

**CALIFORNIA COASTAL COMMISSION**

45 FREMONT, SUITE 2000  
SAN FRANCISCO, CA 94105-2219  
VOICE AND TDD (415) 904-5200  
FAX (415) 904-5400

**RECORD PACKET COPY****Th 16a****STAFF RECOMMENDATION****ON CONSISTENCY DETERMINATION**

Consistency Determination No.	CD-039-04
Staff:	LJS-SF
File Date:	7/7/2004
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Commission Meeting:	8/12/2004

**FEDERAL AGENCY: U.S. Army Corps of Engineers****DEVELOPMENT****LOCATION:**Upper Newport Bay, Orange County (**Exhibits 1 and 2**)**DEVELOPMENT****DESCRIPTION:**

Phase 2 consistency determination for ecosystem restoration through dredging and habitat modifications

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

1. Draft Environmental Assessment for the Upper Newport Bay Ecosystem Restoration Project Mudflat Enhancements, Corps of Engineers, April 2004.
2. Draft EIS, Upper Newport Bay Ecosystem Restoration Feasibility Study, Public Draft Report, Corps of Engineers, May 2000.
3. Consistency Determination CD-072-00 (Corps of Engineers, Upper Newport Bay Restoration Project).

**EXECUTIVE SUMMARY**

The U.S. Army Corps of Engineers has submitted the second of two consistency determinations for its proposed Upper Newport Bay ecosystem restoration project. The first consistency

determination, CD-072-00, was concurred with by the Commission on August 9, 2000. As a part of that concurrence, the Corps agreed to a phased review of the overall project and to submit a second consistency determination that would include final design details, sediment test results, biological and water quality monitoring plans, and access and recreation improvements.

The 752-acre Upper Newport Bay Ecological Reserve is one of the last remaining southern California coastal wetlands that continues to play a significant role in providing critical habitat for a variety of migratory waterfowl and shorebirds, as well as several endangered species of animals and plants. The primary purpose of the proposed Upper Newport Bay restoration project is to develop a long-term management plan to control sediment deposition in Upper Newport Bay in order to preserve the health of the bay's habitats. Since obtaining the Commission's concurrence with CD-072-00, the Corps modified the restoration project design details in a cooperative effort with the inter-agency Habitat Evaluation Group, which includes representatives from the Corps, U.S. Fish and Wildlife Service, NOAA Fisheries, California Department of Fish and Game, Regional Water Quality Control Board, County of Orange, and City of Newport Beach.

The project would increase the tidal prism and reduce sedimentation damage by expanding and deepening the two in-bay basins, relocating a least tern island from the upper basin to the lower basin, creating wetlands and mudflats, and restoring side channels at several locations. The total volume of material to be dredged from the upper bay is approximately 2.4 million cubic yards. Dredged material would be disposed of at the LA-3 offshore disposal site, located approximately four miles southwest of the Newport Bay Harbor entrance, in the nearshore zone off Newport Beach, and at two California least tern nesting islands in the upper bay. Construction would last approximately two years and maintenance dredging for the proposed plan is expected to occur on average once every 21 years.

The project would protect and restore, where feasible, environmentally sensitive habitat, water quality, wetlands, rare, threatened and endangered species, and marine resources. The project is an allowable use for wetland dredging and filling (as restoration), is the least environmentally damaging feasible alternative, would provide net habitat benefits, includes habitat avoidance, minimization, and monitoring efforts, and is consistent with the applicable wetland, marine resource, sand supply, and environmentally sensitive habitat policies (Sections 30230-30233, and 30240) of the Coastal Act. The project also includes access and recreation benefits, both through habitat enhancement and the provision of additional interpretive features, and is consistent with the public access and recreation policies (Sections 30210-30214) of the Coastal Act.

#### **STAFF NOTE**

The Corps of Engineers has submitted the second of two consistency determinations for its proposed Upper Newport Bay ecosystem restoration project. The first consistency determination, CD-072-00, was concurred with by the Commission on August 9, 2000. As a part of that concurrence, the Corps agreed to a phased review of the overall project pursuant to 15 CFR Section 930.37(c):

*...[I]n cases where major Federal decisions related to a proposed development project will be made in phases based upon developing information, with each subsequent phase subject to Federal agency discretion to implement alternative decisions based upon such information (e.g., planning, siting, and design decisions), a consistency determination will be required for each major decision. In cases of phased decision making, Federal agencies shall ensure that the development project continues to be consistent to the maximum extent practicable with the State's management program.*

In its the Phase 2 consistency determination for the Upper Newport Bay restoration project the Corps agreed to include the final design details for the various habitat modifications, sediment test results for dredged materials, biological and water quality monitoring plans, and access and recreation improvements.

### **STAFF SUMMARY AND RECOMMENDATION**

**I. Background.** The 752-acre Upper Newport Bay Ecological Reserve is one of the last remaining southern California coastal wetlands that continues to play a significant role in providing critical habitat for a variety of migratory waterfowl and shorebirds, as well as several endangered species of animals and plants. The primary purpose of the proposed Upper Newport Bay restoration project is to develop a long-term management plan to control sediment deposition in Upper Newport Bay in order to preserve the health of the bay's habitats.

The first consistency determination (CD-072-00) for the proposed Upper Newport Bay restoration project was concurred with by the Commission on August 9, 2000. The Commission's adopted findings for CD-072-00 provide background information on Upper Newport Bay:

*Concerns over sedimentation and the long-term health of the Upper Newport Bay estuarine environment have been growing for several decades. The most significant contributor to change in the Upper Newport Bay estuary is increased sedimentation from the 118 square mile San Diego Creek watershed .... Intensive urban and agricultural development has resulted in the enlargement, creation or re-direction of channels in order to transport flows to Newport Bay that once drained into the Tustin Plain. The end result is a significant increase in storm water and sediment flows to Newport Bay. Early signs of trouble became evident during the particularly severe 1969 storm season when several storms deposited large volumes of sediment in the bay, breaching a large dike that enclosed defunct salt evaporation ponds in the upper portion of the bay. Since the 1970's, local citizens, government, academia, and landowners formed groups and committees to address the Bay's water quality problems. Efforts focused on both Newport Bay and the watershed, and included the initiation of Best Management Practices (BMP's) for agricultural lands and construction sites and construction of a number of sediment catch basins in the watershed to reduce sediment flows to the Bay. Two sediment control basins were constructed in the Upper Bay by a coalition of State, local and private agencies in the mid-1980's to trap the fine sediments that were flushed to the Bay during winter storms. Trash booms were deployed in several locations around the Bay's freshwater inlets. Monitoring programs were implemented for testing watershed and bay water quality. These measures improved the*

*general water quality of the bay and watershed, reducing the rate of degradation of the Upper Newport Bay habitats and the shoaling in the navigation channels. A California Department of Fish and Game draft management plan was developed for the long-term restoration and maintenance of the Upper Newport Bay in the late 1980's, including the funding requirements for future dredging of the sediment basins. The draft management plan was never finalized and funding was not secured for maintenance dredging of the bay sediment basins, although constituents understood periodic maintenance dredging within Newport Bay would be required to preserve a healthy mix of estuarine habitats.*

*After more than a decade of storm seasons, the upper sediment control basin (Unit I/III) had filled beyond design capacity and was unable to effectively trap sediments. Little storage capacity remained in the second sediment basin (Unit II). Intertidal mudflats emerged in former open water areas and marsh areas expanded. Tidal circulation diminished with the continued loss of the tidal prism. Widespread sediment deposition shoaled in navigation channels resulting in vessels running aground and loss of slip access. Orange County initiated and completed a dredging project to increase the storage capacity in the upper basin (the 'Unit III' project). Coincidentally, the 1997-98 'El Nino' winter storm season deposited large volumes of sediment throughout Newport Bay, clearly showing the need for functional sediment basins and what could happen if basins were not maintained.*

The Corps stated in its Phase 1 consistency determination that its goal at Upper Newport Bay was to:

*... restore, enhance, maximize and maintain the overall intrinsic ecological values provided in the Upper Newport Bay coastal estuarine system for fish and wildlife including sensitive communities, to provide a diversity of use (i.e., fisheries, waterfowl, shorebirds, fish-eating birds, mammals, recreation, education, research etc.) and to promote a public awareness and appreciation of the unique habitat offered in this system now and in the future.*

The Commission's adopted findings for CD-072-00 described the Corps' conceptual restoration plan as follows:

*The restoration efforts include increasing the tidal prism and reducing sedimentation damage by expanding and deepening the two in-Bay basins and relocating a least tern island. Under the plan: (1) Unit I/III and Unit II (Exhibits 2, 3 & 9) would be dredged to -20 ft. MSL (mean sea level); (2) an approach channel to Unit II would be dredged to -14 ft. MSL; (3) the least tern island would be relocated from Unit I/III to Unit II; (4) side channels would be created to restore habitat around the small tern island adjacent to the Unit I/III basin, New, Middle, and Shellmaker Islands; (5) the small tern island would be capped with clean sand; (6) material removal and restoration of wetlands would occur along Northstar Beach, Shellmaker Island and a section of the northwestern edge of the upper basin (Bullnose); (7) a small channel on Shellmaker Island would be created; (8) the main dike would be segmented to decrease terrestrial disturbances; (9) eelgrass beds would be restored along the southwestern edge of Shellmaker Island; and (10) education kiosks would be added along Back Bay Drive and by the interpretive center.*

*The total volume of material to be dredged from the Upper Bay is approximately 2.1 million cubic yards. The dredged material would be disposed of at the LA-3 offshore disposal site (Exhibit 5), located approximately 4 miles southwest of the Newport Bay Harbor entrance. Initial construction would take approximately 2 years to complete. Maintenance dredging for the recommended plan is expected to occur once every 21 years, on average. Construction is expected to commence during Fall 2003. ...*

The CD-072-00 findings listed the Corps' conceptual restoration objectives for the project:

Primary

- *Restore, enhance, maintain and manage a mix of native habitat types, which shall include pickleweed dominated flats, cordgrass dominated intertidal zone, unvegetated intertidal mudflat, and subtidal seawater volume with low residence times.*
- *Provide nesting habitat for migratory shorebirds and seabirds.*
- *Provide overwintering habitat for migratory shorebirds, seabirds, waterfowl and raptors.*
- *Improve the fisheries resource by increasing nurseries, forage, and spawning grounds.*
- *Protect and enhance habitat for a variety of water associated wildlife, including endangered, threatened and rare species.*
- *Control, reduce and manage sediment processes in the Upper Bay.*

Secondary

- *Maintain existing navigation opportunities in the lower portions of Upper Newport Bay and the Federal channels in Lower Newport Bay.*
- *Provide and allow public use and recreational opportunities compatible with major objectives, including passive and non-intrusive activities focused on peripheral areas, interpretive foci, and trails.*
- *Provide unique scientific and education use opportunities to study the restoration of the wetland community.*

The CD-072-00 findings also noted the constraints placed on the proposed restoration project:

- *Disturbance of threatened or endangered species should be minimized.*
- *Sediment control measures should be confined to the Bay. Study efforts for this project will not formulate alternative measures to lessen the delivery of sediment from the San Diego Creek watershed. Other studies are being undertaken to investigate the watershed and will include a review of sediment control measures within the watershed.*

- *Restoration measures will not be pursued that advance one habitat at the cost of another. No substantial change from the relative distribution of habitats following the Unit III dredging project should occur. No net loss of saltmarsh should occur.*

On August 9, 2000, the Commission concurred with consistency determination CD-072-00 for Phase 1 of the project, finding that the proposed restoration concept (through the use of dredging and habitat modification) was consistent with the Coastal Act, in part due to the Corps' commitment to submit a second consistency determination to the Commission once the specific details of the restoration plan were developed.

