

CALIFORNIA COASTAL COMMISSION

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

**RECORD PACKET COPY****TU 6a**STAFF REPORT AND RECOMMENDATIONON CONSISTENCY DETERMINATION

Consistency Determination No. **CD-022-99**
Staff: JRR-SF
File Date: 3/8/99
45th Day: 4/22/99
60th Day extended to: 5/14/99
Commission Meeting: 5/11/99

FEDERAL AGENCY: **CORPS OF ENGINEERS**

DEVELOPMENTLOCATION:

Marina del Rey (Exhibits 1-3), Dockweiler Beach & Redondo Beach (Exhibits 2, 4 & 5), and Port of Long Beach (Exhibits 6-8)

DEVELOPMENTDESCRIPTION:

Maintenance dredging of up to 500,000 cu. meters of material with nearshore disposal of up to 150,000 cu. meters of clean sandy sediment at Dockweiler and Redondo Beaches, and disposal of up to 350,000 cu. meters of contaminated material at Pier E, Slip 2, in the Port of Long Beach

SUBSTANTIVE FILE DOCUMENTS:

1. Consistency Determinations for Corps of Engineers maintenance dredging of Marina del Rey: CD-057-86, CD-023-88, CD-031-91, CD-053-92, CD-068-94, CD-088-94, CD-002-98, and CD-012-98.

2. Negative Determinations ND-112-94 and ND-022-96; for Corps of Engineers maintenance dredging of Marina del Rey.
3. Consistency Determination CD-94-98 for Corps of Engineers maintenance dredging of Los Angeles River estuary with disposal at Slip 2, Pier E, Port of Long Beach.
4. Permit No. 5-96-231-A1 for placement of contaminated material dredged from Pier T at Slip 2, Pier E, Port of Long Beach.
1. Port Master Plan Amendment No. 12, certified on 10/13/98 designating Slip 2 Pier E, Port of Long Beach as a disposal site for contaminated dredge material.
5. Results of Physical and Chemical Analysis of sediments from Marina del Rey, California, February 1999.
6. Department of the Army, Los Angeles District Corps of Engineers, Draft Environmental Assessment, Marina del Rey Harbor Maintenance Dredging, Los Angeles County, California, March 1999.

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (Corps) has submitted a consistency determination for maintenance dredging of the entrance and main channels of Marina del Rey Harbor, with nearshore disposal of clean sandy material at Dockweiler and Redondo Beache, and disposal of contaminated material at Pier E, Slip 2, at the Port of Long Beach. The Corps proposes to dredge up to 500,000 cubic meters of sediment from the north, south, and central navigation and entrance channels of the harbor. These areas will be dredged to project depths ranging from -6.1 to -7.6 meters below Mean Lower Low Water (MLLW). All of the beach suitable material (150,000 cu. meters) will be placed at nearshore sites adjacent to Dockweiler and Redondo Beach. Much of the material within the Marina del Rey channels are contaminated with heavy metals, pesticides, and other contaminants. This material (up to 350,000 cu. meters) is unsuitable for beach and ocean disposal and will be placed at Pier E, Slip 2, at the Port of Long Beach.

The proposed project is necessary to support recreational boating and public safety uses of Marina del Rey. The proposed project will not significantly affect water quality because of the monitoring and mitigation measures at the dredging site, and because the contaminated material will be placed at Pier E, Slip 2, behind dikes, and then covered with material dredged by the Port of Long Beach before the site is converted into a marine terminal. The proposed project will protect sand supply resources because suitable material dredged from Marina del Rey channels will be placed at two nearshore sites adjacent to Dockweiler and Redondo Beaches. These disposal sites are within the littoral system and material placed at these sites will nourish nearby beaches. Finally, the proposed project will avoid impacts to the California least tern, a federally listed endangered species. The Corps proposes to begin dredging after September 15, which is after the tern nesting season (April 1 through September 15). The project provides for

dredging 24 hours per day. Dredging during the night potentially affects roosting California brown pelicans, which are sensitive to nighttime disturbances. The Corps needs to dredge at night in order to complete the project during the time period of availability of the Pier E disposal site, in order to maximize use of that site. The Corps will mitigate this potential impact by maintaining a minimum 120 ft. separation from the breakwater where the pelicans roost. The Corps will monitor night dredging impacts (both pre-project and during the dredging) on pelican behavior, and, if warranted, increase the buffer from the dredge so that the operation is a sufficient distance from the pelicans to avoid significant disturbance. With these measures, the project is consistent with the recreational boating, dredging, water quality, sand supply, habitat policies of the California Coastal Management Program (CCMP).

STAFF SUMMARY AND RECOMMENDATION:

I. Project Description.

The U.S. Army Corps of Engineers (Corps) has submitted a consistency determination for maintenance dredging of the entrance and main channels of Marina del Rey Harbor, with nearshore disposal of clean sandy material at Dockweiler and Redondo Beaches, and disposal of contaminated material at Pier E, Slip 2, at the Port of Long Beach. The Corps proposes to dredge up to 500,000 cubic meters of sediment from the north, south, and central navigation and entrance channels of the harbor. These areas will be dredged to channel design depths ranging from -6.1 to -7.6 meters below Mean Lower Low Water (MLLW). All of the beach suitable material (150,000 cu. meters, consisting of the top layers of Area 1, and approximately one-half of Area 2 (to -22 feet Mean Lower Low Water (MLLW)) will be placed at nearshore sites adjacent to Dockweiler and Redondo Beach. Much of the material within the Marina del Rey channels are contaminated with heavy metals, pesticides, and other contaminants. This material (up to 350,000 cu. meters, the remainder of Area 2 and Areas 3 -5) is unsuitable for beach and ocean disposal and will be placed at Pier E, Slip 2, at the Port of Long Beach "...as time, funding, and disposal site capacity allow."

In addition, the proposed dredge area was recently "amended" by the Corps to include:

... a shoal immediately adjacent to the north jetty, between the jetty and the federal navigation channel limits (see Figure 2) [Exhibit 9]. This shoal poses a potential hazard to navigation. The more imminent danger, however, is to people who attempt to use the unstable shoal as a beach during low tide, despite the presence of warning signs. This material has been tested and found to be suitable for beach replenishment, and will be taken to either Redondo or Dockweiler Beach.

II. Status of Local Coastal Program.

The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the Commission certified the LCP and incorporated it into the CCMP, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The Commission has not incorporated the Los Angeles County LCP into the CCMP.

III. Federal Agency's Consistency Determination.

The Corps of Engineers has determined the project to be consistent to the maximum extent practicable with the California Coastal Management Program.

