luis Obispo
1009 Monterey
San Luis Obispo, CA 93408

Environmental Coordinator
San Luis Obispo County Administrative Ofc
County Government Center
San Luis Obispo, CA 93408

Director, Planning Department
County of San Luis Obispo
County Government Center
San Luis Obispo, CA 93408

Librarian
City-County Library
County of San Luis Obispo
1034 Bishop Street
San Luis Obispo, CA 93408

City Engineer
City of Morro Bay
695 Harbor
Morro Bay, CA 93442

Director of Public Works
City of Morro Bay
695 Harbor
Morro Bay, CA 93442

Director of Planning
City of Morro Bay
595 Harbor
Morro Bay, CA 93442

Morro Bay Chamber of Commerce
895 Napa, Suite A1
P.O. Box 876
Morro Bay, CA 93442

Citizen's Advisory Association
of San Luis Obispo County
P.O. Box 15247
San Luis Obispo, CA 93406

Civic Action League of Morro Bay
P.O. Box 245
Morro Bay, CA 93442

Morro Bay Commercial Fisherman's Association
P.O. Box 450
Morro Bay, CA 93442

Morro Bay Boat Owner's Association
P.O. Box 36
Morro Bay, CA 93442

Port San Luis Obispo Harbors District
P.O. Box 248, Pier 3
Avila Beach, CA 93424

Harbor Master
City of Morro Bay
1275 Embarcadero
Morro Bay, CA 93442

Harbor Advisory Board
City of Morro Bay
c/o Harbor Department
1275 Embarcadero
Morro Bay, CA 93442

U.C. Santa Cruz
Predatory Bird Research Group
Lower Quarry
Santa Cruz, CA 95064
ATTN: BRIAN WALTON

Point Reyes Bird Observatory
4990 Shoreline Highway
Stinson Beach, CA 94970

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ATTN: GARY PAGE

Audubon Society, Morro Coast Chapter
2264 Del Norte
Los Osos, CA 93401

The Nature Conservancy
P.O. Box 15810
San Luis Obispo, CA 93406

Morro Bay Beautiful
P.O. Box 601
Morro Bay, CA 93443

Save Our Shellfish
P.O. Box 571
San Luis Obispo, CA 93406

Friends of the Estuary at Morro Bay
1261 Pasadena Dr.
Los Osos, CA 93402
ATTN: Donald S. Parham

Pacific Gas and Electric Company
1290 Embarcadero
Morro Bay, CA 93442
ATTN: PLANT MANAGER

Chevron Pipeline Company
4000 Highway 1
Morro Bay, CA 93442
ATTN: DISTRICT SUPERVISOR

Chevron Shipping Company
P.O. Box 910
San Pedro, CA 90733