

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 00-110

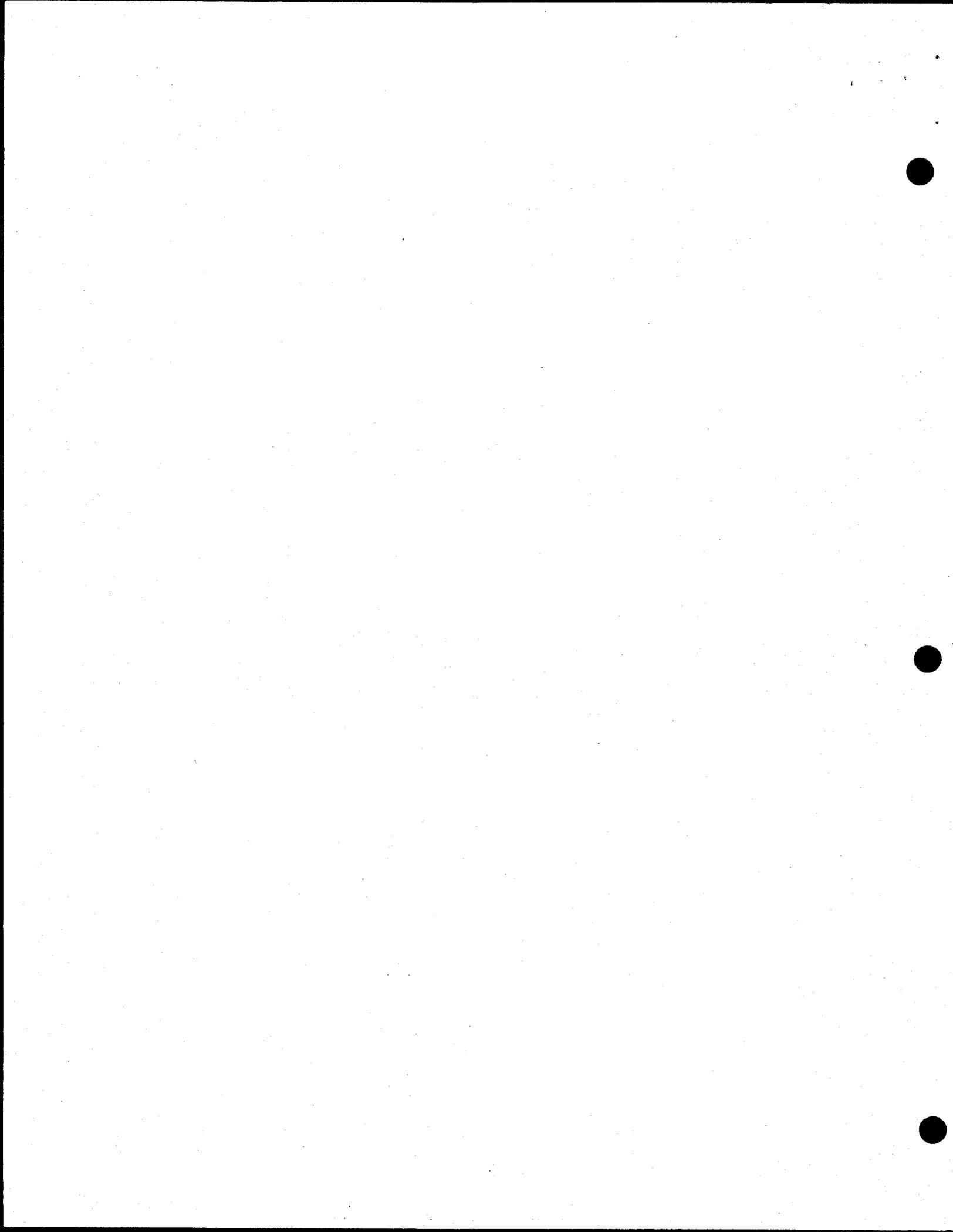
WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY
CERTIFICATION FOR:

UNITED STATES ARMY CORPS OF ENGINEERS
AND
PORT OF OAKLAND

OAKLAND HARBOR NAVIGATION IMPROVEMENT (50 FOOT) PROJECT,
OAKLAND, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region,
hereinafter referred to as the Regional Board, finds that:

1. This order will serve as Waste Discharge Requirements and Water Quality Certification under Section 401 of the Clean Water Act for the Oakland Harbor Navigation Improvement Project (hereinafter, "the 50 Foot Project"). The 50 Foot Project will be carried out by the United States Army Corps of Engineers (hereinafter referred to as "the USACE") under Congressional authorization and funding pursuant to the Water Resources Development Act of 1999. The Port of Oakland (hereinafter, "the Port") is the local sponsor for this federal project. The term "Dischargers," when used in this Order, refers to both the USACE and the Port.
2. The order will provide receiving water limits and discharge specifications, as well as monitoring and reporting requirements for the project.
3. The project location is the Oakland Harbor, located on the east side of San Francisco Bay, in the City of Oakland, Alameda County, California (Figure 1).
4. The 50 Foot Project will deepen existing shipping channels and turning basins in the Oakland Harbor from -42 feet Mean Lower Low Water (MLLW) to -50 feet MLLW. The project will also create approximately 180 acres of shallow water habitats in the Middle Harbor Enhancement Area by using dredged material generated by the project to fill in a former berthing area.
5. The 50 Foot Project is related to the Port of Oakland's Vision 2000 Program of port improvements. The Port indicates that the purpose of the Vision 2000 program is to meet the anticipated demand for transportation services in the San



Francisco Bay Area and Northern California, and to serve markets in the Midwest and beyond. The specific purpose of the 50 Foot Project is to reduce tidal-caused delays associated with containership passages, to increase economies of scale for waterborne commerce, and to increase navigation safety at the Port of Oakland.

6. Other Vision 2000 projects related to the 50 Foot Project include the Berths 55-58 Project (marine terminals development), and the Joint Intermodal Terminal (railyards). The Berths 55-58 project was authorized by Board Order No. 99-055. The other related projects will be regulated by future Regional Board actions as appropriate.
7. The major construction features of the 50-Foot Project are described below (also, see Figure 2). Disposal of dredged material generated is addressed in separate findings. All depths mentioned below do not include overdredge allowance, which is two feet in all cases. The major construction features are:
 - a. Deepening and widening of:
 - **Entrance Channel:** The Entrance Channel will be widened slightly, and deepened to -50 feet MLLW.
 - **Outer Harbor Channel:** The Outer Harbor Channel will be deepened to -50 feet MLLW, and widened to provide sufficient space for ships to navigate the Outer Harbor Channel without compromising structural stability at adjacent berths; and
 - **Inner Harbor Channel:** The Inner Harbor Channel will be deepened to -50 feet MLLW.
 - b. Turning Basin Improvements:
 - **Outer Harbor Turning Basin:** The Outer Harbor Turning Basin will be deepened from -42 feet MLLW to -50 feet MLLW. The diameter will be widened from 1,480 feet to 1,650 feet.
 - **Inner Harbor Turning Basin:** This portion of the 50 Foot Project includes widening and deepening the turning basin from its existing dimensions (-42 feet MLLW, 1,200 feet in diameter) to a depth of -50 feet MLLW, and a diameter of 1,500 feet. The widening of the Turning Basin will include changes to the Alameda shoreline at two locations (see Figure 3): (1) the former Fleet and Industrial Supply Center annex, Alameda (FISC) and (2) at the Alameda Gateway Complex (formerly known as the Todd Shipyard). Activities at the FISC site will include: removal of 81,000 square feet of pile-supported wharf, as well as the portions of "Building 1" overlying this footprint. At the Alameda Gateway, Pier 4 and the Seaway Transportation Building will be demolished. Pier 2 will be cut back to a length of 75 feet, allowing for continued use of the pier by small vessels. The sheet metal shop, a pile-supported catwalk, and mooring dolphins will also

be demolished. The entire shoreline will be stabilized and protected from erosion by a cantilevered bulkhead. All debris generated by the demolition of structures will be removed and disposed of at an appropriate landfill facility.

The excavation of the shoreline will generate approximately 24,500 cubic yards (cy) of concrete, rock, wood, and fill from above the mean high water line. Excavation below mean high water will generate approximately 1,065,000 cy of concrete, rock, wood, artificial fill, bay mud, and Old Bay Mud/Merritt Sand.

c. Infrastructure modifications:

- Modification of the Bay Area Rapid Transit (BART) anode structure and cable (the project would not affect the BART tube itself); and
- Lowering or relocating all existing submarine utilities within the project area as necessary, including the Navy's Alameda sewer pipeline crossing the Inner Harbor Channel.

d. Middle Harbor Enhancement Area.

This portion of the 50 Foot Project will create approximately 180 acres of various shallow water habitats by using dredged material generated by the project to fill in a former berthing area (Figure 4, see detailed findings below).

8. Responsibilities of Dischargers

The USACE is responsible for work associated with improving the federal channels including all work required beyond the federal channel to construct and support the expansion of the Inner Harbor Turning Basin and any side slope stabilization of the channels (such as the construction of bulkheads and dikes), and for the disposal of all dredged material generated by this process, including the disposal of material and all construction activities necessary to complete and meet the goals of the Middle Harbor Enhancement Area. Therefore, the USACE is responsible for compliance with all provisions of this Order related to these activities as well as other provisions of this order, except as expressly conditioned or limited by this finding.