**II. Project Description.** In this Phase 2 consistency determination for the Upper Newport Bay restoration project, the Corps provides the final design details for the various habitat modifications, sediment test results for dredged materials, biological and water quality monitoring plans, and access and recreation improvements (**Exhibits 1-3**). Details of these project elements are provided below in Sections A, B, and C of this report. Restoration construction activities are scheduled to begin in November 2004 and will extend over an estimated 22-month time period.

After the Commission concurred with CD-072-00 (including the dredging and habitat modifications described above), project refinements and modifications were performed during the Corps' Preliminary Engineering Design Phase of the project. This effort was undertaken in order to meet the habitat restoration/loss goals established by the Habitat Evaluation Group (HEG), consisting of representatives from the Corps, U.S. Fish and Wildlife Service, NOAA Fisheries, California Department of Fish and Game, Regional Water Quality Control Board, County of Orange, and City of Newport Beach. The HEG evaluated habitat values in Upper Newport Bay, examined alternative project designs, recommended design refinements and modifications, and advised the Corps during the Reconnaissance and Feasibility Study phases of the restoration project. The primary purpose of the proposed modifications is to meet the HEG requirement of no net loss or gain in any habitat type of more than approximately ten percent. Secondary purposes are to reduce dredging and subsequent disposal of harbor sediments, provide for the protection of endangered species, provide for the disposal of excavated, non-beach disposal materials, and isolate sensitive areas from public encroachment.

The Phase 2 consistency determination proposes the following design refinements and modifications (**Exhibit 4**) to the previously-approved conceptual restoration plan:

1. *The Unit II basin side slopes were steepened to reduce the loss of mudflat habitat.*
2. *The Unit II basin was reduced in size to reduce the loss of mudflat habitat.*
3. *A newly created mudflat was added at 23<sup>rd</sup> Street to offset loss of mudflat habitat in the two basins.*
4. *A second newly created mudflat was added to the Bullnose West area to offset loss of mudflat habitat in the two basins, replacing the prior Bullnose design.*
5. *Design for the removal of previously dredged materials from Shellmaker Island to restore wetlands functions was modified to avoid salt marsh bird's beak, a federal- and state-listed endangered plant species.*

6. Provisions were detailed to provide access to Hot Dog Island for California Department of Fish and Game maintenance activities including provisions for keeping the island isolated from people and their pets.
7. Provisions were detailed to provide access to the new California least tern nesting island for California Department of Fish and Game maintenance activities including provisions for keeping the island isolated from people and their pets.
8. The Shellmaker Island dendritic channel was deleted from the project to prevent potential impact to sensitive plant and animal species occurring in the nearby salt marsh.
9. New design for the California least tern nesting island with removal of all underlying material to project depth to provide disposal site for excavated material.
10. Scour protection features were added to mouth of San Diego Creek.
11. Restoration of the side channel for Shellmaker Island will not include the southern portion of the channel that is already subtidal. This reduces the amount of dredging required and avoids impacts to salt marsh bird's beak located adjacent to this section of the channel.
12. Restoration of wetlands in the Northstar Beach area was redesigned to provide optimal area of intertidal mudflats, while avoiding existing structures.

The proposed project now calls for approximately 2.4 million cubic yards (mcy) of material to be dredged and/or excavated from seventeen locations across Upper Newport Bay. Materials would be disposed at the LA-3 ocean disposal site (2.1 mcy; **Exhibit 5**), in the nearshore zone off Newport Beach (107,000 cu.yds.), and at two California least tern nesting island restoration project sites in Upper Newport Bay (146,000 cu.yds.).

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

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

**V. Staff Recommendation.**

The staff recommends that the Commission adopt the following motion:

**MOTION:** I move that the Commission **concur** with consistency determination CD-039-04 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

**Staff Recommendation:**

The staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

**Resolution to Concur with Consistency Determination:**

The Commission hereby **concurs** with the consistency determination by the U.S. Army Corps of Engineers, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

**VI. Findings and Declarations:**

The Commission finds and declares as follows:

**A. Marine Resources, Water Quality, Wetlands, and Environmentally Sensitive Habitat.**

The Coastal Act provides:

*30230 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.*

*30231 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.*

*30233(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:*

...

(7) Restoration purposes . . . .



*(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 shall be transported for such purposes to appropriate beaches or into suitable long shore current systems.*

*30240(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 Commission's adopted findings for the Phase 1 consistency determination (CD-072-00) for the proposed restoration project provides the following:

*The 752-acre Upper Newport Bay Ecological Reserve, managed by the California Department of Fish and Game (CDFG), is one of the last remaining southern California coastal wetlands that continues to play a significant role in providing critical habitat for a variety of migratory water fowl and shorebirds, as well as several endangered species of animals and plants. For this reason, Upper Newport Bay is an ecological resource of national significance.*

*The ecological diversity and functionality of Upper Newport Bay has been threatened by sedimentation from the surrounding watershed .... The primary source of freshwater and sediment loads to Upper Newport Bay is San Diego Creek, which drains approximately 85 percent of the 98,500 acre watershed. Of the 178,000 cubic yards (cy) of sediment that flows into the Upper Bay, approximately 129,000 cy remains within the Upper Bay. The rest is deposited in the Lower Bay or discharged to the ocean.*

*Sedimentation has been identified as the biggest problem in Newport Bay. Sedimentation has filled open water areas, decreased the extent of tidal inundation, diminished water quality, degraded habitat for biological resources, including threatened and endangered species, and resulted in navigation problems in the Upper Bay marinas and navigation channels. Sediment not trapped in the Upper Bay passes under Pacific Coast Highway (PCH) Bridge, where it causes similar problems in the Lower Bay. If sediment deposition within Upper Newport Bay were allowed to continue, open water areas would evolve into mudflats and eventually marsh or upland habitat, resulting in a loss of ecological diversity. Additionally, the Unit II Basin is not in compliance with the Regional Water Quality Control Board's (RWQCB) sediment Total Maximum Daily Load (TMDL) objective.*

To address these problems the Corps proposed in the Phase 1 consistency determination a restoration project that included dredging 2.1 million cu.yds. of material from the Upper Bay to

increase the tidal prism and reduce sedimentation damage, expanding and deepening the two in-Bay basins, and relocating a California least tern nesting island from the upper basin to the lower basin. Proposed restoration measures also included wetland creation along Northstar Beach, Shellmaker Island, and a section of the northwestern edge of the upper basin (Bullnose). In addition, side channels would be restored around the least tern island in the upper basin, New Island, Middle Island, and Shellmaker Island. The project description contained in the Phase 1 consistency determination was acknowledged to be preliminary in nature and subject to modification as the project entered the Corps' engineering design phase.

The Corps now proposes to modify the previously concurred with restoration project with the twelve design refinements previously outlined in Section II above (and in Exhibit 4). The proposed modifications were designed in cooperation with the multi-agency Habitat Evaluation Group (representatives from the Corps, U.S. Fish and Wildlife Service, NOAA Fisheries, California Department of Fish and Game, Regional Water Quality Control Board, County of Orange, and City of Newport Beach) and will result in no net loss or gain in any existing habitat type of more than approximately ten percent. In addition, the modifications will reduce the areal extent of dredging and subsequent disposal of harbor sediments, better provide for the protection of endangered species, provide for the disposal of excavated, non-beach compatible disposal materials, and isolate sensitive habitat areas from public encroachment.

The proposed dredging and disposal activities contained in the Phase 1 consistency determination (CD-072-00) were examined for consistency with Section 30233 of the Coastal Act. Under that section, dredging and disposal within wetlands, estuaries, and open coastal waters are 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 Commission previously found in its concurrence with CD-072-00 that the proposed project met the allowable use test because the dredging and disposal activities are being performed for habitat restoration purposes, rendering the project an allowable use under Section 30233(a)(7).

In CD-072-00, the Commission next reviewed the Corps' alternatives analysis, including: (1) the "no project" alternative, which would involve continued habitat degradation due to sedimentation in Newport Bay and, ultimately, conversion of intertidal habitat to less environmentally valuable upland habitat; and (2) four alternative dredging and habitat modification plans, involving tradeoffs between various depths, construction and maintenance disturbance, and hydrological modifications. The Commission also reviewed the Corps' alternatives concerning dredge equipment, dredge volumes, maintenance scheduling (e.g., frequency), least tern island relocation, ocean disposal, and a variety of habitat restoration options. The Commission ultimately agreed with the Corps' determination that:

*The alternative that best addresses the problems and opportunities and objectives and constraints for this study is Alternative 6. Alternative 6 provides a balance between sediment control and environmental restoration, and has the fewest number of significant unavoidable adverse environmental impacts. National Ecosystem Restoration benefits are equal to the highest, maintenance intervals easily comply with the sediment TMDL*

*objective, and the storage capacity of both basins ensure less deposition in habitat areas below the Unit II basin.*

The Commission next addressed the mitigation test of Section 30233 and found that even though the project constituted restoration, and even though it would be less damaging than the “no project” alternative, it nonetheless involved habitat alteration between various types of intertidal habitat. The U.S. Fish and Wildlife Service had recommended several measures to minimize intertidal habitat disturbance, including that the Corps implement no greater than a 10% change to any one type of intertidal habitat in the Bay, and the Corps agreed to this restriction. As documented in CD-072-00, the Corps also agreed to additional avoidance and mitigation measures, including scheduling activities to avoid work during sensitive species’ nesting seasons, and using turbidity curtains around the dredge operations. The Corps also committed to undertake water quality and biological monitoring efforts, with the details to be provided in the Phase 2 consistency determination.

The Commission agrees that the proposed project, as refined by the Corps over the past four years and as described in this Phase 2 consistency determination, remains an allowable use and the least environmentally damaging feasible alternative. What must now be determined by the Commission is whether the Corps has provided adequate mitigation measures to assure that the project minimizes environmental impacts to coastal resources during and after project construction. To that end, the Commission must examine the sediment test results for the proposed dredged materials and the project’s water quality and biological monitoring plans.

