

## CHAPTER 4

### DREDGING AND DISPOSAL OF DREDGED SEDIMENT

#### BACKGROUND

Dredging and dredged sediment disposal in the San Francisco Bay Area is an ongoing activity because of continual shoaling that impedes navigation and other water-dependent activities. Large volumes of sediment are transported in the waters of the Sacramento and San Joaquin rivers, which drain the Central Valley. The average annual sediment load to the San Francisco Bay system from these two rivers is estimated to be eight million cubic yards. Of this amount, some four million cubic yards are transported out of the Bay through the Golden Gate. The remaining four million cubic yards are circulated and/or deposited in the Bay. In addition, some two-and-one-half million cubic yards are deposited into the Bay from local watersheds. The largest volume of sediment that affects the Bay is the approximately 100 million cubic yards that are re-suspended in the water column by the actions of tide, wind and currents.

Dredging is generally necessary to maintain the beneficial use of navigation. The trend to increasingly large vessels also necessitates increased channel depths in the shipping channels.

Disposal of the majority of dredged material from San Francisco Bay has historically been at designated disposal sites in San Francisco Bay. This practice dates back to at least the beginning of the 20<sup>th</sup> century. Currently there are three such multi-user disposal sites designated by the U. S. Army Corps of Engineers (USACE, or Corps): the

Alcatraz (SF-11), San Pablo Bay (SF-10), and Carquinez (SF-9) Disposal Sites. A fourth site (Suisun Bay, SF-16) is maintained for Corps use exclusively for material from dredging of the Suisun Bay and New York Slough federal channels.

Annual maintenance dredging of shipping channels, harbors, and marinas in the San Francisco Bay results in disposal of between two and eight million cubic yards of dredged material at in-bay disposal sites. All designated aquatic dredged material disposal sites are operated as “dispersive” sites, that is, material disposed at the sites is intended to disperse and be carried by currents out to sea. Additionally, one of the management practices is to only allow material to be disposed of at disposal sites downstream of the dredging sites, with the objective of moving sediments away from dredging sites and out of the Bay. While the overall hydrodynamics of the Bay are not completely understood it is clear that the fate of material placed at in-bay disposal sites is dependent upon material type, disposal volume, and disposal frequency.

Since 1994, when the U. S. EPA designated the Deep Ocean Disposal Site approximately 50 miles offshore of San Francisco, approximately 6 million cubic yards of dredged material have been disposed of there.

Dredged material has also been used as fill for wetland restoration projects, for levee maintenance, and as daily cover for landfills. Volumes for these, and other beneficial reuse projects, have totaled approximately 2 million cubic yards over the past 9 years.

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**REGULATORY FRAMEWORK**

The Corps of Engineers issues federal permits for dredging projects pursuant to Section 404 of the Clean Water Act. The U. S. EPA provides oversight of the Corps' regulatory program.

As a part of ~~this~~ the Section 404 permitting process, the dredging permit applicant must seek water quality certification from the State of California, in accordance with Section 401 of the Clean Water Act. ~~Currently the applicant must contact the Regional Board for 401 certification. The Regional Board may waive certification, or it may recommend to the Executive Director of the State Board that certification be granted or denied. The Regional Board reviews the proposed project, then may grant or deny certification. Additionally, the Regional Board may choose to act under the authority of the state Porter Cologne Water Quality Control Act, by issuing waste discharge requirements for the project in conjunction with the water quality certification.~~

Water quality certifications and waste discharge requirements often contain conditions to protect water resources that the permittee must meet during the term of the permit. ~~For example, certifications often contain conditions requiring periodic testing of the dredged material, or avoidance of sensitive ecological areas and spawning grounds.~~

The San Francisco Bay Conservation and Development Commission (BCDC) also regulates dredging and disposal under the provisions of the McAteer-Petris Act.

Projects involving the use of sovereign lands of the state may be subject to the lease or permitting

requirements of the California State Lands Commission.

**LONG TERM MANAGEMENT STRATEGY**

In the early 1980s, the problems associated with heavy reliance on in-Bay disposal sites became apparent, including navigational problems associated with the "mound" of dredged material at the Alcatraz disposal site, as well as potential environmental problems associated with disposal and dredging activities in general. These conditions led to the creation of the Long Term management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS).