IV. Staff Recommendation:

The staff recommends that the Commission adopt the following motion:

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

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

Concurrence

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

V. Findings and Declarations:

The Commission finds and declares as follows:

A. Recreational Boating. Section 30220 of the Coastal Act provides that:

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

Section 30224 of the Coastal Act provides, in part, that:

Increased recreational boating use of coastal waters shall be encouraged

Marina Del Rey is one of the larger recreational boat harbors on the West Coast. The land use plan (LUP) for Marina Del Rey describes the area as follows:

The primary use [of the harbor] is recreational boating for which the harbor was designed, providing 6,189 boat slips plus dry storage and launching. (Marina Del Rey LUP, p. I-1)

Shoaling of the entrance and main channels interferes with recreational boating at the Marina. The design depth of the Marina Del Rey's entrance channels is 20 feet below mean lower low water (MLLW). The Corps describes the current situation as follows:

Navigation safety in Marina del Rey Harbor has been impacted by shoaling at the jetties and the approach and entrance channels. Dredging is critical to maintaining the navigability of the harbor. If dredging does not occur, subsequent storms could carry enough sediment and debris from Ballona Creek and the ocean to close the harbor. Closure of the harbor would prevent thousands of recreational and commercial vessels from leaving or entering the port, and would preclude rescue operations by the Coast Guard stationed within the harbor.

The proposed project will remove shoaling in the harbor's channels. Additionally, the project includes dredging of contaminated sediment from the south channel. This channel has not been dredged for several years because the Corps lacked a suitable disposal alternative. As described fully below, the Port of Long Beach has provided the Corps with an environmentally and economically acceptable alternative for disposal of contaminated sediment allowing the south channel to be dredged. This dredging will significantly improve recreational boating. However, the proposed dredging could interfere with recreational boating during operation of the dredge. This impact will be temporary, lasting for the duration of the project, and is insignificant when compared to the benefit from removing the shoaling hazard. Therefore, the Commission finds the project consistent with the recreational boating policies of the CCMP.

B. Dredging and Filling. Section 30233 of the Coastal Act provides the following in relevant part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less

environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

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

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

The proposed maintenance dredging and disposal project needs to be examined for consistency with Section 30233 of the Coastal Act. Under Section 30233, dredging and filling of open waters, including disposal of dredge materials, is limited to those cases where the proposed project is an allowable use, is the least damaging alternative, and where mitigation measures have been provided to minimize environmental impacts. The disposal of dredged materials from the maintenance of navigation channels is an allowable use under Section 30233(a)(2). The proposed disposal locations are nearshore disposal sites (Dockweiler and Redondo Beaches) for material suitable for beach replenishment and a Commission-approved disposal site for contaminated sediments, and are the least damaging alternatives for disposal of the dredged materials. As discussed below, mitigation measures have been incorporated into the project where necessary to protect coastal resources (such as least tern, grunion, snowy plover, and pelican habitat). Therefore, the Commission finds that the proposed project is consistent with the allowable use, alternatives, mitigation, and sand supply tests contained in the dredge and fill policy of the California Coastal Management Program (Section 30233 of the Coastal Act).

C. Water Quality and Marine Resources: Section 30230 of the Coastal Act states that:

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

Section 30231 of the Coastal Act states that:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

The proposed project involves, in part, the disposal of suitable material at two nearshore sites adjacent to public beaches (Dockweiler and Redondo). The primary concerns regarding nearshore disposal of dredged material is the suitability of the material for sand replenishment and the presence and level of contamination in the sediments.

Analysis of the sediments proposed for nearshore disposal include physical and chemical tests. These tests demonstrate that some of the proposed dredged material is chemically and physically suitable for beach replenishment. These areas include Area 1 top and bottom and half of the top of Area 2 nearest the north jetty (as represented by the top halves of test cores 4 and 7, Exhibit 3). The Corps has modified its project to limit beach disposal to the areas identified above. Therefore, the beach disposal will not adversely affect water quality. While the disposal will result in minor, short-term impacts to existing nearshore habitat, the disposal area is regularly subject to active wave action and affected species will recolonize the area. The Commission previously found that these types of impacts are not significant when it concurred with other dredge material disposal operations at southern California nearshore disposal sites. In conclusion, the proposed disposal of clean dredge materials at the proposed nearshore areas at Dockweiler and Redondo beaches will not significantly affect coastal marine resources. Therefore, the Commission finds that the proposed project is consistent with the marine resources and water quality protection policies of the California Coastal Management Program (Sections 30230 and 30231 of the Coastal Act).

The proposed project also includes the dredging and disposal of contaminated sediment. After testing of sediment chemistry, the Corps (and EPA) determined these materials (the rest of Area 2 and Areas 3-5) to be unsuitable for nearshore, ocean or other unconfined aquatic disposal. The Corps proposes to place these sediments within the proposed Pier E/Slip 2 landfill in the Port of Long Beach. In reviewing Coastal Development Permit 5-96-231-A1 (October 1998) and Port Master Plan Amendment No. 12 (November 1998),

the Commission approved the designation of the Pier E/Slip 2 landfill as a site for the placement of contaminated dredged sediments.

The proposed landfill disposal would allow contaminated dredge material to be beneficially re-used. The use of this material will not have significant environmental effects. The placement of contaminants will be adequately isolated from the marine environment by the rock dike closing off the slip, by the 100-foot buffer between the dike and the contaminants, and by the existing upland on the remaining three sides of the slip. In conclusion, this element of the project will minimize environmental effects by ensuring the removal of contaminated sediments from the marine environment and the permanent isolation of those sediments in the Pier E/Slip 2 landfill. The Commission therefore concludes that the proposed dredging and disposal of contaminated sediments from Marina del Rey is consistent with the water quality and marine resource policies of the CCMP (Sections 30230 and 30231 of the Coastal Act).

D. Endangered Species. Section 30240 of the Coastal Act provides that:

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

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

The proposed project may affect two federally listed species: the California brown pelican (*Pelecanus occidentalis californicus*) and California least tern (*Sterna antillarum browni*). Several species of marine mammals and sea turtles may be transient visitors to the harbor and the LA-2 disposal site, but the project will not affect these species. In its environmental assessment, the Corps describes the habitat needs of the federally listed species as follows:

1. California Brown Pelican (*Pelecanus occidentalis californicus*). *The California brown pelican is a frequent visitor of many coastal harbors and has been observed throughout the year, but is most conspicuous in the fall and winter following the breeding season on Anacapa and Santa Barbara Islands from January to March.*

Pelicans use the breakwaters in southern California extensively as a day-time roost; the Marina del Rey breakwater is also an important night (communal) roost site. Day-time roost requirements appear to be areas

where birds can see far enough to detect predators and where birds have shelter from wind, waves, and the elements. Night or communal roosts are generally surrounded by water, provide protection from the elements, and have the capacity to support hundreds of birds (Jaques and Anderson, 1987).