**1. Sediment Test Results.** As a part of this Phase 2 consistency determination, the Corps submitted the *Final Dredged Material Sampling and Analysis Report: Sampling and Tier III Analysis of Sediments Proposed for Dredging as Part of the Upper Newport Bay Ecosystem Restoration Project, January 2003 (Corps of Engineers and MEC Analytical Systems)*. Sediments proposed for ocean disposal underwent full “Green Book” (USACE and USEPA, 1991) testing and the Corps determined them to be suitable for disposal at the LA-3 Ocean Dredged Material Disposal Site, approximately four miles south of the Newport Harbor entrance. Materials proposed for placement as fill within Newport Bay and in the nearshore zone off Newport Beach were tested and found by the Corps to be compatible with existing materials at those sites and suitable for unconfined disposal. In addition, the USEPA reviewed the sediment test data and concurred with the Corps’ suitability determination for dredged material disposal at these locations.

The *Final Dredged Material Sampling and Analysis Report* states that the vast majority of project sediments are fine-grained, but that three locations contain coarse-grained sediments with a sand component ranging between 47 and 63 percent. These latter materials will be placed at the nearshore and least tern island disposal locations; the remainder of the dredged materials will be disposed at the LA-3 ocean disposal site.

The *Final Dredged Material Sampling and Analysis Report* also provides the results of chemical suitability testing and concludes that:

- Evaluation of suspended particulate phase (SPP) tests showed no unacceptable water column impacts for any of the test sediments evaluated. The SPP results indicate that all of the test sediments are suitable for ocean disposal.
- Evaluation of solid phase (SP) test results indicates that there are no benthic impacts for any of the test sediments evaluated. The SP results indicate that all of the test sediments are suitable for ocean disposal.
- Evaluation of bioaccumulation potential (BP) test results suggest that test materials evaluated from all sites pose little risk to higher trophic levels.
- Based on the results of testing and analysis described in this report, all test materials evaluated appear to be suitable for disposal at LA-3.

Given these test results, supported by the USEPA's analysis of dredged material suitability, the Commission finds that the proposed dredged materials are not contaminated, are suitable for unconfined ocean disposal, and that a small portion of the materials are suitable for beach replenishment (in the nearshore zone) and habitat creation (least tern islands in the upper bay).

**2. Water Quality Monitoring.** The *Water Quality Monitoring Plan* submitted with CD-039-04 outlines the monitoring activities that will occur during restoration project dredge and fill operations. The *Plan* includes the following components:

- Pre- and post-construction monitoring and weekly monitoring during periods of dredge and fill operations at monitoring stations 30 yards upcurrent, 30 yards downcurrent, 100 yards downcurrent, and at a control location immediately beyond the turbidity plume associated with dredge or disposal operations in the bay (Stations A, B, C, and D, respectively).
- Weekly instrument sampling will collect and measure dissolved oxygen, temperature, light transmittance, and pH from the entire water column.
- Total suspended solids will be measured twice per month at the mid-water depth at all stations.
- Chemical analysis will be undertaken monthly; grab samples will be collected at all stations at mid-water depth.
- Mitigation measures (e.g., use of turbidity curtains and/or operational changes in dredging and/or disposal activities, depending on exact circumstances) would be implemented when transmissivity at Station C is reduced by 40% or more than the transmissivity at Station D.

Given that the proposed dredged materials are free of contamination, the primary water quality concern associated with the project relates to the potential adverse effects arising from turbidity plumes. The Commission finds that the proposed water quality monitoring plan and mitigation measures, to be implemented during all dredging and disposal operations in Upper Newport Bay, will

adequately protect water quality, sensitive marine habitat and resources, and adjacent terrestrial habitat in the upper bay from potential turbidity effects.

**3. Biological Monitoring.** As a part of this Phase 2 consistency determination, the Corps submitted the *Upper Newport Bay Ecosystem Restoration Project Ecological Monitoring Plan (Exhibit 6)*. The introduction to the *Plan* provides the following general overview of the purpose and objectives of the monitoring plan:

*The purpose of the Upper Newport Bay Ecosystem Restoration Project long-term ecological monitoring program is to document the habitat improvements for fish and wildlife, the success of the restoration efforts, and the use of the site by endangered species. In addition, there are several specific monitoring programs to insure that the restoration is built according to the approved plans, that constructed nesting areas have adequate maintenance, that any impacts to sensitive plant species are offset, and that construction impacts to endangered and threatened species are minimized.*

*The ecological monitoring objectives are:*

- *Facilitate evaluation of the effectiveness of the restoration to provide habitat for fish and wildlife;*
- *Document changes in the ecology of the wetlands environment over time;*
- *Provide timely identification of any problems with the physical or biological development of the restored area;*
- *Assist in providing a technical basis for resource management of the restored wetland by documenting maintenance needs and enhancement opportunities.*

...

*This monitoring program is provided to the California Coastal Commission as part of the Supplemental Environmental Assessment supporting our commitment to the public to execute the best possible restoration project. This document shall be adapted as needed upon consultation with the project sponsors and reviewing agencies. If specific elements drop below expectations or if monitoring needs are realized after the approval of the Plan, additional monitoring requirements may be implemented.*

*The program will emphasize monitoring the biological elements of the Upper Bay. Some physical elements will be monitored to provide supporting information for the biological assessments. Sampling programs are designed to document the condition of vegetation, benthos, fish, birds, and special status species as well as the state of the physical environment on which they depend. The proposed monitoring activities also align with the sediment TMDL requirements for monitoring. The USFWS Draft Coordination Act Report (CAR) also recommends the Corps of Engineers survey plants, invertebrates, fish,*

*amphibians, reptiles, mammals and birds over time before, during, and after project construction.*

*A baseline or pre-construction assessment for all elements shall be done prior to the start of construction. Ecological monitoring will be conducted during the 2<sup>nd</sup>, 5<sup>th</sup>, and 10<sup>th</sup> years after completion of construction. Listed species will be monitored each year. Biological sampling will be conducted at fixed intervals as specified in this program. The reasons for the various sampling frequencies are explained in the discussions of individual program elements. All monitoring activities done within the Ecological Reserve Boundary must be coordinated with the Reserve Manager.*

*Sampling along permanent transects established at strategic locations will support multiple monitoring elements. To the extent possible, physical and biological variables will be measured at the same general location in order to suggest causal relationships among the variables. The information will be summarized in an annual report prepared by the project sponsors (U.S. Army Corps of Engineers, County of Orange, and California Department of Fish and Game) for the California Coastal Commission, as well as other proponent agencies (National Marine Fisheries Service, State Lands Commission, Coastal Conservancy, U.S. Fish and Wildlife Service, and Environmental Protection Agency).*

Additional details regarding the *Plan's* ecological monitoring of water quality, vegetation, fish, benthos, birds, and species of special concern are found in **Exhibit 6**.

The *Plan* also addresses long-term monitoring and management activities at Upper Newport Bay:

*Those above commitments that apply before and during construction will be implemented by the U.S. Army Corps of Engineers, using project funds allocated to construction. The Corps is responsible for post construction and environmental monitoring for three years. When construction is nearly complete, the long-term management agency will be identified (County of Orange, CDFG, or acceptable third party). That entity will assume long-term responsibility for implementation and performance pursuant to this plan, particularly sedimentation basin capacity and breeding habitats for listed species, particularly the least tern. An annuity fund for maintenance (currently amounting to \$3.8 million) was established in 2002 with funds from the settlement from the American Trader Oil Spill and will primarily be used to conduct maintenance dredging.*

*An annuity fund under the Department of Fish and Game was created in 1988 titled: Upper Newport Bay Restoration Fund. It is codified under the F&G code Sec. 1586 and was created to establish the fund and continuous appropriations for the long term maintenance needs of the Department for the Upper Newport Bay Preserve. The enabling legislation was authored by Senator Ross Johnson. Funds were appropriated for two years at \$200k per year; however, given the State budget problem, the \$400k was redirected to other State funding needs. It may be possible to have funding restored at a later date. However, due to the fiscal situation of the State of California and the Department of Fish and Game, the costs of this monitoring plan cannot be assumed by CDFG without external funding.*

With the sediment test results, water quality monitoring plan, and biological monitoring plan, the project has incorporated adequate mitigation measures to ensure that any potential adverse effects from the restoration project will be minimized and less than significant.

However, the Commission notes that the absence at this time of a permanent funding source and a responsible agency for ecological monitoring at Upper Newport Bay *after* conclusion of the Corps' three-year, post-construction monitoring, maintenance, and remediation commitment is cause for some concern. Should ecological monitoring at Upper Newport Bay not occur due to funding constraints after the initial three-year period, there is the risk that unforeseen restoration project effects could develop unnoticed and that coastal resources could be adversely affected. The Commission understands and acknowledges that all the participating federal and state natural resource agencies have an interest in the long-term success and stability of the Upper Newport Bay restoration project. Nevertheless, the Commission reminds the Corps of Engineers that, insofar as the proposed project currently before the Commission, it is the Corps' responsibility to ensure that the proposed restoration project remains consistent with the applicable resource protection policies of the Coastal Act. Should unforeseen adverse effects on coastal resources arise from the proposed project, the Commission has the ability under Section 930.45 to reopen its concurrence with the consistency determination and request that the Corps take appropriate remedial action. That Section provides:

**930.45 Availability of mediation for previously reviewed activities.**

*(a) Federal and State agencies shall cooperate in their efforts to monitor federally approved activities in order to make certain that such activities continue to be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program.*

*(b) The State agency may request that the Federal agency take appropriate remedial action following a serious disagreement resulting from a Federal agency activity, including those activities where the State agency's concurrence was presumed, which was: (1) Previously determined to be consistent to the maximum extent practicable with the management program, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, is no longer consistent to the maximum extent practicable with the enforceable policies of the management program;*

In conclusion, the project is clearly designed to provide overall habitat benefits consistent with Coastal Act goals and priorities. The Corps has modified the conceptual restoration project approved in CD-072-00 to: (1) result in no net loss or gain in any existing habitat type of more than approximately ten percent; (2) reduce the areal extent of dredging and subsequent disposal of harbor sediments; (3) better provide for the protection of endangered species; (4) provide for the disposal of excavated, non-beach compatible disposal materials; and (5) isolate sensitive habitat areas from public encroachment. The Corps provided sediment test results and analysis that demonstrated the suitability of the dredged materials for disposal at the LA-3 ocean disposal site, the nearshore zone off Newport Beach, and at sites within Upper Newport Bay. The Corps

also provided water quality and biological monitoring plans that will be implemented to help ensure successful restoration at Upper Newport Bay. The Commission finds that the proposed project is consistent with the allowable use, alternatives, mitigation, and functional capacity tests contained in Sections 30233(a) and (b) of the Coastal Act, as well as with the other applicable Coastal Act policies addressing the protection and enhancement of marine, estuarine, and wetland resources, environmentally sensitive habitat, and water quality. The Commission therefore concludes that the project is consistent with Sections 30230, 30231, 30233, and 30240 of the Coastal Act.