The LTMS program began in 1990, when the Regional Board joined with USACE, U. S. EPA, BCDC, the State Board, and representatives from the dredging and environmental communities to ensure adequate dredged material disposal and reuse capacity and protection of aquatic resources over a 50-year planning period. The adopted goals for the program (Table 4-13) reflect this purpose. The primary focus of the LTMS is on the various dredged material disposal options and their related impacts. The LTMS was also initiated to maximize beneficial reuse of dredged material, improve coordination of the agencies governing these activities, and ensure a more predictable regulatory framework.

The LTMS examined several possible long-term dredge material management strategies. The LTMS Policy Environmental Impact Statement/Programmatic Environmental Impact Report (LTMS EIS/EIR) for the program selected as the preferred alternative a reduction in the reliance on in-Bay disposal. The ultimate goal of this

4-A

4-A

alternative is a “low” volume of disposal at in-Bay sites (20% of historical average dredging volumes), and an increased reliance on ocean disposal and beneficial reuse of dredged material (with the remaining material split evenly between these two options). The LTMS EIS/EIR was certified by the USACE and U. S. EPA in July 1999, and by the State Board in November 1999, thus beginning the implementation of the preferred alternative.

~~impacts of dredged sediment disposal in San Francisco Bay has increased substantially, forcing regulatory agencies to reexamine their dredging policies. The Regional Board, during its triennial review of the Basin Plan in 1986, stated its intention to update and revise its dredged sediment disposal policy for San Francisco Bay. During the triennial review, the Regional Board recognized that periodic dredging is necessary to maintain the beneficial use presented by navigation and other water dependent activities. The Regional Board also stated its intention to institute a more rigorous testing program to determine the suitability of dredged sediment for unconfined aquatic disposal in San Francisco Bay.~~

Most dredging and dredge material disposal operations cause localized and ephemeral impacts with related biological consequences (Table 4-12). In August, 1980, the Regional Board adopted a general policy (Resolution No. 80-10) for the regulation of dredge sediment disposal. Many concerns have been raised about the adequacy of the Corps’ regional procedures to identify potential pollution conditions. One area of concern is implicit in the guidelines and protocol for testing of sediment for ocean disposal. The current ocean disposal criteria (pursuant to the Marine Protection, Research, and Sanctuaries Act) are more stringent than the inland criteria (governed under the Clean Water Act).

In the 1980s, it was determined that the Alcatraz disposal site was accumulating significant amounts of material, with the depth of the site going from the original 110 feet to 30 feet. The mounding at the disposal site ultimately became a threat to navigation. The Corps

4-A

During the preparation of the LTMS EIS/EIR, the LTMS agencies consulted with USFWS, NMFS, and CDFG regarding potential impacts of dredging and dredged material disposal to sensitive biological resources. These resource agencies, in conjunction with the LTMS agencies, developed a list of restrictions for such projects to protect critical habitat for special status and important commercial and recreational species.

The LTMS EIS/EIR identified the overall future disposal management strategy (i.e. reduced in-Bay disposal volumes at the designated dispersive sites). The LTMS Management Plan contains specific guidance that will be used to implement the preferred alternative by each of the LTMS agencies. The Management Plan will be reviewed and updated every three years to reflect changing statutory, regulatory, technical, or environmental conditions. The Basin Plan dredging policies will be updated, as necessary, in conjunction with Management Plan updates.

#### **ENVIRONMENTAL IMPACTS OF DREDGING AND DISPOSAL IN THE AQUATIC ENVIRONMENT**

During the late 1980s and continuing to the present, concern over the potential

eventually dredged the Alcatraz site to increase the depth, redistributing the material within the disposal area several times between 1984 and 1986.

In September of 1988, Regional Board staff circulated and presented an issue paper entitled “A Review of Issues and Policies Related to Dredge Spoil Disposal in San Francisco Bay.” The issue paper discussed the major environmental concerns posed by dredged sediment disposal in San Francisco Bay, namely: 1) mounding at the Alcatraz disposal site, which posed a navigational hazard and has the potential to alter circulation patterns in the Bay; 2) the disposal of increasingly large amounts of material has the potential to alter benthic and shoreline habitats and to increase water column turbidity; and 3) the resuspension of dredged sediments may increase contaminant bioavailability. The issue paper presented a range of alternative strategies for the Regional Board to consider. Public and agency testimony was received by the Regional Board during hearings on September 15, 1988, and October 19, 1988. Agencies testifying included the Corps, U.S. EPA, and the California Department of Fish and Game. In the issue paper, Regional Board staff recommended that the Regional Board consider adopting quantity and quality limits for the disposal of dredged sediment at unconfined aquatic disposal sites within San Francisco Bay.