The Port owns the land underlying the Middle Harbor Enhancement Area, and therefore after completion of the initial construction of the Middle Harbor Enhancement Area the Port is required to share responsibility with the USACE for the success of this portion of the project, including the successful development of the habitat as expressly provided for in this finding. As between the USACE and the Port, after the USACE completes the initial construction, the USACE will assume exclusive control of a 10-year monitoring and adaptive management or remediation program, and the Port will assume exclusive control of maintenance and other replacement and rehabilitation requirements. Beyond the 10-year

- program, the Port assumes all control and responsibility until such time as the management of the site is turned over to another public agency.
9. Additional portions of the 50 Foot Project are the sole responsibility of the Port, and will be authorized separately from this order. These portions are:
- Berth deepening and necessary wharf strengthening
 - Sediment rehandling facility expansion, if necessary (existing Berth 10 sediment rehandling facility is currently authorized by Regional Board Order No. 98-019)
 - Infrastructure improvements at Alameda Gateway, if made necessary by the widening of the Inner Harbor Turning Basin, to allow continued operations at Bay Ship and Yacht, a commercial ship repair facility, or relocation of Bay Ship and Yacht.
 - Relocation of the Alameda Ferry stop, if made necessary by the widening of the Inner Harbor Turning Basin.
10. The 50 Foot Project will involve dredging and excavation of approximately 13.3 million cubic yards (mcy) of material. Approximately 5.8 mcy of the dredged material will be placed in the Middle Harbor, as part of the Middle Harbor Enhancement Area to create shallow water habitat. The remaining 7.5 mcy of sediments will be divided among several potential disposal options, which are discussed below. Material suitability for each disposal option is discussed in Findings 11 and 12, below.
11. The USACE distinguishes the different types of material that will be dredged (or excavated) in the Project as follows (they are described in order from the deeper and older materials to the more recently deposited or placed materials):
- a. The deepest material that will be impacted by the Project is the **Old Bay Mud/Merritt Sands (OM)** material. These materials were deposited and covered over by more recent sediments in pre-historical times, and therefore are expected to be free from anthropogenic contaminants. These sediments include Old Bay Mud, Merritt Sand, Posey Sand, and San Antonio Formation materials.
 - b. On top of the OM material is the **Younger Bay Mud (YBM)** formation that was deposited beginning 10,000 years ago and was covered by hydraulic fill beginning in the 1880s. The USACE has divided this material into between one and three layers of four-foot thickness each, based on the expected risk of contamination. Four feet was chosen as a dredgeable unit that a contractor can be expected to dredge with reasonable accuracy. Young Bay Mud Surface (YS) consists of all Younger Bay Mud from the mudline down to a maximum of four feet below the mudline. Young Bay Mud Middle (YM) consists of all Younger Bay Mud from four feet below the mudline down to a maximum of eight feet below the mudline. Young Bay Mud Bottom (YB) consists

the Project Boundary is defined as the outer limit (the "toe") of the containment dike buttress.

2. In accordance with Section 13260 of the California Water Code, the USACE shall file a report with this Regional Board of any material change or proposed change in the character, location, or volume of the discharge. Any proposed material change in the operation shall be reported to the Executive Officer at least 7 days in advance of implementation of any such proposal.
3. The responsible representative of the USACE shall immediately notify the Regional Board staff by telephone whenever an adverse condition occurs as a result of this discharge. An adverse condition includes, but is not limited to, a violation or threatened violation of the conditions of this Order, significant spill of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance. Pursuant to Section 13267(b) of the California Water Code, a written notification of the adverse condition shall be submitted to the Regional Board within 30 days of occurrence. The written notification shall identify the adverse condition, describe the actions necessary to remedy the condition, and specify a timetable, subject to the modifications of the Regional Board, for the remedial actions.

C. Effluent Limitations

1. Wastewater discharged as any part of the project shall not exceed the following limits of quality at any time. It is anticipated that there will be no wastewater discharged as part of the project.
 - a. pH: 6.5 - 8.5
 - b. Settleable matter: 1.0 mL/L/hr
 - c. Dissolved sulfide: 0.1 mg/L
 - d. Suspended solids 100 mg/L

D. Receiving Water Limitations

1. The dredging and/or disposal of sediments and/or return water shall not cause:
 - a. Floating, suspended or deposited macroscopic particulate matter or foam in waters of the State at any place more than 100 feet from the Project Boundary or point of discharge of the return flow, except as authorized under Section B, Discharge Specifications, of this Order.
 - b. Visible floating, suspended, or deposited oil or other products of petroleum origin in waters of the State at any place.

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- c. Waters of the State to exceed the following quality limits at any point *except* within the Middle Harbor Enhancement Area and Inner Harbor Turning Basin widening area Project Boundaries during construction activities:
- i) Dissolved Oxygen: 5.0 mg/l minimum. When natural factors cause lesser concentrations, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
 - ii) Dissolved Sulfide: 0.1 mg/l maximum.
 - iii) pH: A variation of natural ambient pH by more than 0.5 pH units.
 - iv) Toxic or other deleterious substances: None shall be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.

- 2. The groundwater shall not be degraded as a result of the fill or sediment disposal, reuse, or handling.
- 3. The total suspended solids in the top 5 feet of the water column shall not exceed 1500 mg/L for more than 10% of the measurements or exceed 750 mg/L for more than 50% of the measurements during a 24-hour period (midnight to midnight) taken no more than 100 feet beyond either the Inner Harbor Turning Basin or the Middle Harbor Enhancement Area Project Boundaries.
- 4. The concentrations of chemicals of concern, as found in grab samples taken no more than 100 feet beyond the Inner Harbor Turning Basin Project Boundary, shall not exceed the Receiving Water Limits in Table A-1 of the attached Self-Monitoring Program, unless it can be shown that site concentrations are not significantly different from ambient concentrations of those chemicals (as measured in the approach channel to Oakland Harbor).

E. Provisions

- 1. The Dischargers shall comply with all the Prohibitions, Specifications and Provisions of this Order, pursuant to the responsibilities of each Discharger, described earlier in this Order, immediately upon adoption of this Order or as provided below.

2. **Permit Tasks:**

Task #1: Quality Assurance Project Plan

The USACE shall submit a technical report acceptable to the Executive Officer that contains a site-specific Quality Assurance Project Plan (QAPP) for all data collection associated with this Order. The QAPP will outline *in situ* monitoring methods, the collection of soil, sediment, and water samples, analysis of the samples, and reporting of the results. The plan will specifically address project organization, quality assurance objectives, sampling procedures, sample handling and custody, laboratory analyses and quality control procedures, audits, corrective action, data reduction, management, reporting and validation.

REPORT DUE DATE: At least 60 days prior to commencement of construction activities associated with any portion of the project

Task #2: Receiving Water Monitoring and Contingency Plan

The USACE shall submit a Receiving Water Monitoring Plan acceptable to the Executive Officer that describes how the USACE will comply with the requirements set forth in the Self Monitoring and Reporting Plan (SMP) associated with this order. The plan shall include a description of how the USACE will continuously monitor turbidity within 100 feet of the Project Boundaries for the Inner Harbor Turning Basin widening area and the Middle Harbor Enhancement Area. The plan shall also describe how the turbidity meters will be calibrated to estimate total suspended solids and how ambient (pre-project) conditions will be evaluated. The plan shall describe how the grab samples required in the SMP will be taken and how the USACE will keep Regional Board staff informed of the compliance with Receiving Water Limits. The Plan will also describe how the USACE will take action if the Receiving Water Limits are exceeded (Contingency Plan).

REPORT DUE DATE: At least 60 days prior to commencement of construction activities associated with any portion of the project

Task #3: Post Placement Confirmation Sampling Plan

The USACE shall submit a technical report acceptable to the Executive Officer that contains a Post Placement Confirmation Sampling Plan for sediments placed in the Middle Harbor Enhancement Area.

REPORT DUE DATE: July 20, 2001

Task #4: Results of Post Placement Confirmation Sampling

The USACE shall submit a technical report acceptable to the Executive Officer that contains the results of the Post Placement Confirmation Sampling at the Middle Harbor Enhancement Area.

REPORT DUE DATE: Within 120 days of completion of final grading of Middle Harbor Enhancement Area

Task #5: Dredging, Excavation and Filling Final Report

The USACE shall submit a report acceptable to the Executive Officer that summarizes compliance of the Project with requirements in this order related to dredging, excavation, and filling. This report shall include a comprehensive discussion of: the compliance record of the project and corrective actions taken; the effectiveness of the receiving water monitoring methods; the effectiveness of dredging, excavating, and filling methods used for minimizing water quality impacts; estimates of the volumes of material dredged, excavated and placed during the project and estimates of total volume of decant water (if any) generated by the project.

REPORT DUE DATE: Within 120 days of completion of the dredging and filling operations

Task # 6: Alameda Shoreline Structural Bulkhead and Barrier Wall Design and Construction Work Plan

The USACE shall submit a work plan and schedule acceptable to the Executive Officer that provides design and construction specifications for the structural bulkhead to be placed along the Alameda shoreline and for a low permeability barrier wall to be installed at the Alameda Gateway Complex on the westernmost shoreline of the Inner Harbor Turning Basin widening area. The minimum performance requirements for the barrier wall are:

In situ hydraulic conductivities of 1×10^{-6} cm/s or less; and

A minimum key-in depth of four feet into the Young Bay Mud or other stratum of equally low permeability.

The work plan shall also include procedures for conducting and documenting construction quality analysis inspections and a procedure for post-placement performance testing to demonstrate that the wall achieves a hydraulic conductivity of 1×10^{-6} cm/s or less.

Prevention of hydraulic pressure head build-up from groundwater inboard of the barrier wall and potential contaminated groundwater releases due to breakthrough, overtopping, and/or diversion around the ends of wall must also be addressed in this work plan. Plans for constructing a groundwater

extraction system shall be included if hydraulic pressure build-up is determined to be a potential problem. Appropriate treatment and disposal of extracted groundwater, if necessary, shall also be discussed.

Lastly, the work plan shall discuss the construction sequencing of the two projects and how construction of the structural bulkhead may impact the structural integrity and functioning of the barrier wall.