From December 1991 through September 1993, surveys were conducted at Mugu Lagoon and other southern California pelican roost sites to determine seasonal use, diurnal attendance patterns, and effects of human disturbances (Jaques, Strong, and Keeney, 1995). Compared to Mugu Lagoon, the Marina del Rey breakwater was found to be more consistently used as a night roost by large numbers of pelicans. Most surveys were conducted at dawn and dusk, in attempts to obtain peak counts. Numbers exceeded 1,000 birds during each survey from December 1991 to June 1992, peaking at 1,640 birds. Fewer disturbances were noted at detached breakwater roosts such as Marina del Rey, than at small estuaries which may be approached relatively closely by people and dogs (Jaques, Strong, and Keeney, 1995).

Brown pelicans are extremely tolerant of human activity at day-time roosts and are often seen roosting and loafing on breakwaters, piers, buoys, harbors, and wharves (U.S. Army Corps of Engineers, 1991). Birds are far less tolerant of any types of disturbances on night roosts, however, and are known to quickly flush from roost at the slightest disturbances. Jaques and Anderson (1987) noted that pelicans were more likely to abandon roosts when suddenly approached by people or animals on foot. Boats or windsurfers passing the night roost would simply result in a shuffling of birds within a short range.

2. California Least Tern (*Sterna antillarum browni*). *The California least tern migrates from Mexico and Central and South America to coastal south-central California to breed. During their stay in California, the birds forage for fish in the nearshore coastal waters and embayments. Most foraging occurs within two miles of breeding colonies (Massey and Atwood, 1982). A nesting colony is known to occur at Venice Beach, immediately north of the entrance to the Marina. The Venice Beach least tern nesting area is surrounded by a chain-link fence, in an attempt to protect the colony from small mammal predation and human disturbance. In the past, nesting also occurred on Dockweiler Beach, but that nesting area is no longer protected, and nesting has not occurred on that beach in recent years.*

The least tern's nest usually occurs in the open expanse of lightly colored sand or dirt or dried mud, next to lagoons or estuaries or on open sandy beaches. The nest generally consists of merely a small depression or scrape in the soil or sand, and is lined with pebbles or sea shell fragments. Nesting usually concludes by mid-August, with post-breeding groups still present into September (USFWS 1980).

Foraging behavior of least terns in the project area and other locations was studied for several years in the late 1970's and early 1980's. Reports on foraging and nesting ecology include Atwood and Minsky (1983), Massey and Atwood (1983), and Massey and Atwood (1980). Massey and Atwood (1980) observed that the majority of feeding activity during courtship, incubation, and rearing of chicks occurred in nearshore ocean waters; an average of 7% of observed foraging activity from May through July of that year occurred within the harbor's entrance channel.

Both of these species forage in the Marina del Rey area and could be affected by increases in turbidity and resuspension of contaminated sediment. Because the Corps intends to begin dredging after September 15, and complete operations before the beginning of the tern-nesting season on April 1, the potential for significant adverse effects on least terns (as well as grunions) will be minimized. Pelicans, on the other hand, roost in Marina del Rey area during the time of year proposed for dredging. Additionally, the Corps proposes to dredge 24 hours per day. The night dredging could disturb the pelicans, which are sensitive to disturbance at night and which roost on the nearby detached breakwater. The Corps needs to dredge at night in order to complete the project during the time period of availability of the Pier E disposal site, in order to maximize use of that site. However, the Corps has developed a monitoring and mitigation plan including measures to: (1) avoid any night dredging within 120' of the detached breakwater; (2) monitor pelican use for 4 nights prior to dredging and compare pelican counts with "during-project" conditions; (3) if monitoring reveals a 50% reduction in total numbers of birds, either through complete avoidance or roost abandonment, and if this reduction appears to be caused by dredge-related activities, then mitigation may be required (and the Corps will continue to monitor and states that "If there continues to be a significant decline from pre-project densities, mitigation will be required"); and (4) if mitigation is warranted:

Mitigation will consist of designating an area where night dredging would not be allowed. If necessary, this area will be expanded by 50' increments until either no impacts are noted, or night dredging is restricted to a minimum of 270' from the dredge. Given the narrow dredge area (most dredging will take place within 425' from the

breakwater), and the importance of dredging a maximum quantity of contaminated sediment, it would not be practical to continue widening the restricted area.

In analyzing the effects of these potential preclusion areas, the Corps states:

Designation of an area in which night dredging would not be allowed, would potentially affect the Corps' ability to remove all the contaminated sediment from this area. It is estimated that approximately 35,000 cubic meters of contaminated sediment has shoaled in the area between 120' and 270' from the breakwater. On an average, each 50-foot increment represents approximately 1/3 of this material. In a worst-case, restrictive dredging would result in all this material (or the same quantity of contaminated material in another area) remaining undredged.