Additionally, the Regional Board and the Corps took steps to prevent further “mounding” at the region’s single largest disposal site, the Alcatraz site. In 1989, the Regional Board adopted volume targets, which served to prevent overfilling of the region’s three aquatic

disposal sites. BCDC also revised its policies to restrict in-bay disposal. These volumes were reduced further for the Alcatraz disposal site (SF-11) in 1993 when the USACE issued Public Notice 93-3. A different set of potential environmental impacts is associated with land disposal, but so is the opportunity for creating environmental benefits.

## **DREDGING STUDY PROGRAMS**

### **DREDGING MANAGEMENT PROGRAM**

In the late 1980s, the Corps of Engineers undertook a series of local dredging studies as a part of the Dredging Management Program (DMP). Additionally, the Corps nationally undertook a demonstration program to examine the environmental impacts from various dredged material disposal practices. The goal of these programs was to examine: 1) factors associated with aquatic disposal practices, 2) characteristics of dredged material, 3) alternative methods of disposal, and 4) dredging technology. However, because the DMP was conducted internally, was not consensus-based, and did not fully involve other state and federal agencies, environmental groups and the dredging community, concern and conflict continued to surround dredging in San Francisco Bay. One particularly notable instance of continued conflict was a 1989 protest and blockade of the aquatic disposal sites by environmental and fishing interests. In the fall of 1989 and in early 1990, the Corps undertook a new approach to studying environmental issues surrounding dredging and disposal site management.

### **LONG-TERM MANAGEMENT STRATEGY**

The new approach, called the Long Term Management Strategy (LTMS) for

4-A

dredged material, was designed as a cooperative process based on active participation by state and federal permitting agencies. The lead LTMS agencies share four basic goals related to the fact that dredging is important both economically and environmentally (Table 4-13). The LTMS structure is a pyramid form with technical committees at the base and appointed state and federal agency administrators at the top (Table 4-14). Three staff level committees, or "workgroups," were charged with addressing technical issues and managing environmental studies. The Corps of Engineers, San Francisco District, was charged with general coordination, contracting, and administrative functions. Later in the process, a fourth committee was formed to carry out various LTMS implementation tasks. The implementation committee has been primarily concerned with permit coordination and streamlining, but has also attempted to address inequities in upland disposal site financing, upland/non-tidal site acquisition, and changes to federal dredging policy. Above the technical and implementation committees is the Management Committee, represented by management executives from five key LTMS agencies. The Management Committee, in turn, takes direction from the Executive Committee. The Executive Committee consists of the chairpersons of the Regional Board and BCDC, the U.S. EPA Regional Administrator, the state Dredging Coordinator (governor appointed), and the commander of the South Pacific Division, Corps of Engineers. Broad public input is gained via the Policy Review Committee, which meets quarterly to review the work and progress of LTMS.

#### THE LTMS PROCESS

The LTMS process allows participation by resource agencies, environmental groups, and the maritime industry. In 1990, the LTMS Study Plan was approved by the participating agencies. The Study Plan outlined the LTMS process, relevant scientific fields, and "gaps" in knowledge. Technical work groups were established to examine: 1) deep ocean disposal, 2) in-bay aquatic disposal, and 3) upland/non-aquatic disposal and reuse. Staff at the Regional Board, BCDC, and U.S. EPA were appointed to chair the three work groups (Table 4-14). Each committee was budgeted funds by the Corps in order to carry out approved studies. Throughout LTMS process, the Corps has retained responsibility for contract management, budgets, and other administrative duties. For the first several years of the program, the In-bay Studies Work Group also served as a part of the San Francisco Estuary Project, as it was also designated as the subcommittee on "Dredging and Waterway Modification."

The LTMS process has resulted in new findings regarding sediment toxicity testing and transport, the development of new testing procedures, and new approaches to disposal of dredged material. Additionally, LTMS participants continue to work toward better disposal site management, and, perhaps more importantly, an increased level of coordination and cooperation among those involved with dredging. Participating federal and state permitting and resources agencies receive technical and policy input from dredging, environmental, and fishing communities through the LTMS structure.