REPORT DUE DATE: At least 60 days prior to start of shoreline excavation activities

Task #7: Structural Bulkhead and Barrier Wall Construction Completion Report

The USACE shall submit a report acceptable to the Executive Officer documenting completion of construction of the structural bulkhead and the low permeability barrier wall to be installed along the Alameda shoreline of the Inner Harbor Turning Basin. The report shall include as-built drawings, post-placement permeability testing results, construction quality analysis inspection results, and any other documentation necessary to demonstrate that the wall was installed according to the approved workplan submitted pursuant to Task #6 of this order.

REPORT DUE DATE: Within 120 days of completion of Inner Harbor Turning Basin construction activities

Task #8: Oakland Harbor Groundwater Monitoring Plan

The Dischargers shall submit a plan acceptable to the Executive Officer describing proposed groundwater monitoring activities on property impacted by the 50 Foot Project and related projects. The plan shall include monitoring for saltwater intrusion due to deepening of the harbor channel and turning basins. This task can be satisfied by the Port of Oakland by including a saltwater intrusion monitoring plan in the existing groundwater monitoring plan required for the ongoing Port of Oakland Berth 55-58 Project.

REPORT DUE DATE: February 15, 2001

Task #9: Floating and Non-Floating Debris Management Plan

The USACE shall submit a plan acceptable to the Executive Officer for preventing building, pier and wharf demolition waste generated during widening of the Inner Harbor Turning Basin from adversely impacting beneficial uses of the Bay. The plan shall address both prevention of debris from falling into the Bay, and collection of debris from the Bay in the event

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that prevention measures fail, as well as disposal procedures for the debris once it has been broken into manageable pieces and collected.

REPORT DUE DATE: At least 60 days prior to commencement of construction activities associated with any portion of the project

Task #10: Spill Response Plan

The USACE shall submit a plan acceptable to the Executive Officer for responding to and cleaning up visible releases of contaminants, including, but not limited to, releases of petroleum product "sheens" during dredging operations.

REPORT DUE DATE: At least 60 days prior to commencement of construction activities associated with any portion of the project

Task #11: Inner Harbor Turning Basin Widening Area Sediment Removal Confirmation Sampling Plan

The USACE shall submit a plan acceptable to the Executive Officer to confirm the removal of contaminated sediment from the Inner Harbor Turning Basin widening area and demonstrate that the sediment remaining in the biologically active layer (top 3 feet) after completion of dredging activities is substantially similar in physical and chemical characteristics to Merritt Sands/Old Bay Muds, as characterized in the report, Tier I Evaluation of Dredged Material (EVS Environmental Consultants, 1997), or that the sediments do not pose an unacceptable risk to biological receptors. The plan shall include, but not be limited to, a procedure for estimating the appropriate number and distribution of samples, a map showing proposed sample locations, a list of constituents to be analyzed, and a description sample collection and analysis methods.

REPORT DUE DATE: At least 60 days prior to the start of dredging in the Inner Harbor Turning Basin

Task #12: Inner Harbor Turning Basin Widening Area Sediment Removal Confirmation Sampling Results

The USACE shall submit a report acceptable to the Executive Officer documenting the results of the Inner Harbor Turning Basin widening area sediment removal confirmation sampling. The report shall provide results of the sediment analyses and an evaluation of the potential risk to biological receptors of the remaining sediments in the widening area.

REPORT DUE DATE: Within 120 days of completion of sediment removal in the Inner Harbor Turning Basin widening area

3. The USACE shall conduct monitoring activities according to the Self-Monitoring and Reporting Program (SMP) attached to this order and as may be amended by the Executive Officer. At any time after adoption of this order, the Dischargers may file a written request proposing modifications to the attached SMP. If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval incorporating the revisions into the SMP.
4. Each discharger shall notify the Regional Board immediately whenever violations of this order (for which the discharger is responsible) are detected.
5. The USACE will continuously estimate total suspended solids concentration using turbidity meters during excavation of the Inner Harbor Turning Basin widening area and during the placement of material at the Middle Harbor Enhancement Area, which will be calibrated with enough grab samples to reduce the error in any measurement to less than 100 mg/L.
6. The USACE will use silt curtains (or an equivalent method) when dredging using a clamshell dredge or excavating in water less than 20 feet deep.
7. During herring spawning season, a monitor, trained by California Department of Fish and Game staff, will observe the construction area and if spawning is observed, will redirect construction activities away from areas of active spawning.
8. Return water overflow from dredging barges shall be limited to no longer than 15 minutes at the dredge site when sediments that have been determined to be suitable for unconfined aquatic disposal are being dredged.
9. In order to minimize resuspension, the USACE will use a clamshell dredge (or equivalent method) for the Inner Harbor Turning Basin widening. The USACE may be required to use alternative construction methods to move the Merritt Sand materials if the suspended solids generated by hydraulic dredging cannot meet the Receiving Water Limits.
10. The USACE shall use a clamshell dredge with a closed (watertight) bucket no larger than 30 cubic yards or the equivalent when dredging or excavating Young Bay Muds in the Inner Harbor Turning Basin widening area. No return water shall be discharged from the disposal barge when dredging in this area.
11. The USACE shall use silt curtains and absorbent booms (or equivalent methods) when dredging or excavating offshore in the Inner Harbor Turning Basin widening area. Both containment and absorbent booms shall be deployed during demolition of concrete and creosote-treated piles. During shoreline excavation, the USACE shall deploy weighted silt curtains, at least 5 feet in depth, completely around the excavation (shoreline to shoreline). If sheens or other visible signs of contaminant releases originating from the excavation and within the silt curtain are detected in surface water, the USACE shall report the spill to Board staff and implement response actions according to the plan submitted pursuant to Task #10 of this Order.

12. Any building, wharf, or pier demolition debris or excavated soil from land above MHW that is stockpiled onshore prior to offsite disposal shall be stored in a manner that utilizes BMPs for construction operations and is in compliance with the NPDES General Construction Stormwater Permit. No runoff of non-stormwater shall be allowed to enter the Bay. All such material shall be disposed of at an appropriate, permitted facility.
13. The USACE and the Port, in accordance with each of the dischargers responsibilities, will follow the proposed plan described in the *Middle Harbor Enhancement Area Construction Period and Long-term Monitoring, Maintenance, and Adaptive Management Program* (Winzler & Kelley and Merkel & Associates, August 2000) and the *Middle Harbor Enhancement Area Construction Period and Long-Term Monitoring Protocols* (Winzler & Kelley and Merkel & Associates, August 2000), as modified per Table 1 (see attachments).
14. The Middle Harbor Enhancement Area will provide the following environmental benefits and habitat types:
 - 3-5 acres of new salt marsh habitat;
 - a minimum of 15 acres of eelgrass habitat within 10 years not including that planted in the previous 3 years;
 - in addition to the 15 acres of eelgrass habitat, above, a minimum of 40 acres of habitat suitable for eelgrass habitat development and 110 acres of other shallow water habitat;
 - new public access beach area;
 - four avian islands, each being a maximum of 5,000 square feet;
 - a protected area for birds along the UP Mole shoreline;
 - 4-8 acres of artificial reef habitat containing some existing hard bottom surfaces such as concrete (4 acres already exist);
 - an estuarine community and habitat that has a higher productivity and greater diversity than the existing community and habitat of Middle Harbor;
 - increased habitat benefits for aquatic birds, especially for the least tern, by increasing the productivity of fish prey; and,
 - a greater number of fish than the existing site.
15. Performance Standards for these benefits will be measured after construction of the site is completed. Monitoring will continue for not less than 10 years and will include the following measurements carried out according to the Middle Harbor Enhancement Area Monitoring Plan documents cited above and as modified per Table 1 in the attachments: surveys of elevation, bathymetry, topography, water depths and velocities, hydrologic turnover rates, sediment size, vegetation, birds, invertebrates, fish; and assessment of physical conditions such as settlement, erosion, and deposition, and monitoring for hydrodynamics and water quality. Monitoring data will be compared to both baseline studies conducted at the Middle Harbor site prior to the restoration project and to reference site data.

While some flexibility in achieving the diverse habitat goals for the Middle Harbor Enhancement Area site should be allowed, performance standards are required to ensure that the desired habitats are provided. Those performance standards are presented in the attached Table 1 and summarized below.

Assessment of overall habitat progress will be made on an annual basis, and a final determination of success will be made at the end of the tenth year of monitoring by the Executive Officer.

- a. The 3-5 acres of new salt marsh habitat will consist of a complex of habitats including high, middle, and low elevation salt marsh, mudflats, salt pannes, salt ponds, and tidal channels. The Regional Board's decision on habitat success will depend on the number of shorebirds and marsh birds using the site compared to reference sites, as well as the overall number of people that visit the marsh annually.
 - b. 15 acres of eelgrass habitat will have at least 5% cover of eelgrass and eelgrass density comparable to the selected reference sites.
 - c. In addition to the 15 acres above, 40 additional acres of habitat suitable for eelgrass habitat development will be constructed at depths ranging from -6 feet to +1 foot MLLW, water velocities between 1 to 20 cm/sec, hydrologic turnover rates for the entire harbor area of no less than once/week, and median sediment grain sizes between 0.1 to 0.3 millimeters. The presence of eelgrass is desired, but not required on these 40 acres. Approximately 120 acres of other shallow water habitat will be created and defined by depths ranging from -18 feet MLLW to intertidal depths.
 - d. Four avian islands, each being a maximum of 5,000 square feet, will have maximum vegetation cover of 20% and will have avian use comparable to the selected reference sites.
 - e. Higher productivity and greater diversity of the native estuarine community and habitat in the restored Middle Harbor Enhancement Area will be realized by the following increases in abundance and/or diversity compared to baseline measurements taken in 1997 and 1999:
 - 1) Benthic Community: abundance will increase by at least 10% and polychaete numbers will decrease in favor of other taxonomic groups;
 - 2) Avian Community: abundance will increase by at least 10% for shore birds and wading birds; the abundance of other birds such as pelicans and least terns will not decrease; and,
 - 3) Fish Community: abundance will increase by at least 15%
Prey species for aquatic birds, especially for the Least Tern, will increase by at least 15%.
16. During construction of the Middle Harbor Enhancement Area, TSS will be monitored continuously and silt curtains will be deployed if TSS concentrations exceed 1,500 mg/L measures at 100 feet from the Project Boundary more than 10% of the time. Also, herring spawns, will be monitored during construction of