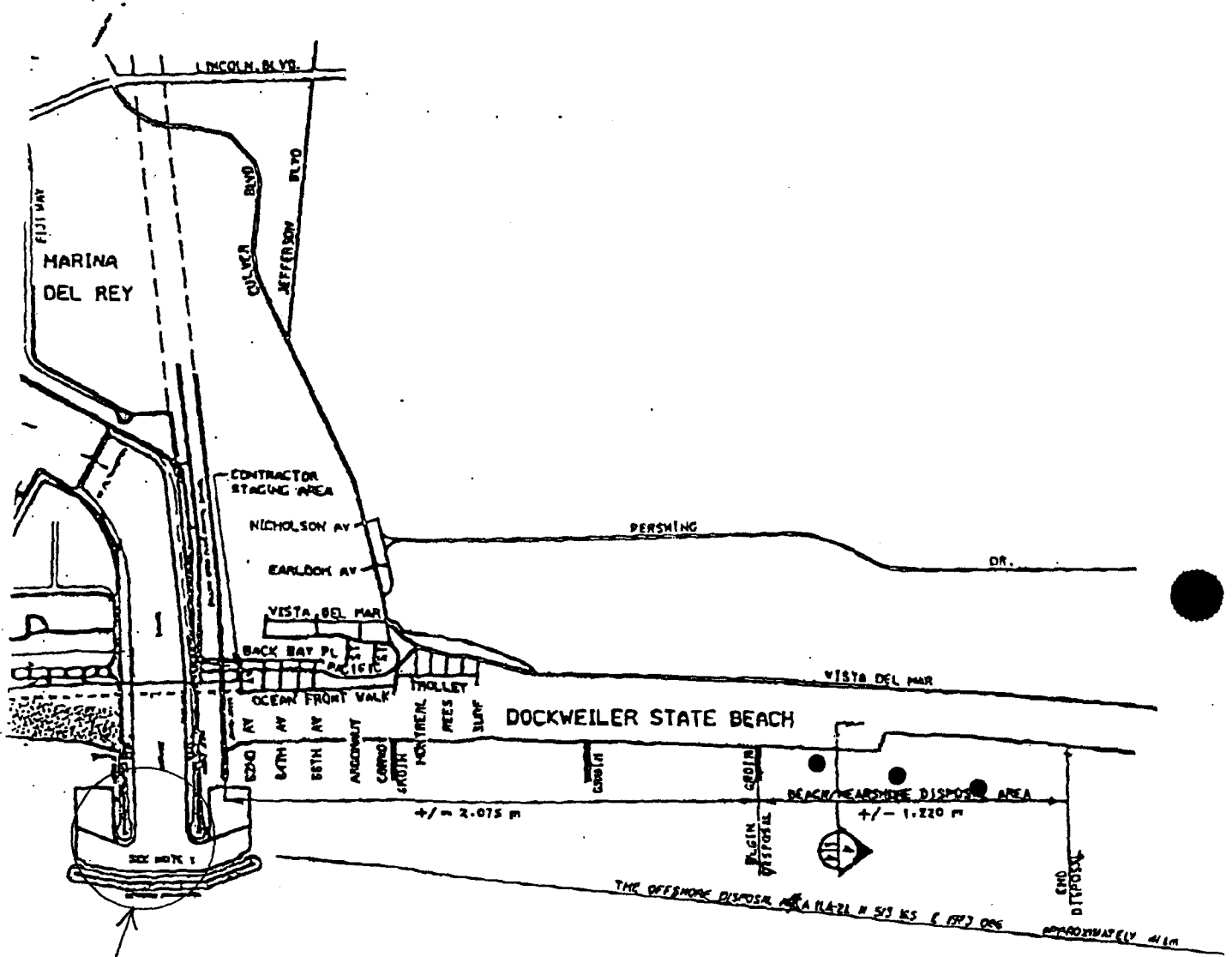
The Corps has coordinated this plan with the U.S. Fish and Wildlife Service. The Corps also notes that the Commission has authorized night dredging at Marina del Rey during past dredging activities. The Commission finds that the proposed monitoring, and if necessary, mitigation measures are adequate to avoid significantly adverse effects on the brown pelican. Therefore, the Commission finds that, with these measures, the proposed project is consistent with the environmentally sensitive habitat protection policies of the California Coastal Management Program (Section 30240 of the Coastal Act).

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

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

The Corps of Engineers proposes to dispose approximately 150,000 cubic meters of clean dredged material (from Area 1 and the top half of Area 2 nearest the north jetty) at two different nearshore sites (at Dockweiler Beach and Redondo Beach). These disposal sites are adjacent to public beaches and material disposed of at these sites is suitable for beach nourishment. Grain size analysis indicates that the proposed dredge material is suitable for beach replenishment, and that the contaminated material not proposed to be used for beach replenishment is either physically and or chemically incompatible with the receiver beaches. As described above, that contaminated material will be disposed at Slip 2, Pier E. Since that material is unsuitable for sand replenishment, disposal at Slip 2 will not affect sand supply resources. Therefore, the Commission finds that the project is consistent with the sand supply policies of the CCMP (Section 30233 of the Coastal Act).

G/Land use/federal consistency/staff reports/1999/022-99



DREDGE
AREA

Disposal
Proposed Sampling Locations ●
(Dockweiler)