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**OCEAN STUDIES**

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The Ocean Studies Work Group, funded through LTMS, provided input on U.S. EPA's study and designation of a deep ocean disposal site for dredged material. The group oversaw studies in the areas of sediment transport modeling, benthic ecology, and environmental risk. The results of various technical studies were compiled in an Environmental Impact Statement (EIS) in which five disposal sites were considered.

U.S. EPA completed an EIS on ocean disposal in August, 1993. Concurrent with and following work on the EIS, U.S. EPA, with input from LTMS, moved closer to disposal site use by completing a Site Management and Monitoring Plan. The designated deep ocean disposal site is located about 58 miles offshore, beyond the boundaries of the Monterey Bay and Gulf of Farallones National Marine Sanctuaries, in waters that are 6,000 to 9,000 feet deep. The site was formally designated by U.S. EPA on August 11, 1994 (59 Federal Register Section 41243 et seq.). It is expected that the ocean site will be used for disposal of dredged material from large new work and maintenance dredging projects.

**IN-BAY STUDIES**

In-bay disposal studies were undertaken to address several key areas of concern. Following the general terms of the LTMS Study Plan, the In-bay Work Group examined key environmental concerns in the following areas:

- Physical effects of disposal, including turbidity;

- Physical processes, including fate and transport of material from the disposal sites using numerical modeling;
- Toxicological issues, including release of contaminants during disposal and ecological fate of contaminants;
- Non-treatment effects in sediment toxicity tests;
- Bioaccumulation;
- Methods to reduce the need for dredging; and
- Sampling and analysis methods for sediment testing.

Most of the LTMS in-bay studies were completed by the end of 1994; however, several documents remain in draft form.

**UPLAND AND NON-TIDAL/REUSE STUDIES**

The Upland Studies Program focused on the evaluation of the potential for upland disposal and the use of dredged material as a resource. The group conducted planning-level feasibility studies of potential sites in San Francisco Bay and the Delta. Studies examined the engineering, biological, and hydrological aspects of wetland restoration using dredged material, as well as various regulatory and planning issues surrounding upland reuse. Other issues studied by the group included remedial technologies for treating  
4-A terminated sediments, an analysis of seasonal and tidal wetlands in the North Bay, and a feasibility study of potential sediment rehandling sites.

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The LTMS technical studies have added to our information base and have filled some of the "data gaps" that were

~~originally identified in the LTMS Study Plan. In many cases, LTMS studies have confirmed our conceptual views and hypotheses about how the Estuary and the ecosystem function.~~

#### **WETLAND RESTORATION USING DREDGED MATERIAL**

While the Regional Board remains concerned about the impacts of both polluted and clean sediments on the San Francisco Estuary, much of the sediment disposed of in the region is not polluted and could be used in beneficial ways (termed "reuse"). One of these uses involves the restoration of tidal marshes in areas that were once part of the Bay. These areas, known as diked historic baylands, were once open to the tides and were thriving salt marsh and mudflat ecosystems (discussed further under the "Wetlands Protection and Management" section). Decades of land "reclamation," first initiated in the 1800s, resulted in diked agricultural lands, the land surface of which has subsided for a variety of reasons.

In order to foster growth of marsh vegetation and proper slough channel formation, the new marsh must be built near mean high tide. In many cases it will be beneficial to place a layer of sediment across the site to raise the elevation of the land surface to a point near the mean tide line. LTMS studies have examined the environmental, engineering, and economic considerations that are involved in restoring certain sites. The studies commissioned by LTMS have shown that, given current laws and policies, placement of dredged sediment at wetland restoration projects may cost more than traditional in-bay disposal, but less than ocean disposal.

#### **SONOMA BAYLANDS**

~~One example of this concept is the Sonoma Baylands Wetlands Demonstration Project. The Sonoma Baylands property, which was formerly used for hay production, was acquired by the Sonoma Land Trust for preservation as undeveloped open space. The Sonoma Baylands project was managed by the State Coastal Conservancy, which facilitated a partnership between the Corps and the Port of Oakland. Federal legislation was necessary to allow the Corps to direct the construction of the project. The Corps began filling the site with dredged sediment in the fall, 1995, with completion expected in late 1996. The 322-acre Sonoma Baylands site will require some two and a half million cubic yards of sediment prior to contact with tidal waters. The Regional Board has issued a permit for the construction of Sonoma Baylands, regulating the placement of dredged sediment and runoff water from the site. Tidal marsh vegetation is expected to be established within five years of construction.~~

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#### **MONTEZUMA WETLANDS RESTORATION PROJECT**