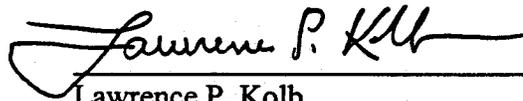
- the project and, if they occur within the Middle Harbor Enhancement Area, discharges will cease for two weeks.
17. The USACE and the Port, in accordance with their respective responsibilities, will provide a Program Manager who will oversee phases 1 through 4 of the Middle Harbor Enhancement Area project and be responsible for implementing a quality assurance program, coordinating with the Technical Advisory Committee, coordinating all data analysis, and producing all reports.
 18. The USACE and the Port, in accordance with their respective responsibilities, will submit annual reports describing the activities associated with the first three phases of construction at the Middle Harbor Enhancement Area.
 19. The USACE and the Port, in accordance with their respective responsibilities, will monitor the Middle Harbor Enhancement Area over a 10-year Performance Evaluation phase after construction is completed to ensure that standards are met for the eelgrass habitat, salt marsh, avian islands, benthic infauna, epifauna, fish, and birds.
 20. Annual reports on the post-construction monitoring of the Middle Harbor Enhancement Area portion of the project will be submitted by the USACE and the Port, in accordance with their respective responsibilities to the Executive Officer beginning one year after final construction, grading, and planting operations have ceased. Annual reports will be submitted each year of the ten-year monitoring period. These reports will include descriptions of monitoring methods used, locations sampled, representative photographs, results of monitoring, reference site data and analysis, condition of sensitive species, wildlife use, aquatic invertebrate and invertebrate community development, management actions taken, responsible parties, recommendations, and other appropriate items. These reports will be due on January 31 of each year, unless another date is approved by the Executive Officer. The USACE and the Port, in accordance with their respective responsibilities, shall notify the Board in writing of the actual start dates of each phase of the project. Any substantive future changes to the Final Construction and Monitoring Plan must be approved in writing in advance by the Executive Officer.
 21. To determine the quality of the Middle Harbor Enhancement Area after placement of dredged sediment and after planting of the eelgrass the USACE and the Port, in accordance with their respective responsibilities, will provide and carry out a sediment/water monitoring sampling plan acceptable to the Executive Officer.
 22. The USACE and the Port, in accordance with their respective responsibilities, will provide sufficient financing for the Middle Harbor Enhancement Area to include construction, implementation, monitoring, corrective actions, maintenance, and contingencies. The USACE and the Port have made commitments in the Consistency Determination that BCDC will take up in December 2000. Those commitments provide financial assurances going beyond a conventional bond, through adaptive management of the Middle Harbor Enhancement Area to ensure

- that the project achieves its restoration objectives. In addition, the Port will establish a \$2 million corrective action contingency escrow account. The amount of funding in this account will in no way limit the USACE's or the Port's obligations for corrective actions or restoration obligations.
23. The Port will provide the necessary legal instruments and financial commitments to ensure permanent preservation and management of Middle Harbor Enhancement Area as a wildlife habitat.
 24. The USACE or the Port will either relocate all storm drains currently draining into the Middle Harbor Enhancement Area or provide a treatment system for those outfalls.
 25. The Port will provide replacement habitat for any proposed habitat that does not meet the goals or performance criteria after 10 years of monitoring. Replacement habitat may include mitigation for temporal habitat losses and will be left to the discretion of the Executive Officer. If replacement habitat is required, the ten year monitoring program will begin again for that replacement habitat.
 26. When the USACE has determined that the Middle Harbor Enhancement Area has achieved its success criteria after 10 years of monitoring, it shall submit a notice of project completion, acceptable to the Executive Officer. The notice of project completion shall include a plan for long-term maintenance and management, including funding in perpetuity for these management activities, which is acceptable to the Executive Officer. After acceptance by the Executive Officer of the notice of completion, submittal of annual reports for the construction and monitoring phases is no longer required.
 27. For construction activities, the USACE and the Port, in accordance with their respective responsibilities and their contractors will be held responsible for compliance with the General Construction Stormwater Permit. The contractors will be held responsible for implementing the Storm Water Pollution Prevention Plan (SWPPP) under the Permit. For ongoing operations at the project site, the Port's tenants will be held responsible for compliance with the General Industrial Stormwater Permit and implementation of the SWPPP.
 28. During the startup of any phase of the proposed work that may increase turbidity in the Bay, the USACE and the Port, in accordance with their respective responsibilities shall download continuously-monitored turbidity data daily and file with the Regional Board self-monitoring reports on the fifth day. The Dischargers may request less frequent sampling (of the Executive Officer) if the Receiving Water Limits are being met.
 29. All reports pursuant to these Provisions shall be prepared under the supervision of a registered civil engineer or certified engineering geologist.
 30. The USACE and the Port, in accordance with their respective responsibilities shall install any additional monitoring devices required to fulfill the terms of any

- Self-Monitoring Program issued to the Discharger in order that the Regional Board may evaluate compliance with the conditions of this order.
31. The USACE shall remove and properly dispose of any wastes, which are discharged at this site in violation of these Requirements.
 32. The USACE and the Port, in accordance with their respective responsibilities shall file with the Regional Board a report of any material change or proposed change in the character, location, or quantity of this waste discharge. For the purpose of these requirements, this includes any proposed change in the boundaries of the disposal areas or the ownership of the site.
 33. The Dischargers shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.
 34. The USACE and the Port, in accordance with their respective responsibilities are considered to have full responsibility for correcting any and all problems, which arise in the event of a failure, which results in an unauthorized release of waste or wastewater.
 35. The USACE and the Port, in accordance with their respective responsibilities shall maintain all devices or designed features installed in accordance with this Order such that they function without interruption for the life of the operation.
 36. The Dischargers shall permit the Regional Board or its authorized representative, upon presentation of credentials:
 - a. Entry on to the premises on which wastes are located or in which records are kept.
 - b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any treatment equipment, monitoring equipment, or monitoring method Sampling of any discharge or surface water covered by this Order.
 37. These Requirements do not authorize commission of any act causing injury to the property of another or of the public; do not convey any property rights; do not remove liability under federal, state or local laws, regulations or rules of other programs and agencies nor do these Requirements authorize the discharge of wastes without appropriate permits from other agencies or organizations.

Order No. 00-110
WDR and Water Quality Certification, US Army Corps of Engineers and Port of Oakland
Oakland Harbor Navigation Improvement (50 Foot) Project
October 18, 2000

I, Lawrence Kolb, Acting Executive Officer, do hereby certify that the foregoing is a full, complete and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on October 18, 2000.



Lawrence P. Kolb
Acting Executive Officer

Attachments:

Table

Table 1 – Performance standards and commitments for the Middle Harbor Enhancement Area

Figures

Figure 1 – Site Location Map

Figure 2 – Components of the Oakland Harbor Navigation Improvement (50 Foot) Project

Figure 3 – Inner Harbor Turning Basin Widening Area: Conceptual Demolition and Excavation Plan

Figure 4 - Middle Harbor Enhancement Area Habitat Design Plan

Appendix

Self Monitoring and Reporting Program

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Table 1. Performance standards and commitments for the Middle Harbor Enhancement Area².

NO	GOALS & OBJECTIVES	WHEN AND HOW DETERMINED	PERFORMANCE CRITERIA
1	<p>Provide a new 3-5 acre marsh to provide bird, fish, benthic and epifaunal foraging opportunities and educational/interpretive benefits.</p>	<p>When: 1) completion of final construction; 2) 10 years after completion of final construction. How: 1) topographic survey (at construction); 2) assessment of vegetation and avian use (over 10 year)</p>	<p>Overall habitat will consist of high, middle, and low elevation salt marsh, mudflats, salt panes, salt ponds, and tidal channels³.</p> <p>For wildlife, especially birds: use comparable to wetland reference sites comparable to sites located at the San Leandro Bay complex of Martin Luther King Restoration Marsh, Arrowhead, and Damon Slough (depending the final habitat type(s) restored).</p> <p>For education: metric will be the total number of annual visitors/year but no performance criteria set. Importance will be assessed at the end of the monitoring period.</p>

² Note: some combination of these performance criteria may be met to achieve success of the project. Success will be determined by the Technical Advisory Committee and regulatory agencies after the 10 year monitoring program is completed.

³ No vegetation cover criteria is required since the goals of bird use and education can be met with only mudflats if that is the final habitat type.

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NO	GOALS & OBJECTIVES	WHEN AND HOW DETERMINED	PERFORMANCE CRITERIA
2	<p>Create a minimum of</p> <ul style="list-style-type: none"> 55 acres of habitat suitable for eelgrass habitat development, 15 acres of which must have eelgrass (see #6, Below) <p>and</p> <ul style="list-style-type: none"> 110 acres of other shallow water, 	<p>When:</p> <ol style="list-style-type: none"> 1) completion of final construction 2) completion of site suitability evaluation and warranty period <p>How:</p> <ol style="list-style-type: none"> 1) topographic survey (at construction); 2) assessment of physical conditions developed 	<p><u>Eelgrass Habitat</u> Water Depths: Target: -4 to 0 feet MLLW Acceptable Range: -6 feet to +1 foot MLLW</p> <p>Velocities: Target: 10-16 cm/sec Acceptable Range: 1 to 20 cm/sec</p> <p>Hydrologic Turnover Rates for Middle Harbor Basin: Target: once/day Acceptable Range: once/week</p> <p>Sediment Grain Size: Target: 0.25 mm median size Acceptable Range: 0.1 to 0.3 mm median size</p> <p><u>Shallow Water Habitat</u> Water Depths: Range: -18 feet MLLW to Intertidal ⁴</p>

⁴ Note: performance criteria for shallow water habitat reflect only the design criteria because the increases in floral and faunal species expected in this habitat are covered in Performance Criteria Number 7 (i.e., increases in benthic invertebrates, birds, and fish).