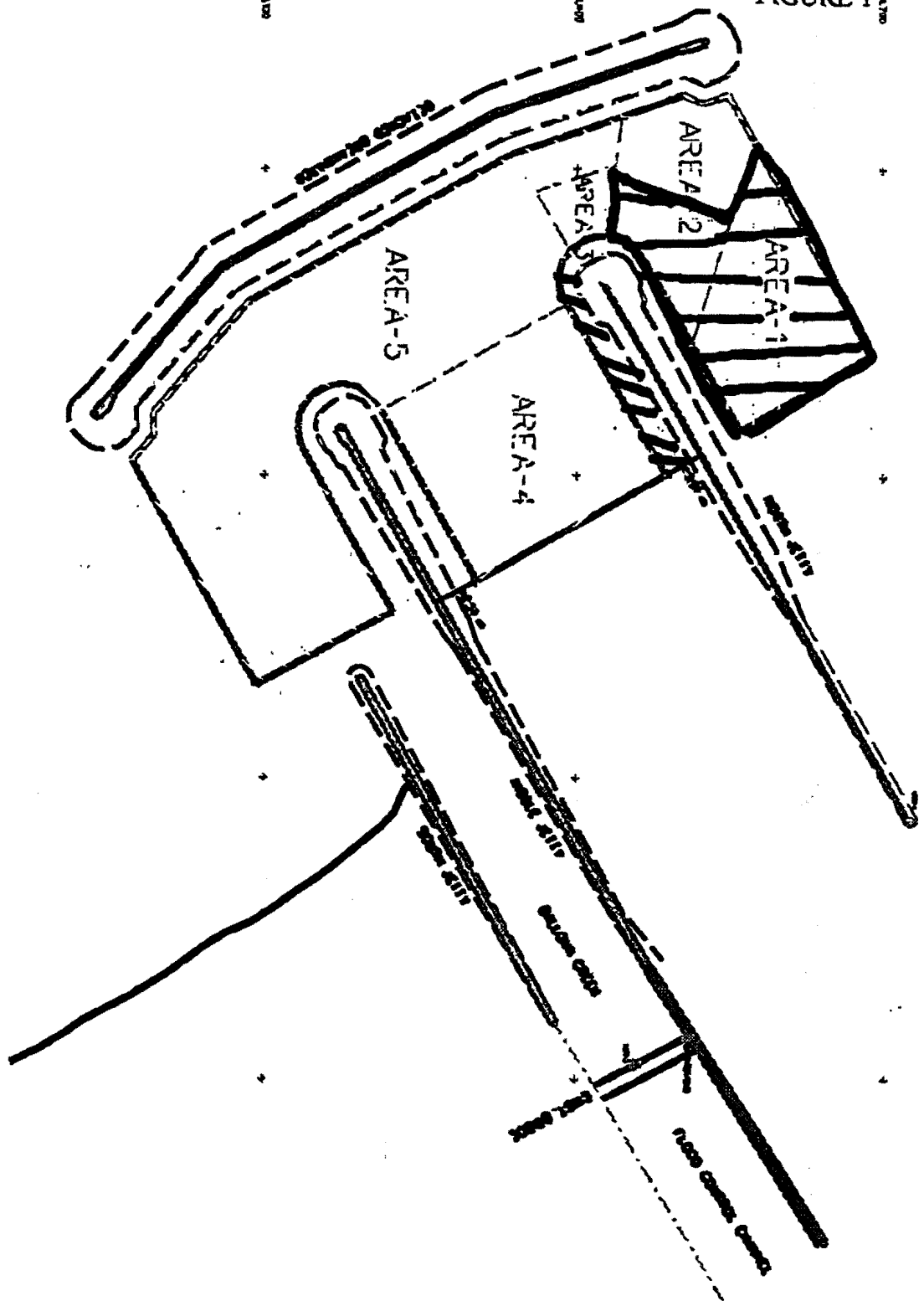
Figure 2

Sampling Locations at Dockweiler Beach

Marina del Rey, Army Corps of Engineers, Los Angeles

EXHIBIT NO.	2
APPLICATION NO.	
	CD-22-99

FIGURE 1



SLIP 2



BEACH COMPATIBLE