**B. Sand Supply.** Section 30233(b) of the Coastal Act provides in part that:

*... Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.*

In the Phase 1 consistency determination, the Corps reported that:

*... most of the material to be dredged in Upper Newport Bay has too fine a sediment grain size to be used for beach nourishment. If sediments with clean sand-sized particles are found within areas targeted for excavation, the sediments will be considered for beneficial uses including beach nourishment and construction of least tern islands. For example, sand-sized sediments may exist in the proposed wetlands restoration area on Northstar Beach. For the purposes of this document, however, it is assumed that most sediments within Upper Newport Bay will be too fine for beach nourishment. Beach nourishment is eliminated, therefore, as a practical alternative for disposal of the majority of dredged material.*

The results of sediment test results and the suitability for dredged material disposal was previously examined in Section A of this report. Given the dredged material suitability for unconfined ocean disposal, project sediment grain size, and the volume and location of sand-sized materials, the Corps proposes as a part of the restoration project to: (1) place approximately 107,000 cu.yds. of sandy materials dredged and excavated from the Shellmaker Island and 23<sup>rd</sup> Street wetland restoration sites into the nearshore zone off Newport Beach; (2) use approximately 146,000 cu.yds. of sandy and fine materials to construct the New and Hot Dog least tern islands; and (3) dispose approximately 2.1 million cu.yds. of fine dredged sediments at the LA-3 ocean disposal site, four miles offshore of Newport Beach.

In conclusion, the Corps has designated those project dredged materials suitable for beach replenishment to be placed in the nearshore zone off Newport Beach where they will be available to replenish area beaches due to wave action and nearshore currents. In addition, the Corps will beneficially re-use other sandy dredged materials in the construction of sand caps on two California least tern nesting islands to be constructed in Upper Newport Bay. Therefore, the Commission finds that the proposed restoration project is consistent with the sand supply policy (Section 30233(b)) of the Coastal Act.

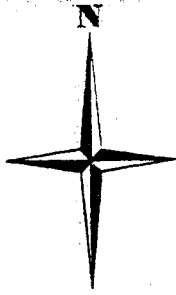


**C. Public Access and Recreation.** Sections 30210-30212 of the Coastal Act provide for the maximization of public access and recreation opportunities, acknowledging that such access needs to be managed in a manner taking into account natural resource protection needs. Section 30213 provides for the protection of lower cost visitor and recreational facilities. Section 30214 provides that the public access policies of the Coastal Act need to be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case, including environmental sensitivity.

Recreational activities in Upper Newport Bay and the California Department of Fish and Game's Ecological Reserve are primarily passive in nature and include birdwatching, hiking, bicycling, jogging, fishing, photography, viewing natural habitat, and visiting the Upper Bay Interpretive Center. Kayaking, canoeing, and rowing are popular on-water activities in the Upper Bay and Reserve. In this Phase 2 consistency determination, the Corps provided additional information on public access and recreational improvements that have been or will be provided as a part of the Upper Bay restoration project (**Exhibit 7**). The Corps confirmed that construction of education kiosks along Back Bay Drive and by the Interpretive Center is complete. In addition, the Corps provided information on additional public access and interpretive elements that will be installed across the upper bay area upon completion of the restoration work. These include four floating interpretive signs (designed to be readable from floating craft and to withstand the environment), two bike trail kiosks, and six "channel closed" signs (with California DFG code information) at entrances to upper bay areas that are closed to the public to protect sensitive habitat.

As noted in the Phase 1 consistency determination for the proposed project, the restoration work will involve temporary access restrictions, closed areas, and boating restrictions in Upper and Lower Newport Bay during dredging, dredge material transport, and dredge material disposal. These impacts will occur at various times during the 22-month construction period, particularly during the peak summer boating and recreation season. However, by enhancing wetland and other upper bay habitat types, by increasing water depths across the bay, and by arresting the ongoing damage to the upper bay environment from sedimentation, the project's future recreational benefits for upland and in-water visitors to both Upper and Lower Newport Bay outweigh the temporary and unavoidable construction impacts. The Commission therefore concludes that the proposed Upper Newport Bay restoration project is consistent with the public access and recreation policies (Sections 30210-30214) of the Coastal Act.

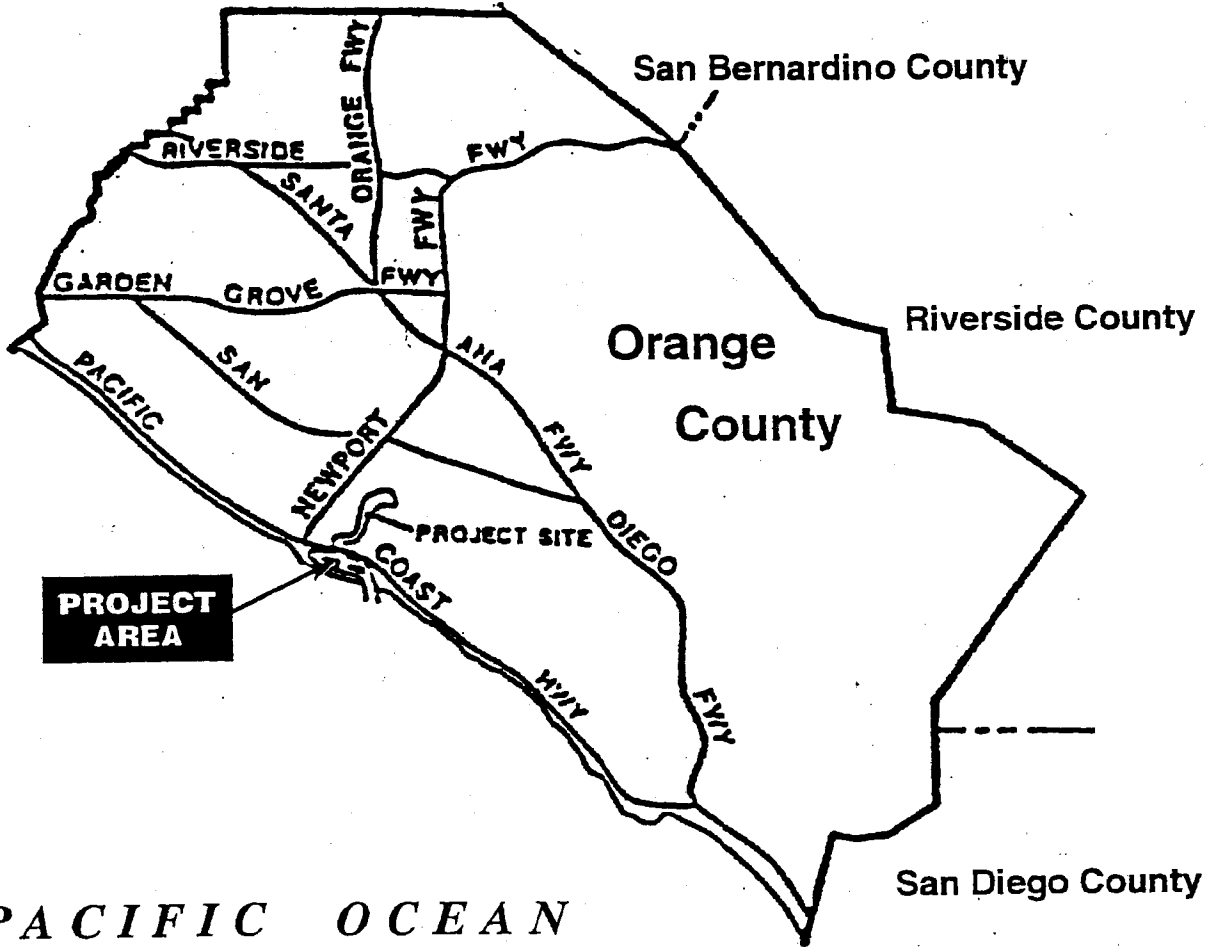




Los Angeles County

Orange County

San Bernardino County



**PROJECT AREA**

PROJECT SITE

PACIFIC OCEAN

NOT TO SCALE

EXHIBIT NO. 1

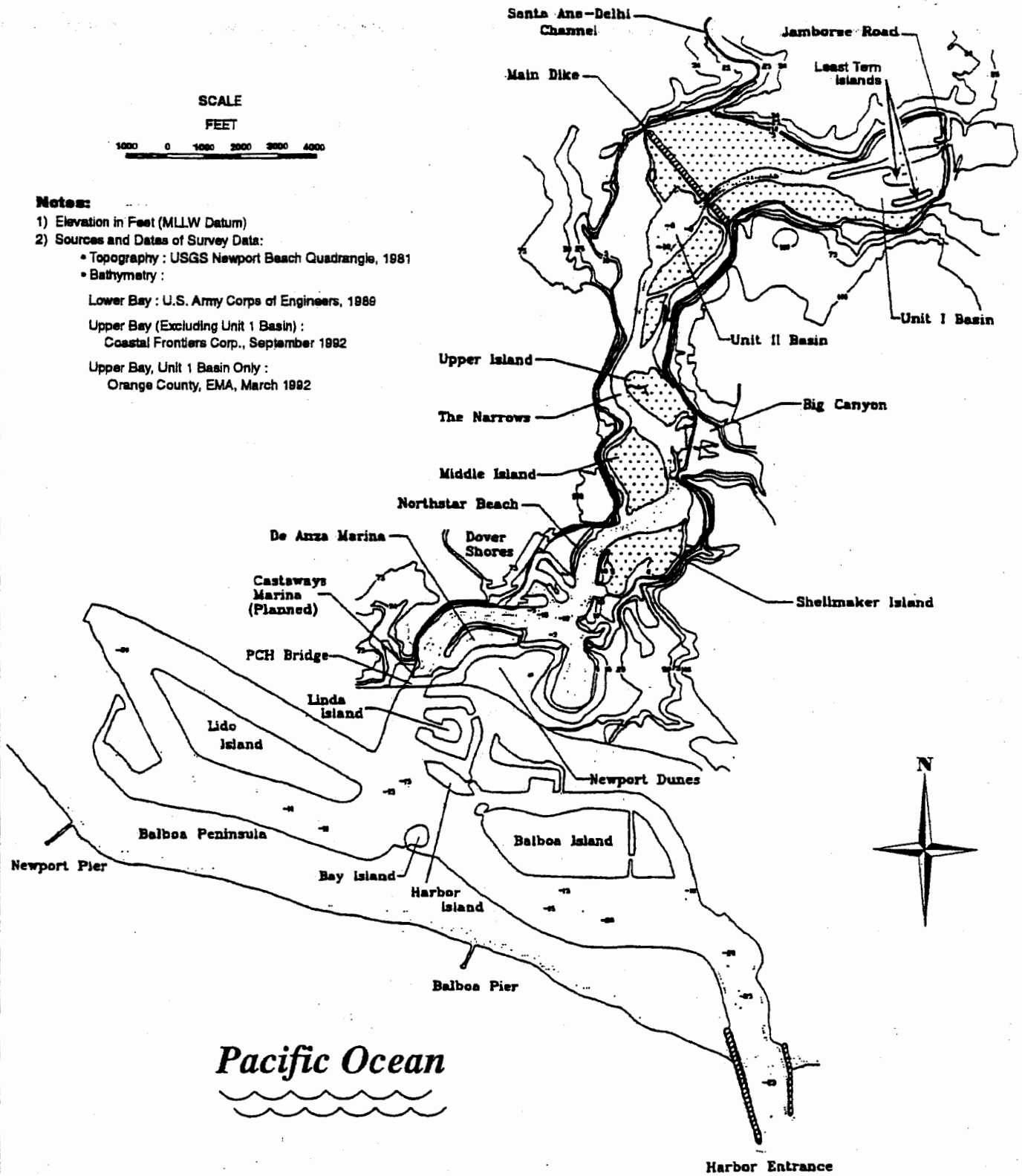
APPLICATION NO.