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NO	GOALS & OBJECTIVES	WHEN AND HOW DETERMINED	PERFORMANCE CRITERIA
3	Provide new public access beach area that will also provide storm refuge to birds.	When: 1) To be completed as part of Berths 55-58/Middle Harbor Shoreline Park work. How: 1) Confirm beach construction under Port's project.	No performance criteria.
4	Provide improved bird habitat, with reduced predators and human disturbance (a) through construction of four avian islands, each being a maximum size of 5,000 sq. ft. and with a gull population of no more than 50%, and (b) by providing a protected area along the shoreline of the UP Mole.	When: 1) completion of final construction; 2) 10 years after completion of final construction. How: 1) topographic survey (at construction); 2) assessment of vegetation and avian use (over 10 year)	Avian Use comparable to wetland reference sites located at San Leandro Bay complex of Martin Luther King Restoration Marsh, Arrowhead, and Damon Slough Vegetation: maximum percent cover of 20%
5	Provide 4-8 acres of artificial reef habitat containing some existing hard bottom concrete surfaces (approximately 4 acres presently exist)	When: 1) completion of final construction. How: 1) site survey at completion.	No performance criteria.

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NO	GOALS & OBJECTIVES	WHEN AND HOW DETERMINED	PERFORMANCE CRITERIA
6	<p>Create a minimum of 15 acres of eelgrass habitat within 10 years after initiation (start of dredging) of project not including that planted in the previous 3 years.</p>	<p>When: 1) completion of 10-year post-construction monitoring program. How: 1) annually evaluate eelgrass cover and density throughout site and reference areas using side-scan sonar and diver verification; 2) compare eelgrass cover with reference areas to control for natural interannual variability in eelgrass.</p>	<p>1) 5% cover after 10 years⁵ 2) density comparable to reference sites located at Crown Beach and Bay Farm Island after 10 years</p>
7	<p>Provide an estuarine community within Middle Harbor Enhancement Area that is of higher productivity and greater diversity than the existing community of Middle Harbor. Provide a habitat that is more highly productive than existing conditions and provides a net increase in habitat value.</p>	<p>When: 1) completion of 10 year post-construction monitoring program. How: 1) evaluation of plant, invertebrate, fish, and avian communities relative to baseline Middle Harbor conditions reported in prior studies.</p>	<p>Benthic community: At least 10% increase in overall density and a decrease in polychaete numbers⁶ Avian community (includes all habitat types created by the project): <u>Aerial birds</u> (pelicans, terns other than the least tern, etc.): Abundance equal to or greater baseline numbers. <u>Shore birds</u>: at least a 10% increase in abundance and diversity <u>Wading birds</u>: at least a 10% increase in abundance and diversity Fish community: At least a 15% in abundance.</p>

⁵ Note: low criterion based on Merkel & Associates inventories of eelgrass beds in the SF Bay.

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NO	GOALS & OBJECTIVES	WHEN AND HOW DETERMINED	PERFORMANCE CRITERIA
8	<p>Increase habitat benefits for aquatic birds and most particularly the least tern colony, by providing more tern prey sized forage species.</p>	<p>When: 1) completion of 10 year post-construction monitoring program.</p> <p>How: 1) evaluate availability of forage species and size classes consumed by avifauna, and specifically least terns.</p>	<p>At least a 15% increase in fish that are prey species for the endangered least tern, compared to baseline measures</p>

⁶ Note: benthic diversity may decline by supporting fewer polychaete and oligochaete species, but overall diversity of the estuarine community will improve with increased numbers of amphipods, mollusks, and other shallow water species.