~~The Montezuma Wetlands Restoration Project is planned on an even larger scale. The Montezuma project site is located on the northern boundary of Suisun Bay at Collinsville. The site, which is adjacent to the Suisun Marsh reserve, is currently used for sheep ranching and commercial pheasant hunting. The Montezuma project involves restoration of approximately 1,800 acres of diked historic baylands to tidal action. Like the Sonoma Baylands site, dredged sediment would be placed at Montezuma in order to account for the heavy subsidence that has occurred at~~

the site. In some areas, up to seven feet of sediment would be necessary to bring the site to a proper elevation for wetland creation. Because the Montezuma site has subsided so much, the quantity of material that potentially will be placed there is in the range of 20 million cubic yards. The Montezuma project is currently undergoing CEQA review.

**DELTA ISLAND LEVEE REPAIR AND MAINTENANCE**

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Winter Island, located in the western Delta, near Pittsburg, is operated as a duck club by the local Reclamation District. In 1998, the Reclamation District, in need of material to repair levees, partnered with the Corps of Engineers, and accepted over 200,000 cubic yards of sandy dredged material from the Corps' dredging of the federal Suisun Bay Channel. In 1999, an additional 225,000 cubic yards from the Suisun Bay Channel project was placed on the site, along with approximately 30,000 cubic yards of finer-grained material from the Port of San Francisco. The Reclamation District estimates that they will have a long-term need for fine-grained dredged material, of about 100,000 cubic yards per year.

Other Delta islands are also in need of material for levee repair. For example, the Corps is currently exploring the possibility of taking material from the Suisun Bay Channel to Sherman Island. Cooperation with the Department of Water Resources, the Central Valley Water Resource Control Board and the CalFed program may provide additional opportunities for reuse of dredge material in the future.

4-B

**REGIONAL BOARD POLICIES ON DREDGING AND DREDGED SEDIMENT DISPOSAL**

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The overall policy for dredging and disposal of dredged sediment will include a reduction in in-bay disposal volumes and an increased emphasis on beneficial reuse of dredged material. The most likely beneficial reuses of dredged material are use in wetland restoration projects or for levee maintenance and repair. Additional capacity for dredged material is available at the deep ocean disposal site designated by U. S. EPA in 1994. The goal of the policies below is to reduce in-bay disposal volumes to approximately 20% of recent historical dredging volumes, about 1 million cubic yards per year.

Dredging and dredged material disposal should be conducted in an environmentally and economically sound manner. Dredgers should reduce disposal in the Bay over time to achieve the LTMS goal of limiting in-Bay disposal volumes to approximately one million cubic yards, or less, per year. The LTMS agencies will implement a system of disposal allocations to individual dredgers to achieve the LTMS goal only if voluntary efforts are not effective in reaching the LTMS goal.

**1. NEED FOR REGIONAL AND LOCAL MONITORING**

The Regional Board recognizes that the continued disposal of dredged material from maintenance work will require a demonstration that such disposal will not result in significant or irreversible impacts in San Francisco Bay. The Corps' and other major dredgers' active participation in environmental studies and in testing and monitoring programs are absolutely



necessary in order to find solutions to the dredging problems in the region.

Specific monitoring requirements will be fulfilled through two programs: (1) the Regional Monitoring Program (RMP), which monitors the general health of the Bay and provides specific technical studies that inform policy decisions on required sediment testing (see Policy 5, below) and (2) specific monitoring programs at the designated disposal sites.

**2. MATERIAL DISPOSAL RESTRICTION**

Materials disposed of at approved aquatic dredged material disposal sites shall be restricted to dredged sediment. Disposal of rock, timber, general refuse, and other materials shall be prohibited. Additional specific requirements regarding material type and dredging and disposal mechanisms may be implemented as required, based on ongoing site monitoring and adaptive management.

**3. VOLUME TARGETS**

**INDIVIDUAL DISPOSAL SITES**

Volume targets for each disposal site were developed based on understandings of sediment dynamics and historical information regarding disposal volumes (Table 4-15). ~~An examination of disposal patterns at all aquatic disposal sites in San Francisco Bay revealed that the Carquinez Straits area may be influenced by wet weather events. The volume targets for the Carquinez Straits disposal site are 3.0 million cubic yards for wet and above normal years and 2.0 million cubic yards for all other year classifications.~~

In addition, the Regional Board established a volume target of 0.2 million cubic yards per year for the

Suisun Bay Channel disposal site and restricts its use to Corps maintenance dredging. The San Francisco Bar site is used for disposal of material from the bar channel. The use of the San Francisco Bar disposal site is regulated under the Marine Protection, Research, and Sanctuaries Act.