CD-039-04



**Notes:**

- 1) Elevation in Feet (MLLW Datum)
- 2) Sources and Dates of Survey Data:
  - Topography : USGS Newport Beach Quadrangle, 1981
  - Bathymetry :
    - Lower Bay : U.S. Army Corps of Engineers, 1989
    - Upper Bay (Excluding Unit 1 Basin) : Coastal Frontiers Corp., September 1992
    - Upper Bay, Unit 1 Basin Only : Orange County, EMA, March 1992



*Pacific Ocean*

LOCATION OF PLAC

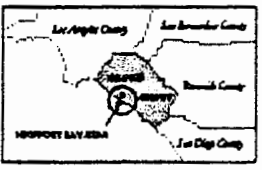
EXHIBIT NO. 2

APPLICATION NO.

CD-039-04



- Shellmaker Dendritic Channel
- Eelgrass Beds
- Tern Island Channel
- Northstar Beach Wetlands
- Shellmaker Island Wetlands
- New Island Channel
- Bullnose Wetlands
- Middle Island Channel
- Shellmaker Island Channel



**Upper Newport Bay**  
**Restoration Measures**  
*County of Orange, California*

EXHIBIT NO. <b>3</b>
APPLICATION NO.
<b>CD-039-04</b>
California Coastal Commission

## SECTION 1 - PROJECT INTRODUCTION AND NEED

### 1.1 AUTHORIZED PROJECT

**Previously Prepared Environmental Documents.** The Water Resources Development Act of 2000 authorized the Upper Newport Bay Ecosystem Restoration Project. Brigadier General Robert H. Griffin, Director of Civil Works, signed the project Record of Decision (ROD) on September 24, 2001 (Appendix A). The purpose of the Upper Newport Bay Ecosystem Restoration Project is to develop a long-term management plan to control sediment deposition in the Upper Bay to preserve the health of Upper Newport Bay's habitats (Figure 1 & 2).

This Supplemental Environmental Assessment (SEA) has been prepared to document design refinements; and is also intended to serve as a Consistency Determination (CD) as required by the Federal Coastal Zone Management Act of 1972 (CZMA). As such, this SEA contains additional information on project impact assessment requested by the California Coastal Commission.

**Design Refinements.** Design refinements assessed in this SEA include:

1. The unit II basin side slopes were steepened to reduce the loss of mudflat habitat.
2. The unit II basin was reduced in size to reduce the loss of mudflat habitat.
3. A newly created mudflat was added at 23rd Street to offset loss of mudflat habitat in the two basins.
4. A second newly created mudflat was added to the Bullnose West area to offset loss of mudflat habitat in the two basins, replacing the prior Bullnose design.
5. Design for the removal of previously dredged materials from Shellmaker Island to restore wetlands functions was modified to avoid salt marsh bird's beak (*Cordylanthus maritimus maritimus*) a federal and state-listed endangered plant species.
6. Provisions were detailed to provide access to Hot Dog Island for California Department of Fish and Game maintenance activities including provisions for keeping the island isolated from people and their pets.
7. Provisions were detailed to provide access to the new California least tern-nesting island for California Department of Fish and Game maintenance activities including provisions for keeping the island isolated from people and their pets.
8. The Shellmaker Island dendritic channel was deleted from the project to prevent potential impact to sensitive plant and animal species occurring in the nearby salt marsh.
9. New design for the California least tern nesting island with removal of all underlying material to project depth to provide disposal site for excavated material.
10. Scour protection feature were added to mouth of San Diego Creek.
11. Restoration of the side channel for Shellmaker Island will not include the southern portion of the channel that is already subtidal. This reduces the amount of dredging required and avoids impacts to salt marsh bird's beak located adjacent to this section of the channel.
12. Restoration of wetlands in the Northstar Beach area was redesigned to provide optimal area of intertidal mudflats, while avoiding existing structures.

EXHIBIT NO. 4
APPLICATION NO.
CD-039-04

**Additional Information.** The Environmental Impact Statement and its associated Consistency Determination prepared for this project assumed that dredged sediments would be suitable for ocean disposal at the LA-3 Ocean Dredged Material Disposal Site located off Newport Beach (Figure 3). A complete sampling and analysis program was prepared and completed, in accordance with Green Book (USACE and USEPA, 1991) protocols. Results were presented in a report prepared for the Corps by MEC Analytical Systems (2003) the main text of which is attached as Appendix D.

## **1.2 PROJECT BACKGROUND**

The proposed modifications were the result of detailed design processes conducted by the U.S. Army Corps of Engineers (Corps) in consultation with the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Regional Water Quality Control Board – Santa Ana Region (RWQCB), California Department of Fish and Game (CDFG&G), and the California Coastal Commission (CCC). The Corps, during the Reconnaissance and Feasibility Study phases of this project, set up a Habitat Evaluation Group (HEG) to assist the Corps in evaluating existing conditions and alternative designs. The HEG consisted of representatives of the Corps, USFWS, NMFS, CDF&G, RWQCB, CCC, County of Orange, and the city of Newport Beach. The HEG set goals of no net loss or gain in any habitat type of more than 10% resulting from implementation of the proposed project compared to existing conditions and compliance with all applicable Total Maximum Daily Load (TMDL) limitations implemented by the RWQCB for the Bay. The Recommended Plan resulted in the loss of more than 10% of intertidal mudflat habitat. Subsequently, the Corps committed in writing to the HEG to “reduce the initial loss of intertidal mudflats” during design. The design modifications evaluated in this SEA were largely the result (Figure 4).

## **1.3 PROPOSED PROJECT MODIFICATIONS**

### **1.3.1 Unit II basin side slopes.**

The side slopes were changed from a 5H:1V to a 3H:1V slopes (Figure 5). Geotechnical samples indicated that the bottom sediments could support the steeper slope without failure. The design team felt that the steeper slope would be better for purposes of designing the basin because the steeper slope supports a higher volume of sediment storage for a given surface area of the basin and minimizes the losses to surrounding mudflats.

### **1.3.2 Unit II basin size.**

The original basin was oversized in terms of sediment storage. This plus the steepening of the side slopes discussed above resulted in a smaller Unit II Basin that still had sufficient volume to allow the project to meet its TMDL goals. Reducing the size of the basin reduced the loss of intertidal mudflat that resulted from deepening and enlarging the existing basin. The Unit II Basin will still be both deepened and enlarged, but not as much as was discussed in the EIS/EIR.

These two measures result in a decrease in the loss of intertidal mudflat and a decrease in the gain of subtidal, open water.

### **1.3.3 23<sup>rd</sup> Street mudflat.**

The 23<sup>rd</sup> Street area is an area of historic dredge material disposal. This area will be excavated in order to provide an additional two hectares (five acres) of intertidal mudflat to offset losses (Figures 6 & 7). Construction includes dredging of a scow channel (Figures 6 & 8) to allow barges to load and haul excavated material to the disposal sites. Nearshore compatible, excavated materials will be disposed in the nearshore to serve as nourishment for the adjacent beaches and materials incompatible for nearshore disposal will be disposed in-bay under the California least tern nesting island (New Least Tern Island).

### **1.3.4 Bullnose West mudflat.**

There is an area in the Bullnose known as Bullnose West that is currently unvegetated salt panne (Figures 9 & 10). This area will be excavated to create approximately 1.7 hectares (4.2 acres) of intertidal mudflat to offset losses. Excavated material will be used to build the New Least Tern Island.

This feature replaces the prior feature designed at the Bullnose point. Upon further investigation, it was discovered that very little mudflat could be created at the Bullnose point area. Only a small strip of mudflat would be created after excavation of a large amount of resistant material. The geometry of the site made the site impractical for mudflat creation.

### **1.3.5 Shellmaker Island salt marsh bird's beak avoidance.**

Portions of Shellmaker Island are actually old dredge material discharge. It was proposed in the Feasibility Study to remove some of this material and return portions of Shellmaker Island to intertidal mudflat habitat. During the design phase, the Corps conducted a survey of Upper Newport Bay to document and map occurrences of the federally endangered plant species the salt marsh bird's beak (*Cordylanthus maritimus*). Bird's beak was located within the area on Shellmaker Island to be excavated to create intertidal mudflat.

The excavation area was redesigned (Figures 11 & 12) to avoid all impacts to existing populations while maximizing the original acreage of intertidal mudflat created.

### **1.3.6 Hot Dog Island maintenance access.**

The EIS describes the construction of the access for maintenance purposes of a channel with a 6 m bottom width at -1.0 m MLLW depth and 1V:3H side slopes, constructed at the southern tip of the island. The CDF&G field supervisor for the Upper Newport Bay Wildlife Sanctuary has requested that a different kind of access crossing be built to the existing California least tern island known as the Hot Dog Island. This access crossing will allow the field supervisor to cross



on to the island with maintenance equipment to remove any vegetation that would impede with the island's function as a nesting site for the California least tern.

The access will consist of a gravel path approximately five feet wide built up to a level of 0.0 m MLLW. This will allow the field supervisor to cross over in the dry at low tide with their equipment. Due to the potential for land-based predators to also cross over at low tides, a fence and gate will be installed at the access path.

#### **1.3.7 New Least Tern Island maintenance access.**

The EIS describes the construction of the access for maintenance purposes of a channel with a 6 m bottom width at -1.0 m MLLW depth and 1V:3H side slopes, constructed at the southern tip of the island. The CDF&G field supervisor for the Upper Newport Bay Wildlife Sanctuary has requested that a different kind of access crossing be included in the design of the new California least tern island. This access crossing will allow the field supervisor to cross on to the island with maintenance equipment to remove any vegetation that would impede with the island's function as a nesting site for the California least tern.

The access will consist of built up sand from the channel to allow equipment to be landed from a boat. This will allow the field supervisor to land with their equipment.

#### **1.3.8 Shellmaker Island dendritic channel deletion.**

The Shellmaker Island dendritic channel was deleted from the project to prevent potential impact to sensitive plant and animal species occurring in the nearby salt marsh. The proposed channel route lay along the existing roadbed. This area now supports populations of the federally endangered plant the salt marsh bird's beak. Deleting the dendritic channel was seen as the best way to avoid impacting this endangered plant species.

#### **1.3.9 New Least Tern Island design modification.**

Excavation of materials to create intertidal mudflats, particularly in the 23<sup>rd</sup> Street area will result in excess material, some of which can be used for nearshore disposal. Other materials that cannot be used to create restoration features, nor can they be properly disposed of at the LA-3 Ocean Dredged Material Disposal Site will be disposed in bay. The design for the New Least Tern Island (Figures 13 & 14) was modified to deal with this problem. A larger excavation will be dredged beneath the island site, removing sediments identified as being suitable for ocean disposal. The excess upland material will be placed in the excavation. These foundation materials will provide better support for the new island, reducing the magnitude of consolidation. The old bay harbor bottom materials could have resulted in slower consolidation. If fine materials are used for the island itself, subsidence of fine materials could result in subsidence of the nesting island to levels which are not functional. Sandier materials from other sites such as Northstar or Shellmaker will be placed on top of the fine materials, and used to create the island from the existing mudline elevation to the top of the island.