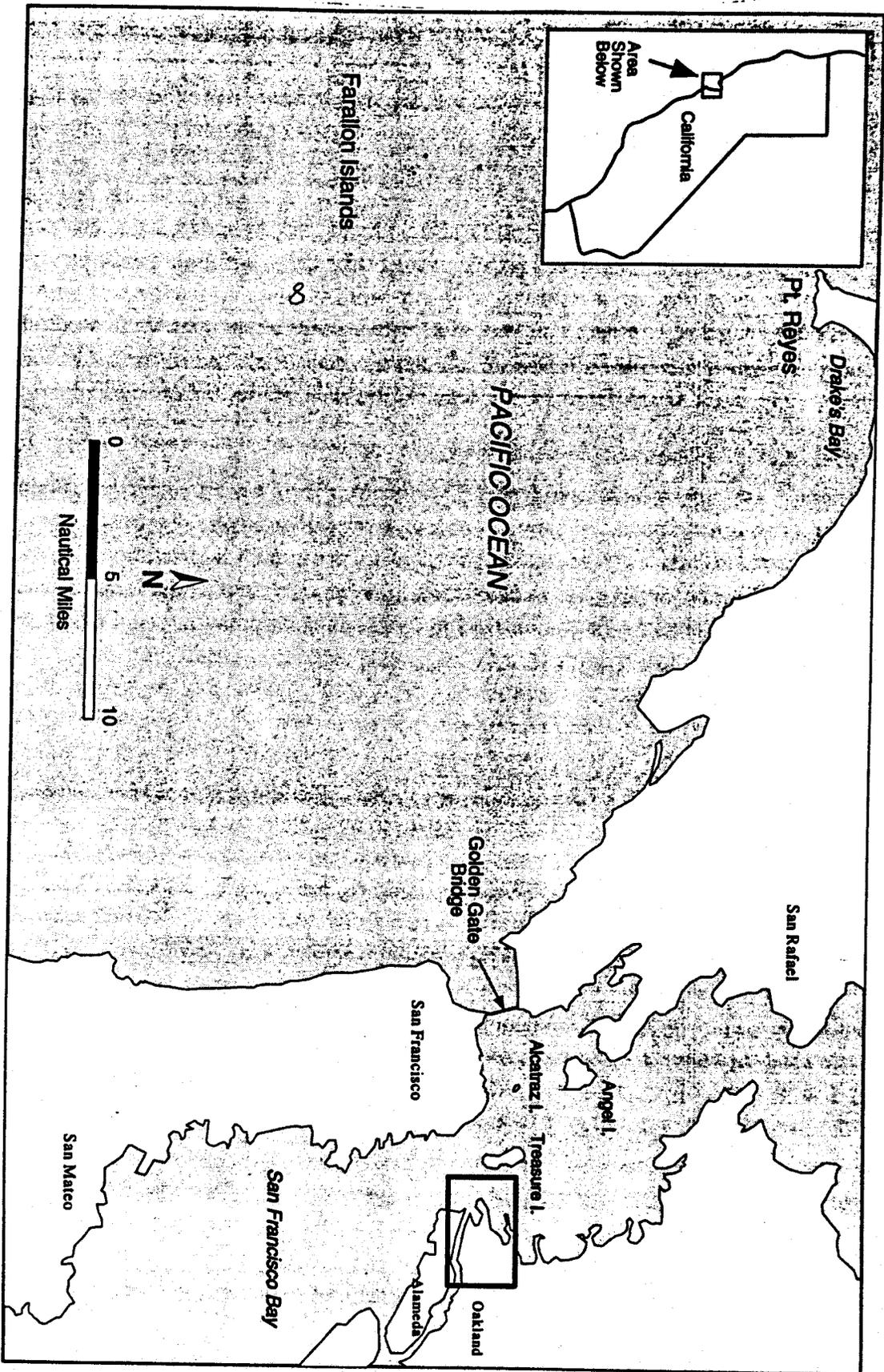


Figure 1. Site Location Map

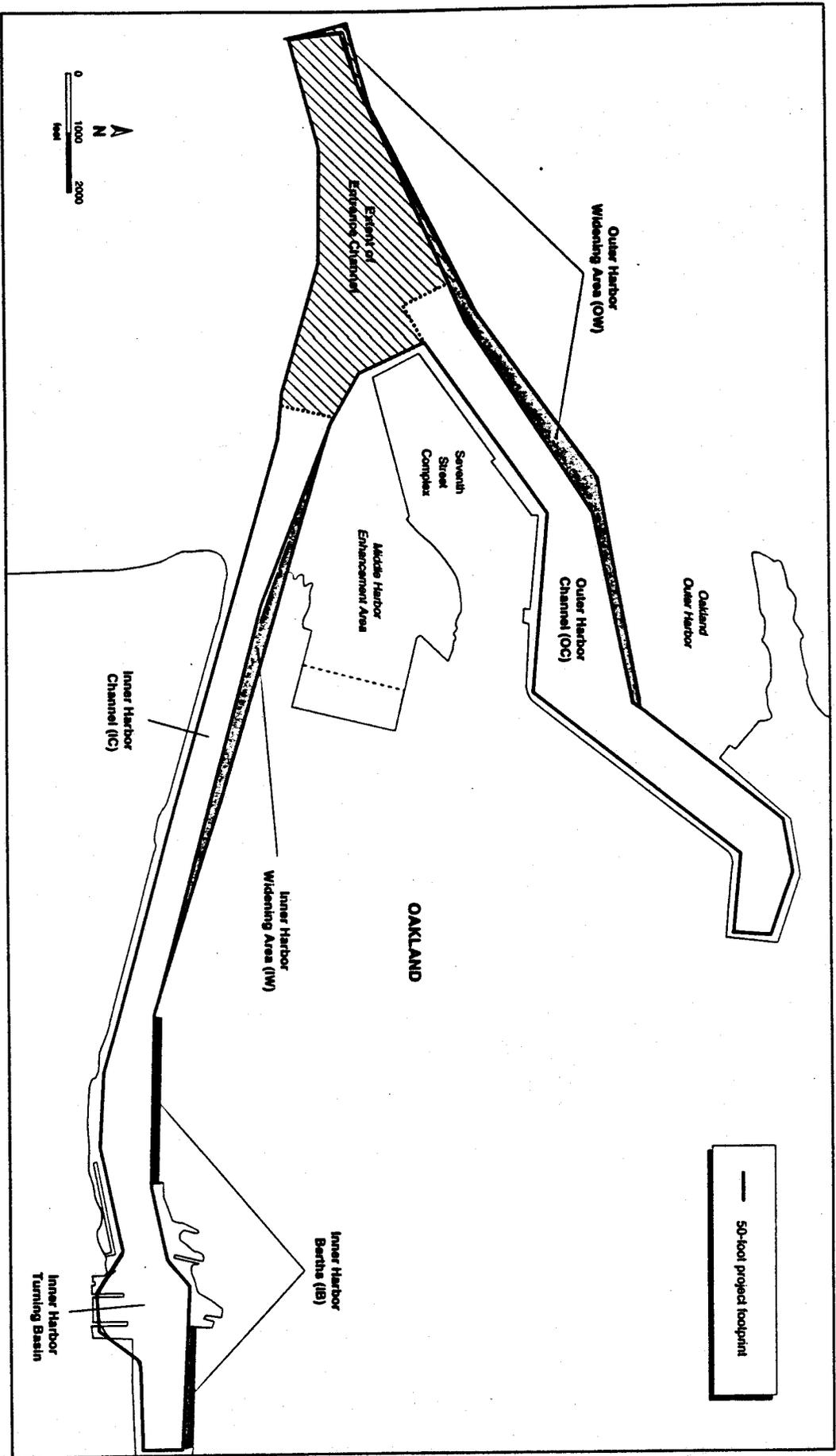


Figure 2. Components of the Oakland Harbor Navigation Improvement (50 Foot) Project

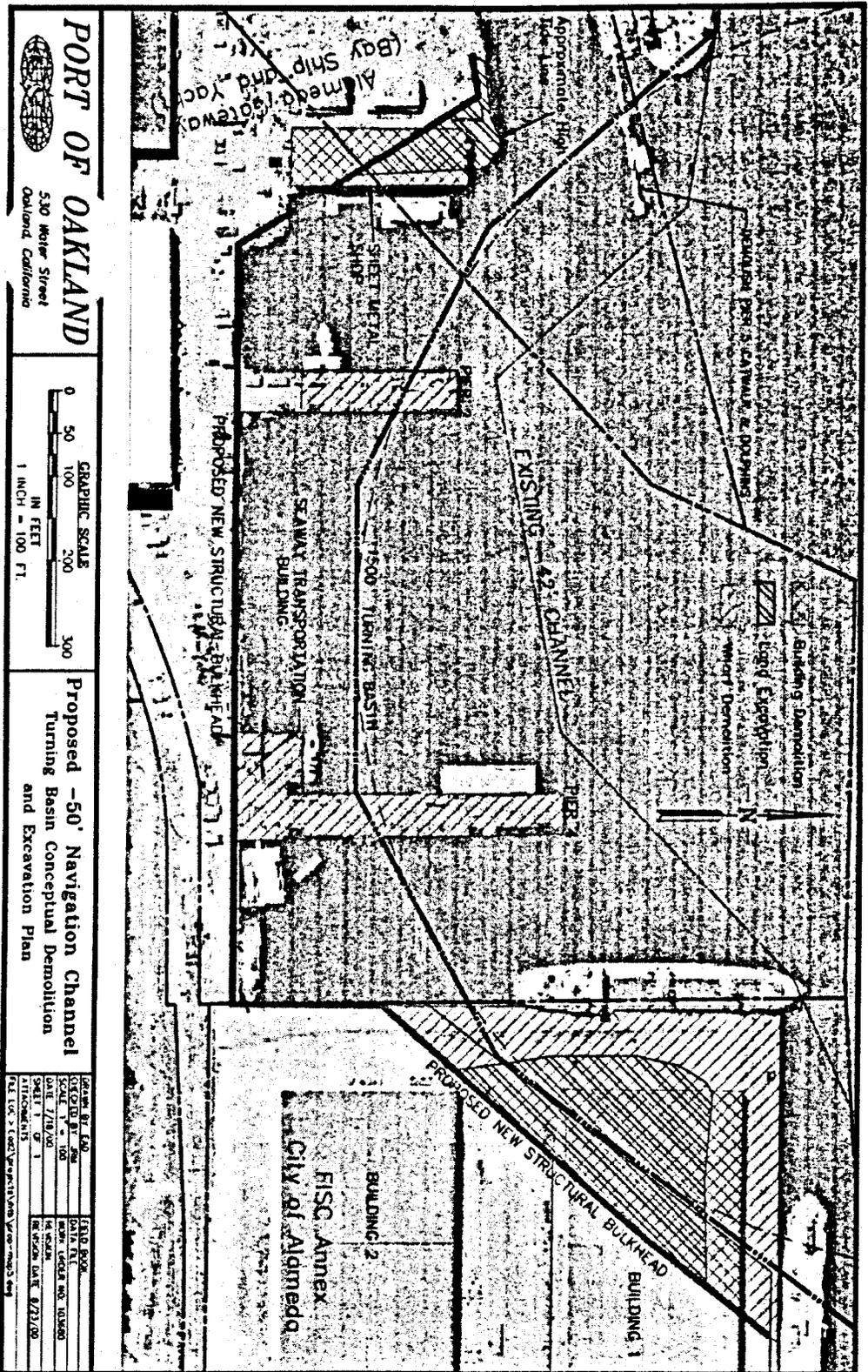


Figure 3. Inner Harbor Turning Basing Widening Area
Conceptual Demolition and Excavation Plan

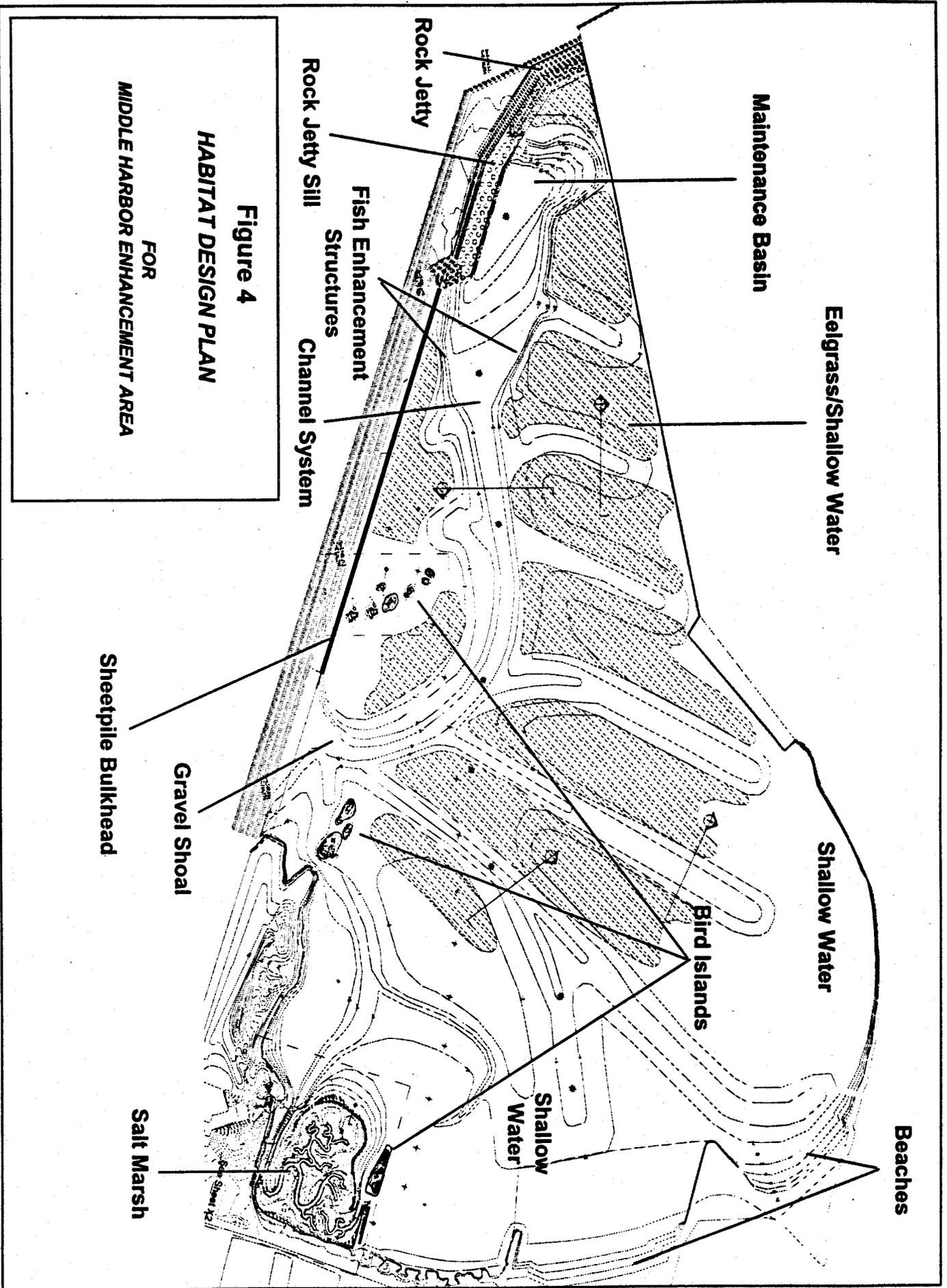


Figure 4
HABITAT DESIGN PLAN

FOR
MIDDLE HARBOR ENHANCEMENT AREA

Sheetpile Bulkhead

Gravel Shoal

Salt Marsh

Rock Jetty

Rock Jetty Sill

Fish Enhancement Structures

Channel System

Maintenance Basin

Eelgrass/Shallow Water

Shallow Water

Bird Islands

Shallow Water

Beaches

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

**SELF-MONITORING AND REPORTING PROGRAM
FOR**

**UNITED STATES ARMY CORPS OF ENGINEERS
AND
PORT OF OAKLAND**

OAKLAND HARBOR NAVIGATION IMPROVEMENT (50 FOOT) PROJECT

OAKLAND, ALAMEDA COUNTY

ORDER NO. 00-110

CONSISTS OF

PART A

AND

PART B

PART A

A. GENERAL

1. Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16. This Self-Monitoring Program is issued in accordance with Provision 3 of Regional Board Order No. 00-110.
2. The principal purposes of a discharge monitoring program are: (1) to document compliance with waste discharge requirements and prohibitions established by the Board, (2) to facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of standards of performance, and toxicity standards, (4) to assist the dischargers in complying with the requirements of the California Code of Regulations.