**OVERALL IN-BAY DISPOSAL**

Total in-Bay disposal volumes shall decrease according to the schedule identified in Table 4-16, until the long-term LTMS target of 1.25 million cubic yards per year is attained.

In addition to the total volume specified in Table 4-15:

- a. Material from small dredging projects (see below) will, in general, be exempt from restrictions on in-Bay disposal if it is demonstrated through an alternatives analysis that are no practical alternatives to in-Bay disposal, and
- b. A contingency volume of 250,000 cubic yards per year will be established for “emergencies”<sup>1</sup> or for years when sedimentation or other factors result in unanticipated material volumes.

**4. VOLUME TARGET IMPLEMENTATION**

**INDIVIDUAL DISPOSAL SITES**

The Regional Board will consider denial of water quality certification for

<sup>1</sup> A dredging emergency is a situation that poses an immediate danger to life, health, property, or essential public service and that demands action by the Board more quickly than the Board’s normal permit procedures would allow

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any project proposing to place material at a disposal site for which the annual or monthly volume target, as defined in Table 4-15, has been exceeded. Small project proponents may apply for an exemption to monthly or annual volume targets and new work disposal in ~~San Francisco Bay~~. A small project is defined as a facility or project whose design depth does not exceed -12 feet Mean Lower Low Water (MLLW) with an annual average disposal volume of less than 50,000 cubic yards. The project proponent must demonstrate:

- a. That the additional burden of using an alternative to in-Bay disposal placed upon the applicant would be inordinate relative to the beneficial uses protected; and
- b. That the ~~proposed discharge is less than 20,000 cubic yards in one year and not to exceed 50,000 cubic yards over five years.~~ The alternatives analysis indicates that there are no practical alternatives to in-Bay disposal.

OVERALL IN-BAY DISPOSAL

A voluntary program will be instituted to attain the overall in-Bay disposal targets, with the majority of maintenance material from Corps of Engineers projects being used in wetland restoration projects or taken to the ocean disposal site. As part of the voluntary program, other dredgers will make efforts to use alternatives to in-Bay disposal.

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Progress towards the goal will be evaluated both on an annual basis and every three years, based on the three-year average volume of in-Bay disposal. Should this voluntary program fail to provide progress toward the goal in the reviews outlined above, a mandatory allocation program will be considered. The institution of the mandatory allocation process will occur as outlined below and the determination to rescind mandatory allocation, if imposed, will be a symmetric process.

4-F

**CURRENT CORPS OF ENGINEERS' POLICY ON VOLUME OF MATERIAL DISPOSED OF AT THE ALCATRAZ DISPOSAL SITE**

*On February 1, 1993, the Corps of Engineers released a proposed policy as Public Notice 93-3, which further limited allowable monthly disposal volumes at the Alcatraz disposal site (SF-i-1). The Corps stated that the "existing maximum volume targets have been determined to be inadequate to maintain the site for continued dredged material disposal. The Corps' change in policy in the Public Notice reduces monthly volume limits for the Alcatraz site below what has been adopted by the Regional Board (Table 4-15). However, the Corps' policy does not address annual limits; it reserves exclusive use of the site for Corps-maintained projects if deemed necessary; and it allows other dredgers to dispose of material at the San Pablo Bay site (SF-b), when and if the Alcatraz site has reached capacity. Of course, the Corps may change its policy independently of the Regional Board and other agencies.*

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The Board will consider the imposition of mandatory allocation in a Board hearing. In making its decision regarding disposal allocations, the Board will confer with the LTMS agencies and consider the need for the dredging and disposal projects, environmental impacts, regional economic impacts, efforts by the dredging community to implement and fund alternatives to in-Bay disposal, and other relevant factors. If the Board votes to impose mandatory allocations then the mandatory allocation program will be regulated through the issuance of general Waste Discharge Requirements for small- and medium-category dredging projects and through separate Waste Discharge Requirements for all USACE dredging projects. If in place, rescission of the mandatory allocation program would be considered if the three-year average disposal volume was lower than the target volumes as identified in Table 14-16, unless, after review by the Board in a Board hearing, the Board votes to not rescind mandatory allocations. Both the institution and rescission of the mandatory allocation program would be discretionary actions of the Board, and thus subject to review pursuant to CEQA under the Board’s functionally-equivalent process.