EXHIBIT NO. 3
APPLICATION NO.
00-22-99

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FIGURE 4
Redondo Beach Disposal Site

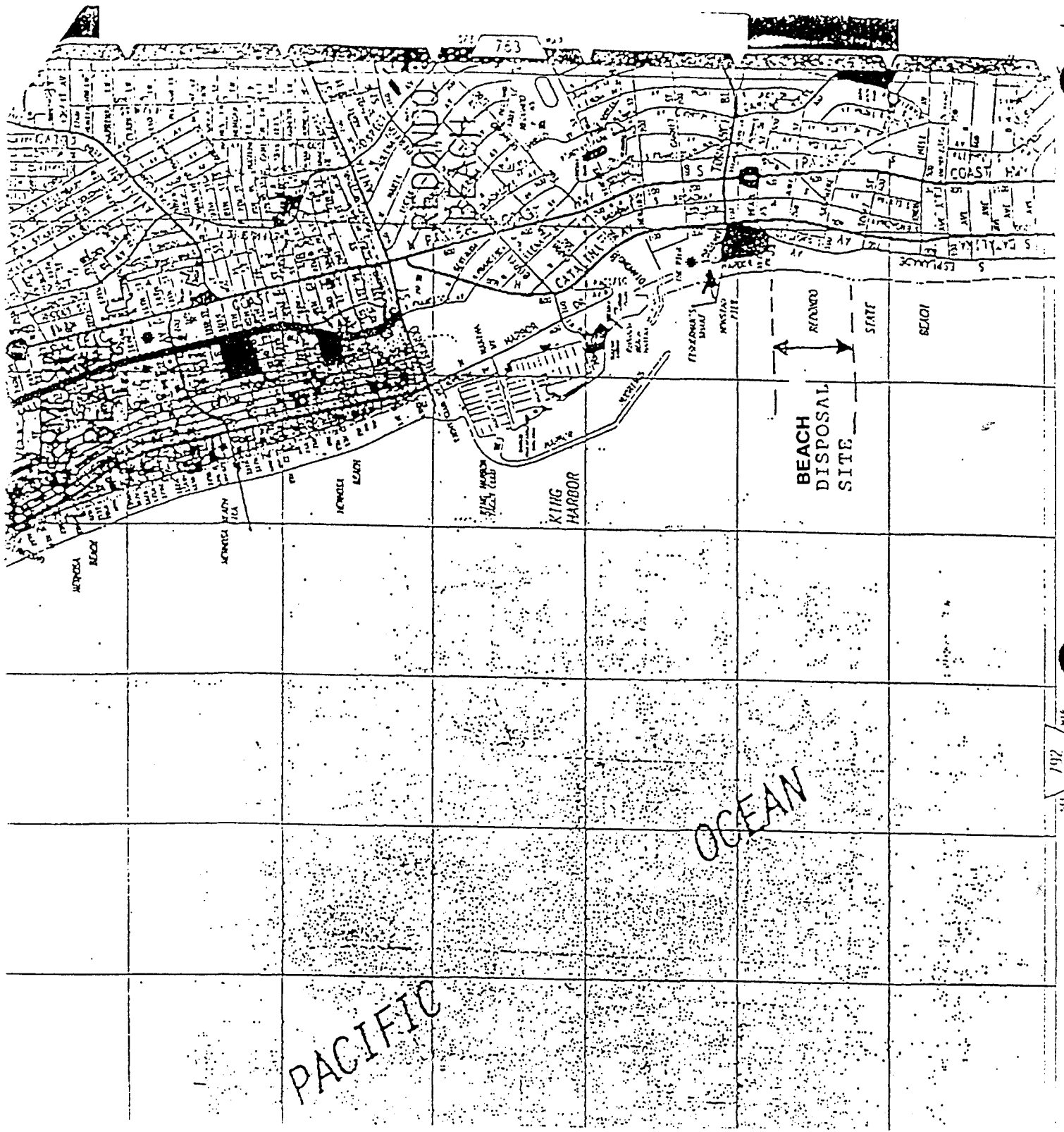
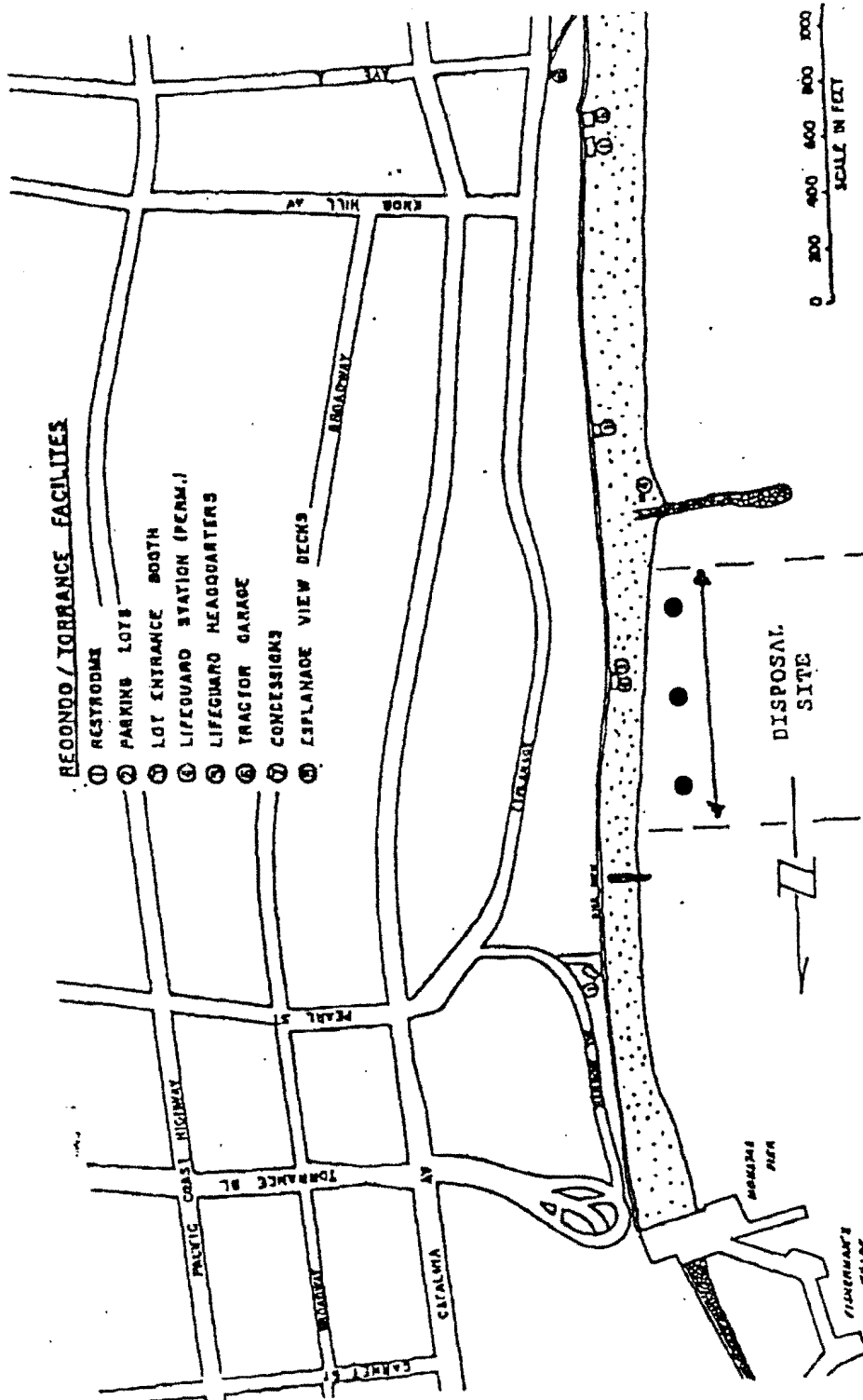