B. SAMPLING AND ANALYTICAL METHODS

1. Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods and in accordance with an approved Quality Assurance Project Plan (Provision 2, Task 1 of Order No. 00-110).
2. Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.
3. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITION OF TERMS

1. A **grab sample** is a discrete sample collected at any time.
2. **Receiving waters** refers to any surface or groundwater which actually or potentially receives surface or groundwater, which pass over, through, or under waste materials or contaminated soils. For these requirements, the samples to evaluate the condition of the receiving water should be taken within 100 feet of the Project Boundary.

3. **Project boundary** as defined in Board Order No. 00-110, is any point along the silt curtain in the Inner Harbor Turning Basin (IHTB) widening area and any point along the outer limit (the "toe") of the containment dike buttress in the Middle Harbor Enhancement Area (MHEA).
4. **Standard observations** refer to:
 - a. **Receiving Waters**
 - i) Evidence of floating and suspended materials generated by the construction activities, as recorded by visual observations, video or photographic records, continuous, fixed-turbidity meters that have been calibrated to total suspended solids and grab samples.
 - ii) Discoloration and turbidity: description of color, source, and size of affected area.
 - iii) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
 - b. **IHTB Widening Area- On-shore**
 - i) Evidence of liquids leaving or entering the shoreline excavation/demolition area, estimated size of affected area and flow rate. (Show affected area on map)
 - ii) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
 - iii) Evidence of erosion of stockpiled materials or generation of dust from the stockpiles.
5. **Operations monitoring** refers to the following information:
 - a. A description of and a map showing the area(s) dredged during the previous month.
 - b. Estimates of the daily volume in cubic yards and the disposal location(s) of dredged materials removed during each day of the previous month.
6. **Construction activities** refer to dredging, excavation, and filling.

D. SAMPLING, ANALYSIS, AND OBSERVATIONS

The Dischargers are required to perform sampling, analyses, and observations in the following media:

1. The total suspended solids (TSS) in the top 5 feet of the water column at the IHTB and MHEA Project Boundaries shall be continuously estimated with turbidity meters (optical backscatter sensors) that have been calibrated with grab samples.
2. Dissolved mercury in the top 5 feet of the water column shall be monitored at turbidity/TSS station using the methods described in Part B and according to the schedule in Table A-1.

E. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the Dischargers or their laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

1. Identity of sample and sample station number.
2. Date and time of sampling.
3. Date and time that analyses are started and completed, and name of the personnel performing the analyses.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Calculation of results.
6. Results of analyses, and detection limits for each analysis.

F. REPORTS TO BE FILED WITH THE BOARD

1. Written monitoring reports shall be filed according to the schedule set forth in Table A-1. The reports shall contain the following:

a. Letter of Transmittal

A letter transmitting the essential points in each report should accompany each report. Such a letter shall include a discussion of any requirement violations found during the last report period, and actions taken or planned for correcting the violations. If the Dischargers have previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by the Army Corps District Engineer or his

duly authorized representative or a principal executive officer at the level of Deputy Port Director or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

- b. Each monitoring report shall include a compliance evaluation summary. The summary shall contain:
 - i) An estimation of the volume of the facility discharge on a daily, weekly and monthly basis.
 - ii) The method and time of measurement, equipment and methods used to monitor turbidity and total suspended solids (TSS) in the field.
- c. A map or aerial photograph shall accompany each report showing observation and monitoring station locations.
- d. Laboratory statements of results of analyses specified in Part B must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Board.
 - i. The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and approved by the Executive Officer.
 - ii. In addition to the results of the analyses, laboratory quality assurance/quality control (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is less than the recovery acceptance limits specified in the USEPA method procedures or the laboratory's acceptance limits, if they are more stringent than those in the USEPA method procedures; the results of equipment and method blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.
- e. A summary and certification of completion of all Standard Observations for the facility including the IHTB and MHEA Project Boundaries in the receiving waters and the demolition and excavation areas on the Alameda shoreline that are part of the IHTB widening.

- f. A summary and certification of completion of all Operations Monitoring information.

2. Contingency Reporting

- a. A report to the Executive Officer and Regional Board case manager shall be made by telephone of any accidental discharge of whatever origin immediately after it is discovered. A written report shall be filed with the Board within five days thereafter. This report shall contain the following information:
 - i) A map showing the location(s) of discharge(s);
 - ii) Approximate flow rate;
 - iii) Nature of effects, ie., all pertinent observations and analyses; and
 - iv) Corrective measures underway or proposed.
- b. If the receiving water limits for Total Suspended Solids and/or dissolved mercury shown in Table A-1 are exceeded, the Dischargers shall implement contingency actions per the *Receiving Water Monitoring and Contingency Plan* to be submitted by the Dischargers pursuant to Provision 2, Task #2 of Board Order No. 00-110 and approved by Board staff.

3. Final Reporting

The Dischargers shall notify the Regional Board by letter upon completion of the project. Project completion is considered to be the date on which all dredged material has been deposited at its final disposal location(s). The Dischargers shall also submit a final report containing the following information:

- a. A comprehensive discussion of the compliance record, and the corrective actions taken or planned, which were needed for compliance with the waste discharge requirements;
- b. A comprehensive discussion of the effectiveness of receiving water monitoring methods;
- c. An evaluation of the effectiveness of dredging and filling methods used (at minimizing water quality impacts);
- d. An estimate of the total volume of material dredged or excavated from each discrete site during the project and the total volume of material placed at each disposal or reuse location; and,
- e. An estimate of the total volume of decant water generated from dewatering of the dredged material (handled and disposed of under Waste Discharge Requirements Order No. 98-019 for the Port of Oakland's Berth 10 Dredged Sediment Rehandling Facility).

PART B: MONITORING AND OBSERVATION SCHEDULE

I. DESCRIPTION OF MONITORING STATIONS AND ANALYSES

A. RECEIVING WATERS

1. Number and locations of turbidity (optical backscatter) meters¹:
 - a. Minimum of one turbidity meter no more than 100 feet beyond the Project Boundary in the MHEA (monitoring for constituents other than turbidity is described in Table A-2)
 - b. Minimum of one turbidity meter per construction area, no more than 100 feet beyond the Project Boundary in the IHTB widening area (may be attached to clamshell dredging barge/ electrical spool barge combination)
 - i. If simultaneous construction activities (e.g. land excavation on Alameda shoreline and offshore dredging in the IHTB widening area) occur > 300 yards apart, each construction area will have a turbidity meter located no more than 100 feet beyond the boundary of that particular area, as defined by the silt curtain.
 - ii. If simultaneous construction activities occur > 100 feet but ≤ 300 yards apart, the Dischargers may deploy one turbidity meter for both areas (see special receiving water limits for this scenario in Table A-1).
 - c. One turbidity meter located > 300 yards from all construction activities in the MHEA and the IHTB to measure ambient conditions
2. Dissolved Total Mercury grab samples (to be located coincident with turbidity/TSS moorings, including the ambient station)
 - a. Grab water samples shall be collected and analyzed using two different methods for comparison purposes:
 - i. US EPA Method 245.1: Mercury in Water by Cold Vapor Atomic Absorption; and,

¹ Specific locations to be proposed in *Receiving Water Monitoring and Contingency Plan* to be submitted by the Discharger pursuant to Provision 2, Task #2 of Board Order No. 00-110

ii. Ultra-Clean Sampling and Analytical Methods consisting of:

- Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, US EPA; and,
- Method 1631: Mercury in water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence, Proposed Rule, US EPA, Federal Register June 8, 1999.

II. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis is provided in the attached Tables A-1 and A-2.

III. REPORTING SCHEDULE

Reports submitted in compliance with this Self-Monitoring Program shall be submitted on the following basis:

Initial Construction Phase Turbidity/TSS Reporting - Reports of the turbidity measurements and TSS estimates downloaded daily during the first five days of each new construction phase shall be submitted on the fifth day after initiation of that phase during all dredging and fill placement operations that may impact surface waters.

Monthly Reporting - Monthly reports shall be submitted during all dredging, fill placement and decanting operations. Monthly reports shall be submitted by the 15th day of the month following the reporting period, beginning with the first month of dredging. Monthly reports shall include the measurements, observations and monitoring as enumerated in Table A-1.

Annual Reporting - Annual reports on the various phases of development of the Middle Harbor Enhancement Area shall be submitted starting with the first year of construction and shall continue for 10 years after completion of construction. Annual reports shall include the measurements, observations and monitoring as enumerated in Table A-2.