### **1.3.10 San Diego Creek scour protection feature.**

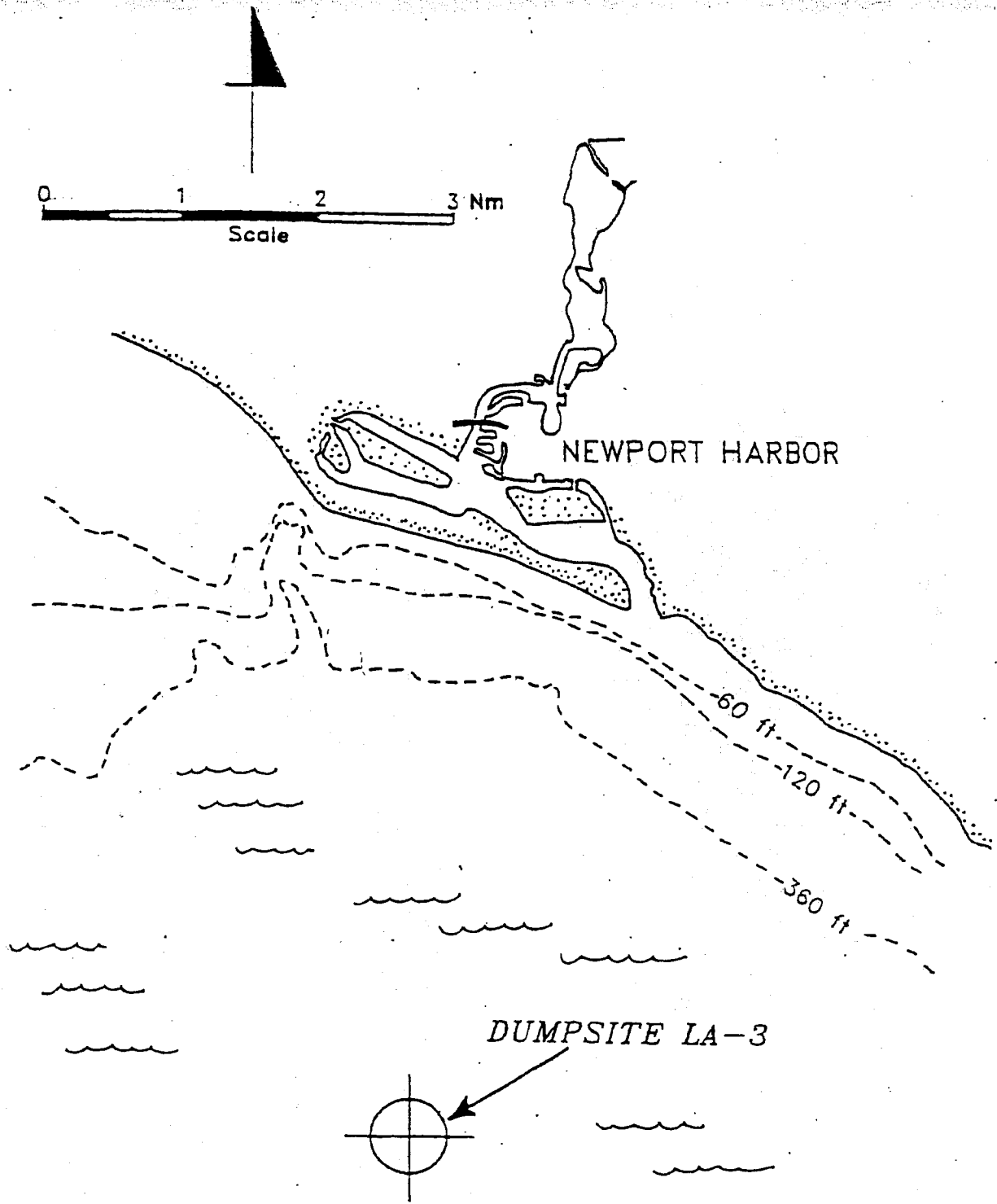
A scour protection feature was added to mouth of San Diego Creek.

### **1.3.11 Shellmaker Island side channel design.**

Salt marsh bird's beak also occurs within the dredge footprint for the side channel at Shellmaker Island. The side channel will therefore not be dredged in the vicinity of the bird's beak located within the channel footprint. The side channel in this section, according to CDFG&G field personnel, is deep and wide enough to function without further enhancement. The channel from Stations 0-040 to Station 0-700 will not be dredged; dredging will be limited to Stations 0-700 to 1-260 (Figure 15).

### **1.3.12 Northstar Beach restoration area design modification.**

Restoration of wetlands in the Northstar Beach area was redesigned (Figures 16 & 17) to maximize the area of intertidal mudflats, while avoiding existing structures.



LA-3 OCEAN DREDGED MATERIAL DISPOSAL SITE

EXHIBIT NO. 5
APPLICATION NO.
CD-039-04

100 7-1-04 NIS 5-000

# Upper Newport Bay Ecosystem Restoration Project

## Ecological Monitoring Plan

June 2004

### INTRODUCTION

The purpose of the Upper Newport Bay Ecosystem Restoration Project long-term ecological monitoring program is to document the habitat improvements for fish and wildlife, the success of restoration efforts, and the use of the site by endangered species. In addition, there are several specific monitoring programs to insure that the restoration is built according to the approved plans, that constructed nesting areas have adequate maintenance, that any impacts to sensitive plant species are offset, and that construction impacts to endangered and threatened species are minimized.

The ecological monitoring objectives are:

- Facilitate evaluation of the effectiveness of the restoration to provide habitat for fish and wildlife;
- Document changes in the ecology of the wetlands environment over time;
- Provide timely identification of any problems with the physical or biological development of the restored area;
- Assist in providing a technical basis for resource management of the restored wetland by documenting maintenance needs and enhancement opportunities.

Some parts of this plan may be subject to a Request for Proposal process for consultant services with a negotiated contract and scope of work to be established following completion of construction. However, the agency which assumes long-term management and maintenance responsibility may elect to implement this plan employing its own experts and institutional expertise.

This monitoring program is provided to the California Coastal Commission as part of the Supplemental Environmental Assessment supporting our commitment to the public to execute the best possible restoration project. This document shall be adapted as needed upon consultation with the project sponsors and reviewing agencies. If specific elements drop below expectations or if monitoring needs are realized after the approval of the Plan, additional monitoring requirements may be implemented.

The program will emphasize monitoring the biological elements of the Upper Bay. Some physical elements will be monitored to provide supporting information for the biological

EXHIBIT NO. 6
APPLICATION NO. CD-039-04

assessments. Sampling programs are designed to document the condition of vegetation, benthos, fish, birds, and special status species as well as the state of the physical environment on which they depend. The proposed monitoring activities also align with the Sediment TMDL requirements for monitoring. The USFWS Draft Coordination Act Report (CAR) also recommends the Corps of Engineers survey plants, invertebrates, fish, amphibians, reptiles, mammals and birds over time before, during, and after project construction.

A baseline or pre-construction assessment for all elements shall be done prior to the start of construction. Ecological monitoring will be conducted during the 2nd, 5th, and 10th years after completion of construction. Listed species will be monitored each year. Biological sampling will be conducted at fixed intervals as specified in this program. The reasons for the various, sampling frequencies are explained in the discussions of individual program elements. All monitoring activities done within the Ecological Reserve Boundary must be coordinated with the Reserve Manager.

Sampling along permanent transects established at strategic locations will support multiple monitoring elements. To the extent possible, physical and biological variables will be measured at the same general location in order to suggest causal relationships among the variables. The information will be summarized in an annual report prepared by the project sponsors (U.S. Army Corps of Engineers, County of Orange and the California Department of Fish and Game) for the California Coastal Commission, as well as the other proponent agencies (National Marine Fisheries Service, State Lands Commission, Coastal Conservancy, U.S. Fish and Wildlife Service, and Environmental Protection Agency).

## ECOLOGICAL MONITORING

### WATER QUALITY

Expansion of the tidal prism in the Upper Bay would improve tidal flushing and water quality. The enhanced tidal flushing would increase the marine influence, reduce fluctuations in water column parameters such as temperature and salinity, and increase the dilution of contaminants. Data on water quality will be taken quarterly at the two locations sampled for benthos and fish. Water quality monitoring shall also occur immediately following a 50-100 year storm event.

Dissolved oxygen, temperature, chlorophyll a, and conductivity will be measured with a Hydrolat, Surveyor, or equivalent, and turbidity will be recorded with a Seatech transmissometer, or equivalent. At each Site, measurements will be made at the surface, mid-depth, and near bottom in the channel and also at surface and near bottom over the shallow subtidal during high tide and low tide to characterize the environmental extremes.

The results of quarterly water quality surveys will be summarized and presented in a form that allows comparisons of locations and over time. The results can also be used in multivariate correlations of environmental conditions with biological parameters.

## VEGETATION

The composition and extent of vegetation will be documented by transect sampling and aerial photography. Aerial photography will record wide-scale patterns of plant community distribution. Transect sampling will provide data on species composition with elevation and on cover of plant communities. Over time, these combined techniques should reveal the pattern of revegetation following construction. Vegetation monitoring shall occur outside of the breeding season (May-September).

The methodology for vegetation monitoring is based on Technical Memorandum No. 99-74 (Memo 99-74), Regarding Monitoring and Reporting Program, Part D. Topographic/Bathymetric and Vegetation Surveys (Tetra Tech, Inc. 2000). A total of 10 vegetation transects will be surveyed as described in the Baseline Vegetation Monitoring for the Sediment TMDL for Upper Newport Bay Tetra Tech, Inc., 2001). The majority of transects originated at the upper limit of the tidal mudflat boundary and extend through the wetland communities to the lower limit of adjacent upland habitat. Transect locations were selected to capture each of the community types as characterized by MEC (1997) to allow complete delineation of low and middle marsh. Community types include low marsh, middle marsh, high marsh, freshwater marsh, and riparian habitat.

Species composition and percent cover will be determined by the point-intercept method using a sample quadrat of appropriate area. A stratified random sampling design will be used. Within uniform intervals along each transect, 10 replicate samples will be taken at randomly determined points within 5 meters on either side of the transect. Equivalent sampling designs that yield the same total replication within each habitat type may be used. The intercept frame will be placed on the ground, and plants hit by pins in the frame (or equivalent points) will be identified to species. The sampling area will also be photographed with the frame in place to provide a permanent record.