EXHIBIT NO.	4
APPLICATION NO.	
	CD-22-99



Proposed Sampling Locations

Figure 3

Sampling Locations at Redondo Beach

EXHIBIT NO.	5
APPLICATION NO.	
	CD-22-99

FIGURE 6
Slip 2 Disposal Site

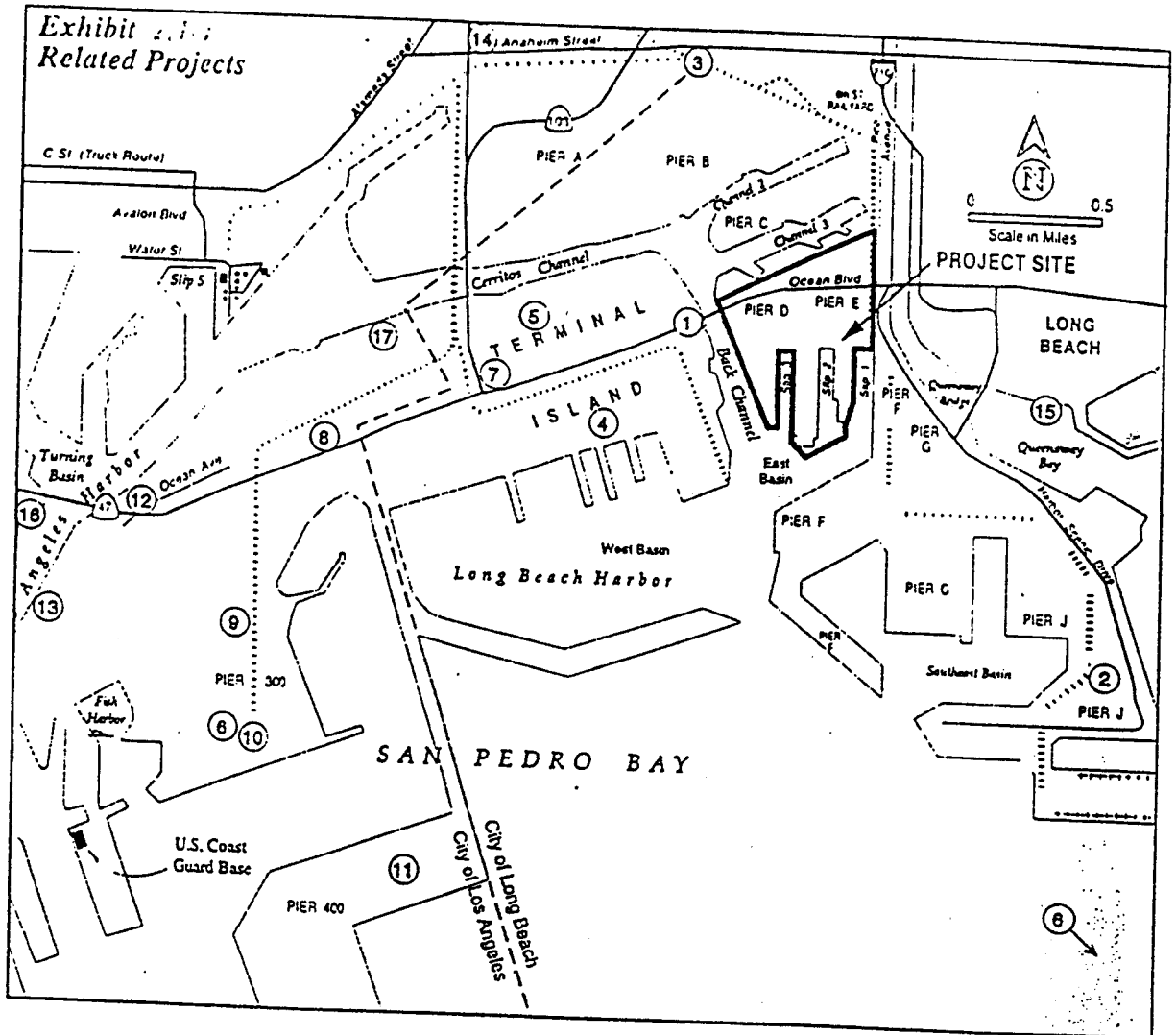


EXHIBIT NO.	6
APPLICATION NO.	
CD-22-99	

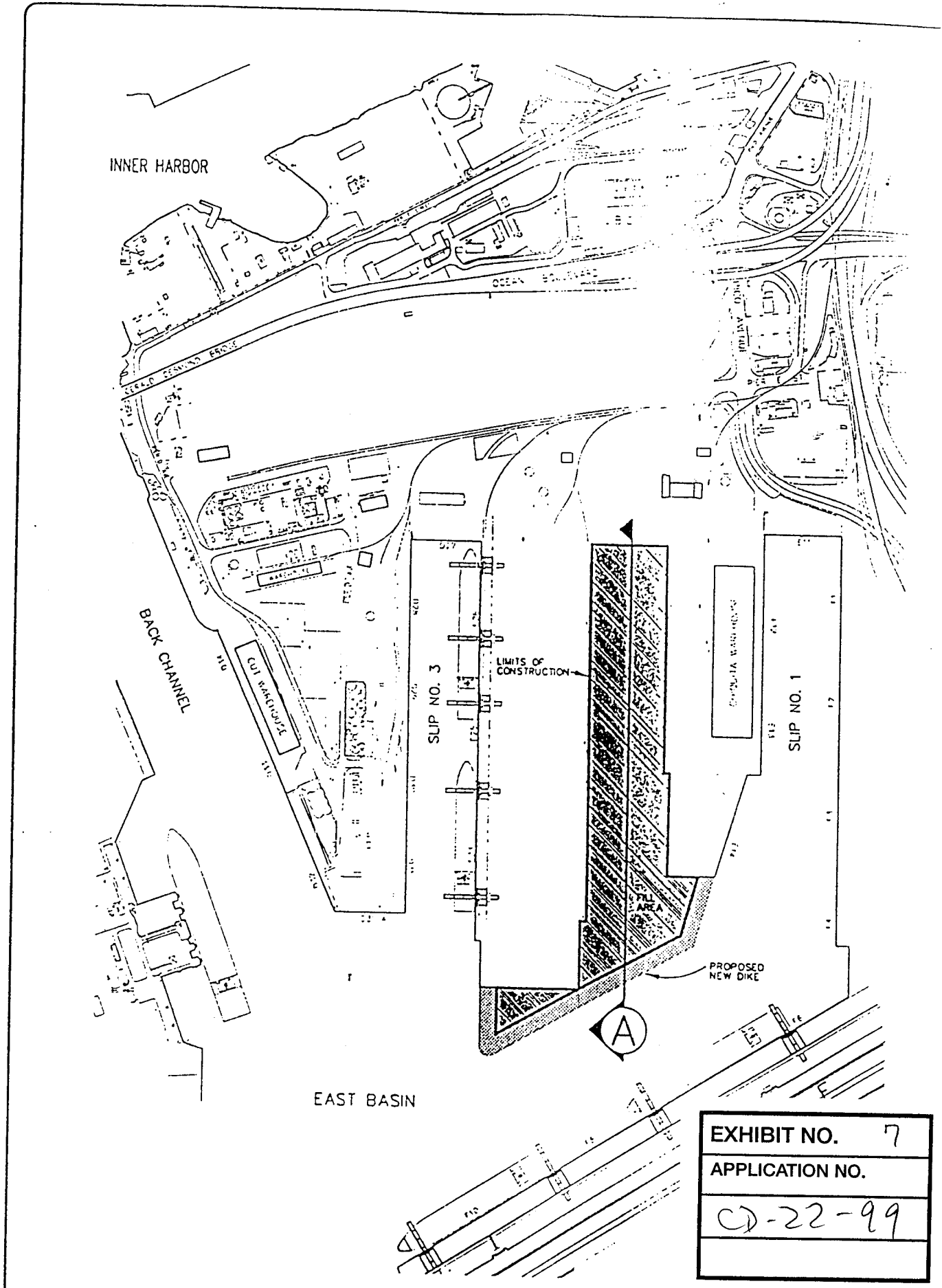
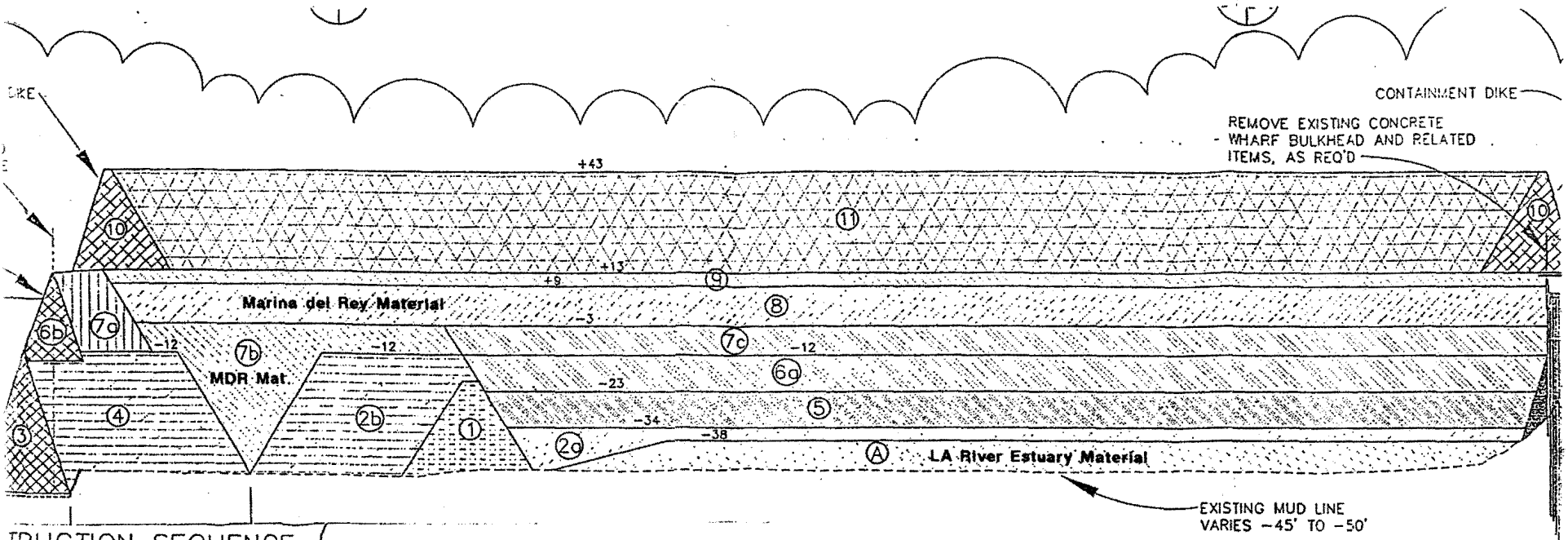