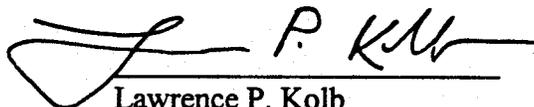
Final Reporting - The Dischargers shall notify the Regional Board by letter upon completion of the project. Project completion is considered to be the date on which all dredged material has been deposited at its final disposal location(s). The Dischargers shall also submit a final report within 60 days of the project completion date.

All reports shall be submitted to the Regional Board case manager at:

California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

I, Lawrence P. Kolb, Acting Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 00-110;
2. Was adopted by the Board on October 18, 2000; and
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Dischargers, and revisions will be ordered by the Executive Officer or the Board.



Lawrence P. Kolb
Acting Executive Officer

Attachments: Tables A-1 and A-2

Table A-1. Receiving Water Monitoring Schedule for Inner Harbor Turning Basin Widening Area (IHTB) and Middle Harbor Enhancement Area (MHEA)

Type of Monitoring	Receiving Water Limits ≤ 100 Feet Beyond Project Boundary	Receiving Water Limits > 100 Feet But ≤ 300 Yards Beyond Project Boundary	Frequency	Reporting Period	Report Due Date
Total Suspended Solids - estimated from turbidity measurements (See Part B, I.A.1.)	90% of all measurements ≤ 1500 mg/l 50% of all measurements ≤ 750 mg/l	90% of all measurements ≤ 500 mg/l 50% of all measurements ≤ 250 mg/l	Continuous	First 5 days of each new construction phase – data downloaded daily Following weeks – data downloaded twice weekly	5 th day after new construction phase begins Monthly
Dissolved Total Mercury (See Part B, I.A.2.)	0.025 µg/l	0.025 µg/l	Grab	First 5 days of each new construction phase – Daily sampling (72-hour lab turnaround) For remainder of phase – Monthly sampling	10 th day after new construction begins or sooner, depending on when all 5 days' lab results have been received Monthly
Standard Observations (See Part A, C.4.a&b)	--	--	Daily	Monthly	15 th of month following reporting period
Operations Monitoring (See Part A, C.5.a&b)	--	--	Daily	Monthly	15 th of month following reporting period
MHEA Construction Period and Long-Term Monitoring (See Table A-2 for description)	--	--	Varies depending on project phase and type of measurement	Annual	January 31 for previous monitoring year (Beginning with 1 st year of construction and continuing for 10 years after completion of construction)

Table A-2. Monitoring Schedule for Middle Harbor Enhancement Area

PHASE	DURATION	CATEGORY	CONSTITUENT OR MEASUREMENT	SPECIFIC MODE OF SAMPLING OR LOCATION	TYPE & FREQUENCY OF SAMPLE	Reference; COE/PORT Monitoring Plan ^{1,2}
I. Construction	4-4.5 years ³	Water Quality	TSS (mg/l)	≤ 100 ft bayward of toe of containment dike	Continuous	2.4.1
		Biological Windows/Surveys	Herring Spawn	Observations from dredge by trained observers & coordination with CDFG monitors	Seasonal: weekly during 12/01 through 3/01	2.4.2
II. Design Verification	4 years (concurrent with construction)	Sheetpile Jetty Reflected Waves	Least Tern Foraging Activities	Trained observers	Seasonal: weekly during 4/15 through 9/01	2.4.2
		Sediment Fill Stratigraphy & Material Placement	Wave Properties (wave height and steepness)	Sheetpile Wall (1 location)	Every daytime hour over 1-2 months, starting 6-9 months after jetty construction	2.5.1
			Source & Placement data; Bathymetry	Cell placement locations	Weekly during material placement (approx. 1 year)	2.5.2
Light, Sediment, Water Quality	Hydrodynamic Model Verification/Adjustment	Flow velocity, wave height & direction, tidal delay & muting	Current data measured both at 2 fixed monitoring stations & along 7 transects.	Approx. 1 year with various periods of deployment depending on constituent	2.5.4	
		Wave data from 3 fixed stations	MHEA will be divided into several sectors with fixed monitoring points at 38 stations of future pilot planting areas	4, 6, 8 & 10 months following 2 nd fill placement.	2.5.5	

¹ Middle Harbor Enhancement Area Construction Period and Long-Term Monitoring, Maintenance and Adaptive Management Program (Winzler & Kelley and Merkel & Associates, August 2000)

² Specific monitoring protocols identified in Middle Harbor Enhancement Area: Construction Period and Long-term Monitoring Protocols (Program (Winzler & Kelley and Merkel & Associates, August 2000)

³ Includes jetty construction, initial fill placement, initial settlement, 2nd fill placement and 2nd settlement period & surface sculpting.

PHASE	DURATION	CATEGORY	CONSTITUENT OR MEASUREMENT	SPECIFIC MODE OF SAMPLING OR LOCATION	TYPE & FREQUENCY OF SAMPLE	Reference: COE/PORT Monitoring Plan 1,2
III. Suitability Eval/Warranty Period	±1.5 years (beginning after completion of Phase I)	Consolidation/ Settlement Assessment	Untended Water Quality: temperature, turbidity, D.O., PAR, salinity, depth	Four water quality units (one at a reference and 3 around the 38 sediment stations)	At 20-minute intervals during 2-week period immediately following 2 nd fill placement and repeated 6 months later.	2.6.1
			Tended Water Quality: GPS location for light, turbidity, salinity, temperature, and DO.	Lines run in a 200 foot grid pattern parallel and perpendicular to the fill centerline	4, 6, 8 & 10 months following fill placement.	
			Bathymetric surveys	Consolidation & settlement will be monitored with 4 fixed location platforms.	Once at beginning, once ± 1.5 yr. Later.	
			Consolidation curves for settling rates and interstitial porewater pressures		Semi-annually	
			Surveys of bird islands & marsh containment berm	Aerial imagery	3 times over 18 months	
		Stability & Topographic Suitability for Habitat	Sediment erosion & deposition; bottom stability	38 stations of future pilot planting areas	Total 4 - 12 months with various intervals (e.g., 20 minutes or monthly) depending on constituent	2.6.2
		Water Column	Light, temperature, turbidity, D.O., PAR, salinity, depth	MHEA Reference Areas (Crown Beach, Bayfarm Island)	Total duration 18 months: 6, 12, & 18 months (high & low and spring & neap tides) two weeks of untended sampling	2.6.3

PHASE	DURATION	CATEGORY	CONSTITUENT OR MEASUREMENT	SPECIFIC MODE OF SAMPLING OR LOCATION	TYPE & FREQUENCY OF SAMPLE	Reference; COE/PORT Monitoring Plan 1,2
IV. Establishment Monitoring Program	10 years (beginning after completion of Phase III)	Bathymetric & Avian Islands surveys	Elevation/area	Lines run in a 200 foot grid pattern parallel and perpendicular to the fill centerline	Years 1, 2, 3, 5, and 10	2.7.1
				Donor beds	6 & 12 months following harvest	2.7.2
<u>Biological</u>		Eelgrass Vegetation	Lateral spread and turion density, survival, growth, vigor, and natural recruitment measured by side-scan sonar & diver surveys.	MHEA & Reference areas: 20 plants measured in each of the 38 pilot transplant plots	6 months & Years 1, 2, 3, 5, 7, & 10	2.7.2
				Stratified random quadrat field surveys & aerial surveys. 4 samples from 3 strata (high, medium, low vegetation zones) totaling 12 quadrats (quadrat size = 1 m ²).	Years 1, 2, 3, 5, 7, and 10	
				Infaunal: 15 cm cores taken in 15 subtidal and 5 intertidal habitats—20 samples/sampling year	Infaunal surveys: Years 1, 2, 3, 5, 7, and 10.	
Benthic Invertebrates			Infaunal: density, biomass, composition by major taxonomic group.	Epifaunal: Number of hauls and size of sampling area depends on equipment used. Methods will follow CDFG guidance.	Epifaunal surveys: Years 1 through 10.	2.7.2
				Density, biomass, length, composition in shallow areas, shallow channels,	Annually during years 1 through 10 for surveys; (April and Summer)	
Fish						

PHASE	DURATION	CATEGORY	CONSTITUENT OR MEASUREMENT	SPECIFIC MODE OF SAMPLING OR LOCATION	TYPE & FREQUENCY OF SAMPLE	Reference; COE/PORT Monitoring Plan 1,2
			and eelgrass habitat, as well as eelgrass habitat at reference sites.	Methods will follow CDFG guidance	Different gear and location for 2 sampling events	
		General Birds	Composition, abundance, avian activities, habitat type, tide heights, and nearby human activities.	2-4 Study blocks TBD.	2 times/yr in Years 1, 2, 3, 5, 7, and 10. (December and June, during both high and low tides)	2.7.2
		Human Use	Surveys on group size, activity, and habitat.	2-4 Study Blocks, TBD.	2 times/yr in Years 1, 2, 3, 5, 7, and 10. (December and June, during both high and low tides)	2.7.3
V. Long-Term Management	Indefinite (beginning after completion of Phase IV)	Physical	Bathymetry	Lines run in a 200 foot grid pattern parallel and perpendicular to the fill centerline	Once every 3 years in perpetuity	2.8.1
		Avian Islands	Settlement & Bird Usage	Lines run in a 200 foot grid pattern parallel and perpendicular to the fill centerline	Once every 3 years in perpetuity for island surveys Annually in perpetuity for bird use;	2.8.1
		Habitat Concerns	Conditions at site for access, compliance, and general degradation		At least monthly in perpetuity	2.8.2

Groundwater Protection Waste Containment Division

Adopted Order Check List

ITEM	Case Handler Initials	Section Leader Initials	Division Chief Initials
Cover Letter			
Revised Order			
WDS Forms & CEQA			
Mailing Instructions Form			
Attached Mailing List?(eg.THM has it)			
E-mail Order to State Board:			
Email Order to:SCB for R-2 web site			

Special Instructions:

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