Low and middle saltmarsh communities will be identified using indicator species as defined by both the California Department of Fish and Game (CDFG 1988) and by MEC (1997). The CDFG study found that three general vegetative groupings existed, including *Spartina*, *Salicornia/Batis*, and *Monanthochloe/Suaeda* communities. MEC (1997) found that areas dominated by *Spartina foliosa* (60-70%) were considered to be low marsh. Middle marsh was dominated by *Salicornia virginica*. Other species commonly abundant in middle marsh were *Jaumea carnosa* and *Batis maritime*. High marsh was typically dominated by *Distichlis spicata* with lesser areas of *Monanthochloe littoralis*, *Salicornia virginica*, and *Jaumea carnosa*. Although marsh plants have a broad range of elevation distributions and overlap between communities, these species are considered indicators. Within appropriate habitats, height measurements will also be taken of a random sample of *Spartina* and *Salicornia* plants. In addition, all plant species present within a 1-meter swath on either side of the transect will be recorded.

Reintroduction of eelgrass, *Zostera marina*, will occur in order to begin establishment of this high habitat value coastal wetland species. Additional, more frequent monitoring of pilot planting areas for eelgrass following planting will occur. The contractor responsible for the

revegetation component of the enhancement effort will have responsibility for meeting survival criteria for three years following transplantation. The long-term monitoring program will determine, document, and report on the location and size of the stands of these reintroduced plants. At representative locations, vegetative cover will be estimated for turion density. These surveys, as well as the fish sampling, would also aid in the early detection of highly undesirable, aquatic, invasive species, such as *Caulerpa taxifolia*, the notorious "killer algae".

The establishment of new acreage of coastal salt marsh and intertidal mudflats will be determined in the aerial photographic analysis. Aerial photographs will be taken during each monitoring year during early summer (May and June). This is when wetland habitat can best be delineated because it remains green while upland vegetation has begun to senesce and turn brown. The photographs will be taken at as low a tide as possible given a high sun angle. False-color infrared photographs will be produced at a scale of 1:4800. Aerial photography will be done at the same time as transect sampling so that transect data can provide ground truth.

Based on the aerial photograph, a vegetation map will be prepared at 1:300 scale. Vegetative communities will be mapped using the Holland classification System developed by the CDFG. Acreage of each habitat type will be determined.

Other observations that will be recorded during the yearly survey include:

- Invasion by any non-native species considered to be nuisance or pest species such as giant reed or pampas grass;
- Die-offs of native vegetative communities that might be attributed to disease, anomalous oceanographic conditions, or insect damage;
- Shifts in species abundance, such as replacement of coastal salt marsh by freshwater species or the presence of new species such as increases in cordgrass or eelgrass;
- General growth and expansion patterns in the vegetative transplant areas.

A focused survey for salt marsh bird's beak (*Cordylanthus maritimus* ssp. *maritimus*) within and immediately adjacent to construction activities shall be conducted annually. The survey shall be conducted along transects to minimize the disturbance to wildlife. Results of the survey shall be compared to historical records and previous surveys (MEC 2003).

## FISH

A variety of sampling methods will be used to determine the abundance and composition of burrowing, demersal, and pelagic fish assemblages in the Upper Bay. The approach is based on agency-approved monitoring programs for wetlands enhancement projects previously at Upper Newport Bay, Anaheim Bay, and Batiquitos Lagoon.

Fish will be sampled quarterly at high tide during specified monitoring years at two sites. Samples will be collected by using otter trawls, or bag seines, as appropriate. Other sampling methods, such as small boat purse seine may be employed during the monitoring, as needed, to document specific subgroups of fish. A beam trawl may be used in areas where beach seines cannot be deployed safely. The sampling locations will be selected after construction plans are

final, but they are expected to be near two of the benthos sampling sites discussed below. Sampling will begin one year after completion of construction (beginning of year 2) to characterize post-construction conditions. The fish surveys will be conducted between mid- and high tide during daylight hours.

Demersal fish, including juvenile California halibut, will be collected by otter trawl. A 3.8-meter otter trawl with 2.0-centimeter mesh in the wings and 0.8-centimeter mesh in the cod end will be towed by a small boat along the mid-channel area at each station. Two replicate 5-minute otter trawls will be made during each survey. Differential GPS will be used to measure the length of the trawl area so that catch densities can be calculated.

A bag seine (15.2 meters x 1.8 meters with 0.3-centimeter mesh net in the bag and 0.6-centimeter mesh in the wings) will be used to capture large and small demersal and pelagic fish. This device is particularly effective for sampling nearshore schooling fish (the type the California least tern feeds on). Two replicate hauls covering approximately 220 m<sup>2</sup> each would be made at each station. The bag seine will be set parallel to shore at a depth of 1.8 meters and hauled to shore by hand or winch,

A square enclosure (1 meter x 1 meter x 1 meter) will be used to sample burrow-inhabiting fishes. The square enclosure is made of heavy duck material fastened to a frame of 2.5-centimeter PVC pipe. The enclosure is set on the bottom in 1 meter of water at three randomly chosen positions at each station and spiked with rotenone or quinaldine to kill or immobilize the fish. Fish are collected from the interior of the enclosure by thorough search for 10 minutes with a 1 millimeter mesh, long-handled dip net.

A small boat purse seine may be used to catch large, fast-moving pelagic fish. The use of gill nets is discouraged because of the risk of fish mortality. The purse seine will eliminate the possibility of taking non-target animals such as marine diving birds or marine mammals.

Samples will be processed in the field to the extent possible. All fish (or subsamples of large catches) will be counted, measured, and weighed, then returned, if alive, to the water unless identification to species is not possible. Subsampling, when necessary, will follow standard procedures for each sampling technique. Fish samples not measured in the field will be preserved in 10 percent formalin and returned to a laboratory for analysis.

The fish catches will be expressed as fish per square meter for trawl and seine results. Parametric statistics will be used to summarize abundance, size, and biomass of fish populations and to describe differences over time. The establishment and recovery of the fish community will be well described and quantified and will be comparable to the similar work done at other completed restoration projects, such as Anaheim Bay and Batiquitos Lagoon.

## BENTHOS

The objective of benthos monitoring is to characterize the marine invertebrate food resources for birds and for fish, including those of recreational or commercial importance (e.g. California halibut). The results will also provide an index of general habitat quality.



Benthic invertebrates will be sampled twice during specified monitoring years, in December/January and June/July. This schedule will encompass the extremes of seasonal variation for benthic communities and will document food availability for winter migrating birds and summer fish communities. Benthic samples will be taken near the two locations sampled for fish and at one nearby vegetated area. The benthic survey will be conducted during low tide to facilitate collection of intertidal and subtidal samples.

Infaunal samples will be collected with a hand-operated corer 15 centimeters in diameter by 10 centimeters deep (approximately 1.5-liter volume). At each station, three core samples will be collected in the intertidal zone (approximately 2 to 4 feet MLLW), and an equal number will be collected in the subtidal zone (below -1.6 feet MLLW). Cores will be collected within 10 meters of the designated sampling station. A random number table will be used to select the six locations (direction and then distance along the radius) for core samples within each tidal zone. In order to reduce within-zone variability, each sample may be a composite of several cores. A subsample (100-gram capacity) will be taken from each core or composite and washed through a 0.5-millimeter screen. The remaining portion of each sample will be washed through a 1.0-millimeter screen. Both portions will be preserved in seawater-formalin for subsequent taxonomic and biomass analysis.

Macrobenthic organisms living on the sediment surface (for example, the California hornsnail *Cerithidea californica* and grapsid crabs) are not effectively sampled by cores. Relatively sedentary epifauna will be censused visually by counting animals within randomly-placed quadrats. Six replicate quadrats will be censused at each station. The size of the quadrat will be appropriate to the abundances of the species present. The more motile epifauna will be counted in belt transects. Representative subsamples of epifauna in the quadrats will be collected for biomass determination.

Infauna retained by the 1.0-millimeter screen will be sorted into major faunal groups (crustacea, polychaetes, oligochaetes, molluscs, echinoderms, insects, and others) and weighed to determine wet-weight biomass. This level of taxonomic discrimination is sufficient to establish the food resource for birds and bottom-feeding fish. The total food resource represented by infauna in each basin will be calculated on the basis of the densities in the core samples. The subsample of organisms retained by the 0.5-millimeter screen will also be identified and weighed to establish the proportion of infaunal biomass made up by smaller organisms. All samples will be archived, however, and will be available for more detailed evaluation in the future. Epifaunal invertebrates will be identified to species, and their abundance will be expressed as estimated number per square meter. Parametric statistics will be used to summarize the abundance and biomass of major infaunal groups and to describe differences over time. The establishment and recovery of the benthic invertebrate community would be well described and quantified and be comparable to the similar work done at other completed restoration projects, such as Anaheim Bay and Batiqitos Lagoon.

## BIRDS

Counts of all birds at the New Least Tern Island will be conducted monthly throughout each

monitoring year. In addition to the New Least Tern Island, the existing Hotdog Island shall also be monitored during the breeding season to potential displacement due to the removal of the Kidney Shaped breeding island. The survey will involve systematic coverage during daylight hours. Surveying the study areas standardizes the coverage and allows for direct comparisons of avifauna within each study area on each survey date. This same procedure will be followed in the long-term monitoring program to ensure compatibility of data. In addition, each study area will be divided into habitat types. These types will correspond to the habitat types described in this Final EIR/EIS and those used in the vegetation mapping.

The avifauna of the wetland system will be counted over a tidal cycle during each observational period. Several surveyors, experienced ornithologists equipped with spotting scopes, binoculars, field guides, and data entry forms, will systematically survey the study areas. All birds seen or heard will be counted, and the activity (feeding, resting, flying, courting) will be recorded along with the habitat being used. Wind speed and cloud cover will be noted periodically during the survey (surveys will be canceled if wind speed exceeds approximately 10 knots because the effect of strong wind on bird behavior would make the resultant data not comparable with the other surveys). Each observational period will be conducted over a tidal cycle (or approximately 6 hours) and will be conducted from low to high tide. During the survey, staff gauge readings will be recorded at hourly intervals to relate to habitat distribution.

The data from each survey will be used to describe the composition of the bird community by habitat and through time. Each year of data will be compared with other years and with data from other coastal wetlands, as available. Avifaunal abundance will be summarized by habitat type, activity patterns will be described, and use of the Upper Bay by key groups of birds (herons/egrets, raptors, dabbling ducks, shorebirds, grebes and diving ducks; and gulls, terns, and skimmers) will be discussed.

Data analysis will evaluate differences in population density among habitats in the Upper Bay, between other coastal wetlands, and at Upper Newport Bay over time. The comparisons will be supported by basic parametric techniques such as t-tests.

#### SPECIES OF SPECIAL CONCERN

Biological monitoring for nesting listed Threatened or Endangered species will be conducted annually, not just during years 2, 5, and 10. The monitoring method will be the same as has been developed for each species pursuant to a statewide monitoring program or the same method as has been conducted at Upper Newport Bay for several years pre-project. The purpose of this monitoring is primarily to assess reproductive success and/or problems, and to determine the adequacy or need for management actions.

The Special-status species in Upper Newport Bay that will be monitored each year are the Federal and State listed Endangered California least tern (*Sterna antillarum browni*) and light-footed clapper rail (*Railus longirostris levipes*), Federal Threatened western snowy plover (*Charadrius alexandrinus nivosus*) and the State Endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*). These listed species will receive special attention because they have long histories of breeding at Upper Newport Bay. The breeding conditions for the

least tern at Upper Newport Bay will be improved by the proposed surface improvements of the nesting islands.