EXHIBIT NO.	7
APPLICATION NO.	
	CJ-22-99



CONSTRUCTION SEQUENCE

1. REMOVE MATERIAL, BY OTHERS
 2. DIKE FROM WHARF EXCAVATION
 3. FROM SLIP 2
 4. MATERIAL FROM WHARF EXCAVATION
 5. PRESENT ROCK DIKE
 6. MATERIAL FROM WHARF EXCAVATION
 7. MATERIAL FROM AREA II
 8. TIER A & B MATERIAL
 9. PRESENT ROCK DIKE

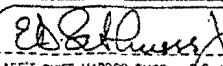
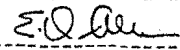
- △ 7a. TIER C+ MATERIAL
- △ 7b. TIER C PLUS MARINA DEL REY MATERIAL
- △ 7c. TIER A & B MATERIAL
- 8. TIER C PLUS MARINA DEL REY MATERIAL
- 9. IMPORTED LAND BASED SANDY MATERIAL
- 10. IMPORTED FILL MATERIAL
- 11. SURCHARGE-SUITABLE HYDRAULIC DREDGE MATERIAL


NOTES-

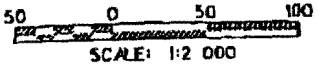
1. MARINA DEL REY MATERIAL EQUALS 300,000c.m. MAX.
2. IT IS THE INTENT OF THE DISPOSAL PLAN TO LAYER THE MATERIALS AS SHOWN. A DIFFERENCE OF FOUR (4) FEET BETWEEN THE HIGH AND LOW POINTS OF EACH MATERIAL LEVEL IS ACCEPTABLE, EXCEPT THAT MATERIALS SHALL NOT OVERFLOW ADJACENT MATERIAL FROM NORTH TO SOUTH.

EXHIBIT NO. 8
 APPLICATION NO. CD-22-99

DRAWN ALC DATE 11/98
 DESIGNED JDM P.E. NO. C-36820
 PROJ. MGR. JDM P.E. NO. C-36820
 SECT. HEAD. RRR P.E. NO. C-17747


 ASST CHIEF HARBOR ENGR. P.E. NO. C-56108

 CHIEF HARBOR ENGINEER P.E. NO. C-24528


THE PORT OF LONG BEACH
 925 HARBOR PLAZA P.O. BOX 570 LONG BEACH CALIFORNIA 90801 TEL (562) 437



N 551.400

N 551.100

DETACHED BREAKWATER

North Jetty Shoal Area
 (approx 50,000 M²)

NORTH JETTY

ENTRANCE

MIDDLE JETTY

SOUTH JETTY

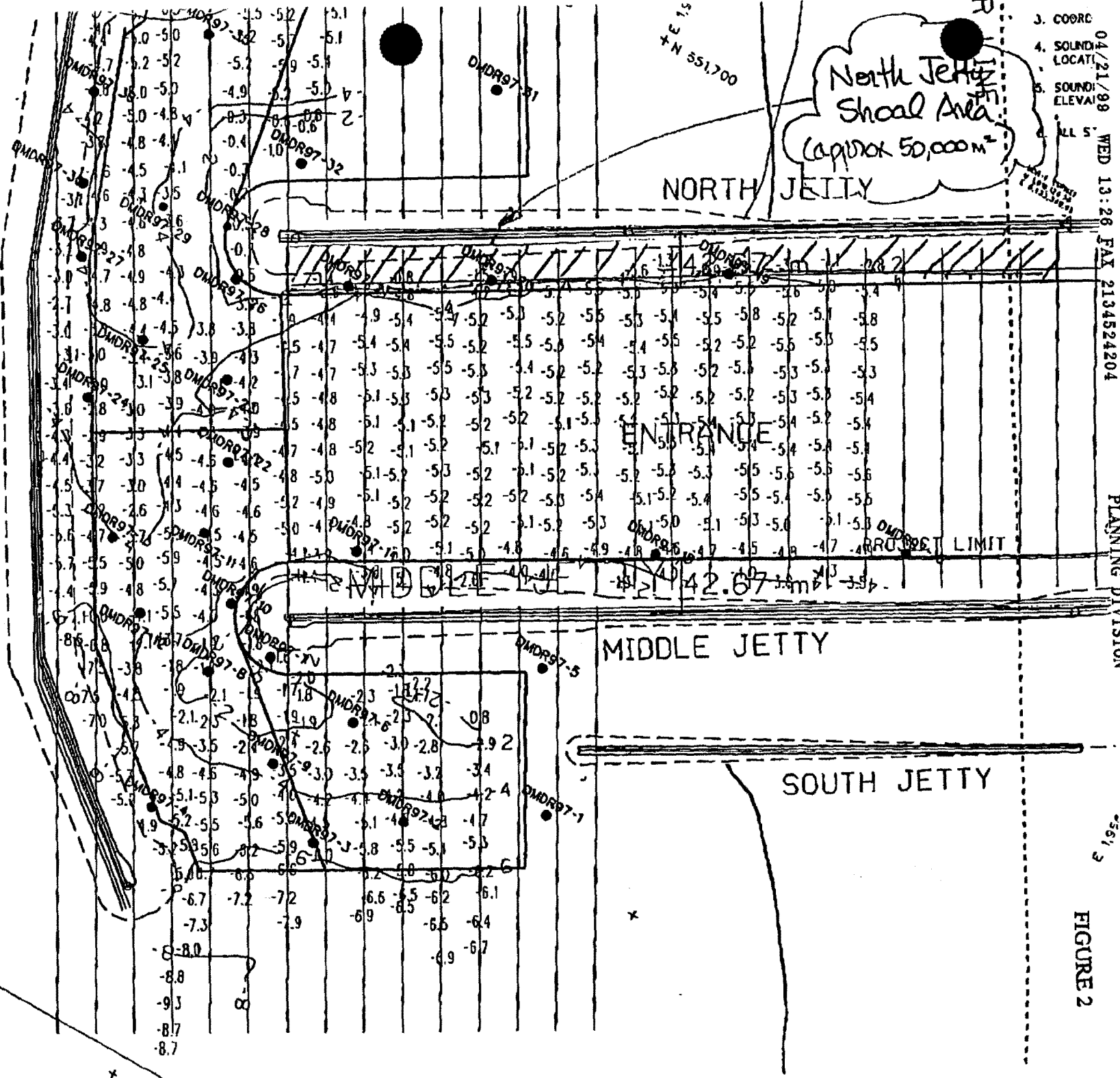


EXHIBIT NO.	9
APPLICATION NO.	CD-22-99

3. COORC 04/21/99 WED 13:28 FAX 2134524204
 4. SOUND LOCATI
 5. SOUND ELEVAI
 ALL 5'
 PLANNING DIVISION
 FIGURE 2
 008