A Statewide breeding census of the least tern has been conducted annually under the guidance of CDFG and USFWS. Least tern breeding site monitoring is somewhat standardized: nesting colony inspections of nests and tern breeding activity twice a week between middle April to late August, by a qualified permitted monitor. Additional observations may be made from a suitable distance outside the nesting colony to avoid disturbance. Other pertinent observations will also be made (e.g., evidence of disturbance by humans, predators, other nesting birds). This census program, at a minimum, determines the breeding population at the site, number of nests, and number of fledglings, or breeding success, each year during and after project construction,

Monitoring of western snowy plover breeding activity at Upper Newport Bay has been conducted by USFWS for 5 years pre-project in accordance with methods described in the reports. This survey method would continue during and after project construction. This survey method determines the snowy plover breeding population, number of nests, number of chicks and fledglings produced. Snowy plovers and least terns may nest together on the constructed nesting areas, as happened at Batiquitos Lagoon. Such nesting activity by least tern or snowy plover during construction will be protected from harm by maintaining an appropriate buffer between the nesting location and construction activity. DFG currently has no funding and is not expected to fund the monitoring of these species at Upper Newport Bay.

Counts and observations of Belding's savannah sparrows will be completed each year during and post-project with the same methods as have been used at Upper Newport Bay for many years. Field observations will concentrate on high coastal salt marsh pickleweed communities. A walk-through survey will be conducted annually between early April through July. Singing males, nesting females and other evidence of breeding or breeding territories will be mapped. Other pertinent observations will also be recorded.

## PERFORMANCE MONITORING

### "Built-to-Plan Monitoring"

The restoration plan for Upper Newport Bay includes dredging to expand and deepen the Unit I/III basin and Unit II basin, constructing a new least tern island, and reintroduction of eelgrass. The Bullnose West area adjacent to the Unit I/III basin, Northstar Beach, the 23<sup>rd</sup> Street site and part of Shellmaker Island will be restored to tidal action by removing old dredge spoils. The main post-project "built-to-plan" survey at the end of construction will be a bathymetry survey. There will also be a survey of the constructed nesting area insure that elevations and configurations are as planned. The design criteria are the performance standards. The sedimentation basins will be surveyed following construction to verify that design criteria (e.g., channel dimensions, side slopes, nesting site locations) have been achieved. This survey will be conducted by an independent contractor (not the construction contractor) under the guidance of the responsible agency. If the performance standards are not met the construction contractor will be responsible for remediation in order to meet those standards.

## MONITORING AND MAINTENANCE OF CONSTRUCTED NESTING AREA

The new constructed least tern island will require annual evaluation of the surface in order to determine whether they remain optimal for nesting snowy plovers and least terns. To provide a site attractive to nesting least terns, the site should be relatively free of vegetation prior to the breeding season.

All nesting sites should be inspected in January. If vegetation coverage exceeds 5%, vegetation must be removed. The presence of some low profile native vegetation that provides cover for chicks is acceptable. The amount of effort required to remove vegetation will depend on the extent of coverage. Removal of excess vegetation would be carried out by scraping, dragging, hand weeding, and sometimes appropriate herbicides, before middle March, when plover nesting begins.

During breeding season for these birds, regular surveillance for predation losses or other disturbances to these sensitive species is essential and will be conducted. Predator management (to guard against listed species breeding failure) has been conducted by CDFG at Upper Newport Bay for years, and will continue. At Upper Newport Bay, the principle predators of the listed species, particularly terns and plovers, have been other birds, such as crows and American kestrel. Qualified predator management specialists will conduct appropriate predator removal activities in coordination with the site manager/monitor.

## SENSITIVE PLANTS

A federally endangered plant species, the salt marsh bird's beak (*Cordylanthus maritimus*) is located in areas on Shellmaker Island. The Corps conducted a survey of the project area for this plant in 2003.

## COMMITMENTS TO PERFORM

Those above commitments that apply before and during construction will be implemented by the U.S. Army Corps of Engineers, using project funds allocated to construction. The Corps is responsible for post construction and environmental monitoring for three years. When construction is nearly complete, the long-term management agency will be identified (County of Orange, CDFG, or acceptable third party). That entity will assume long-term responsibility for implementation and performance pursuant to this plan, particularly sedimentation basin capacity and breeding habitats for listed species, particularly the least tern. An annuity fund for maintenance (currently amounting to \$3.8 million) was established in 2002 with funds from the settlement from the American Trader Oil Spill and will be primarily used to conduct maintenance dredging.

An annuity fund under the Department of Fish and Game was created in 1998 titled: Upper Newport Bay Restoration Fund. It is codified under the F&G code Sec. 1586 and was created to establish the fund and continuous appropriations for the long term maintenance needs of the Department for the Upper Newport Bay Preserve. The enabling legislation was authored by Senator Ross Johnson. Funds were appropriated for two years at \$200k per year; however, given

the State budget problem, the \$400k was redirected to other State funding needs. It may be possible to have funding restored at a later date. However, due to the fiscal situation of the State of California and the Department of Fish and Game, the costs of this monitoring plan cannot be assumed by CDFG without external funding.

**Larry Simon**

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**From:** Grandon, Jane F SPL [Jane.F.Grandon@spl01.usace.army.mil]  
**Sent:** Wednesday, July 07, 2004 5:16 PM  
**To:** Larry Simon (E-mail)  
**Cc:** Smith, Lawrence J SPL; Susan Brodeur (E-mail); Brian Shelton (E-mail)  
**Subject:** Education Kiosks for UNB


Larry,  
The following describes our plan to provide education kiosks as part of the Upper Newport Bay Ecosystem Restoration Project. Attached is an education kiosk plan showing the planned locations for four floating interpretive signs and two bike trail kiosks. An outline of the type of information that will be displayed on the signs and kiosks is attached as a word document. The bike trail kiosk structure will be designed to be consistent with other area kiosks. A committee has been formed to provide input as to the look of the structure. The floating interpretive signs will be designed to be readable from floating craft and to withstand the environment. Additionally, there will be six "channel closed" signs for areas that are for birds only with the Fish and Game codes. Our budget is about \$32,000 and we expect to be able to provide these items within this budget.

Please let me know if you have any questions about this information.

Thank you.

-Jane

<<kiosks.jpg>> <<Interpretive Signs.doc>>

EXHIBIT NO. 7
APPLICATION NO.
CD-039-04
 California Coastal Commission

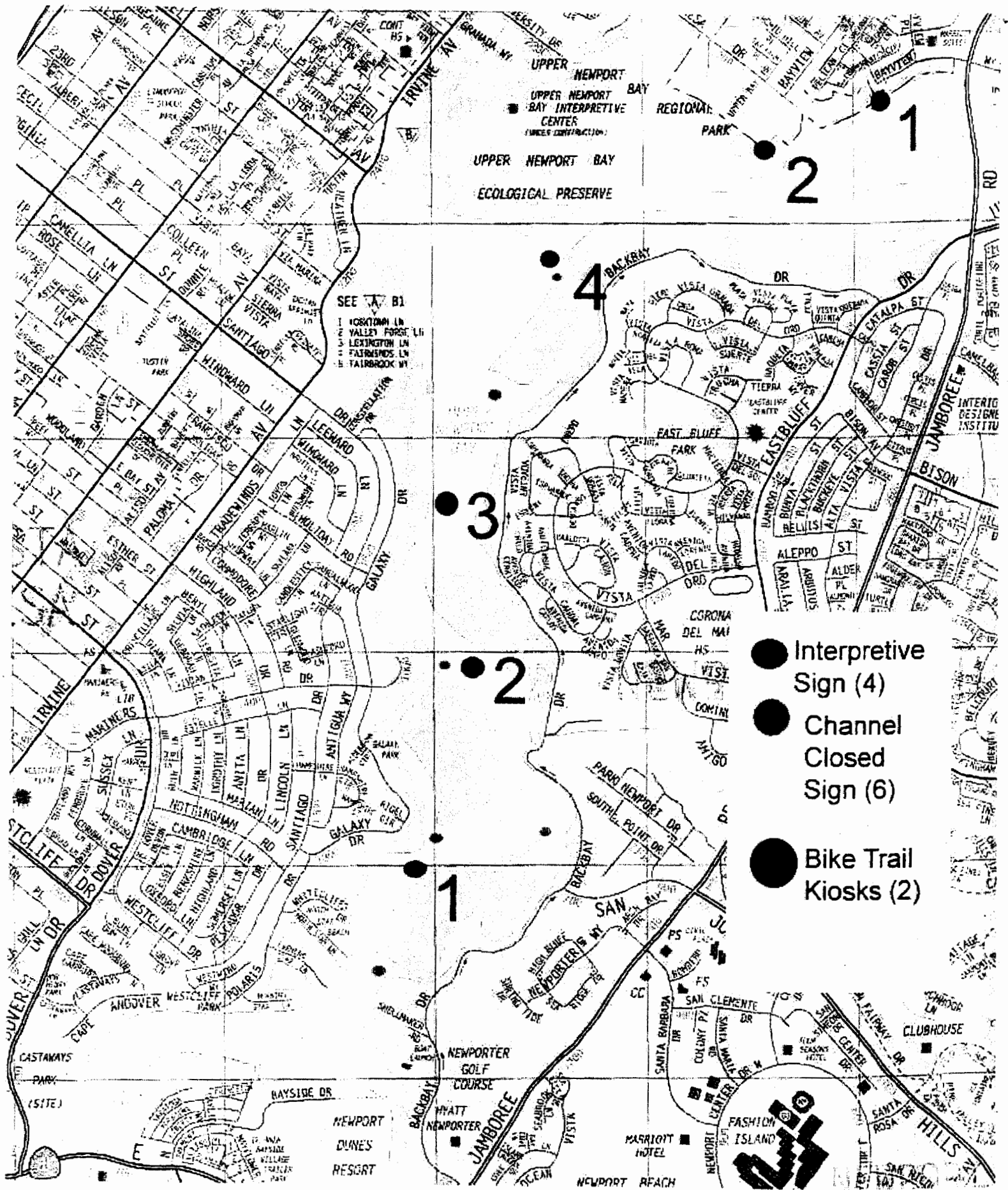
## Floating Interpretive Signs

1. Welcome to Upper Newport Bay Ecological Reserve
  - Facts
  - Species that might be observed
  - Boundary map
  - Guidelines and rules
2. Big Canyon
  - Facts
  - Species
3. New Tern Island
  - Facts
  - Species
  - Temp breeding Season Closure
4. Salt Dyke
  - Facts
  - Species
  - Closed Channel Information

(6) Channel closed signs will most likely be the current "Birds Only" format with the Fish and Game codes.

## Bike Trail Kiosks

- (2) Both will have:
- Site Map
  - Facts
  - Species
  - Guidelines and Rules



- Interpretive Sign (4)
- Channel Closed Sign (6)
- Bike Trail Kiosks (2)

EX. 7