**5. USE OF TESTING GUIDELINES**

The Regional Board’s Executive Officer will continue to require technical data according to Public Notice 93-2, “Testing Guidelines for Dredged Material Disposal at San Francisco Bay Sites,” which is incorporated by reference into this plan. In June of 1994, the Corps and U.S. EPA published the draft “Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. (Draft), Inland Testing Manual

(ITM).” The ITM is intended to provide comprehensive guidance to dredging applicants on sampling and testing of sediment. The ITM outlines a tiered approach to sediment testing, similar to the existing Ocean Disposal Testing Manual, or “Green Book,” which was written by the federal government for ocean disposal (pursuant to MPRSA).

In February of 1998, the Corps and U.S. EPA published *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual, Inland Testing Manual (ITM)*. The ITM provides comprehensive guidance to dredging permit applicants on sampling and testing of sediment proposed for disposal in waters of the United States, pursuant to Section 404 of the Clean Water Act. Disposal at the in-Bay disposal sites is subject to this guidance. The ITM outlines a tiered approach to sediment testing, similar to the existing Ocean Disposal Testing Manual, or “Green Book,” the federal guidance document for testing for ocean disposal (pursuant to MPRSA). The Dredged Material Management Office, through USACE Public Notice 99-3, “Proposed Guidelines for Implementing the Inland Testing Manual within the USACE San Francisco District,” has issued further guidance, detailing how the ITM is implemented locally. The Regional Board’s Executive Officer will require evaluation of sediments proposed for in-Bay disposal according to Public Notice 99-3, or subsequent guidance, which is incorporated by reference into this plan, before issuing authorizations for such disposal.

The ITM was intended to only address testing of material for aquatic disposal and does not provide a protocol

4-G

for upland disposal. Regional Board staff have developed a guidance document, “Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines,” to assist project planners with developing testing procedures for beneficial reuse projects, including wetland restoration, levee maintenance, and construction fill. The guidance document also provides general sediment screening guidelines for these uses. However, disposal of dredged material for beneficial reuse will be subject to site-specific testing requirements and “acceptance criteria” provided by the Regional Board.

The Regional Board is working in cooperation with other LTMS agencies to develop a regional implementation manual that will detail ~~how the ITM will be implemented in the San Francisco Bay Area testing requirements for all three disposal environments. The ITM was intended to only address testing of material for aquatic disposal and does not provide a protocol for upland disposal. Disposal of dredged material in other environments for beneficial reuse, e.g., wetland restoration, landfill daily cover, and levee bolstering, will be subject to site-specific guidance provided by the Regional Board.~~

The Executive Officer, following consultation with other agencies, will periodically review and update all testing procedures. The Executive Officer may require additional data collection beyond the tiered-testing procedures on a case-by-case basis.

**6. APPLICABILITY OF WASTE DISCHARGE REQUIREMENTS**

~~The Regional Board will consider issuing waste discharge requirements for individual dredging projects unless the~~

~~Executive Officer has waived such requirements in accordance with Resolution No. 83-3, which is incorporated by reference into this plan (see Chapter 5).~~

**6.7. ENVIRONMENTAL DREDGING WINDOWS**

The Regional Board will restrict dredging or dredge disposal activities during certain periods (“windows”) in order to protect the beneficial uses of San Francisco Bay. These beneficial uses include water contact recreation; ocean, commercial, and sport fishing; marine habitat; fish migration; fish spawning; shellfish harvesting; and estuarine habitat. ~~These restrictions may include but are not limited to:~~

~~a. Dredging activities from December through February in selected sites along the waterfront where Pacific herring are known to spawn; and~~

~~b. Disposal activities at the Carquinez Straits site during spring and fall in order to protect striped bass and salmon migrations.~~

These restrictions may include, but are not limited to those specified by the United States Fish and Wildlife Service and the National Marine Fisheries Service in their review of the LTMS programmatic EIS/EIR pursuant to Section 7 of the Endangered Species Act, and will incorporate any requirements from project specific consultations.

**7.8. IMPACTS AT DREDGE SITE**

The Regional Board may require additional documentation and inspections during dredging activities in order to ensure that dredgers minimize impacts at the dredging location. Water quality certifications or waste discharge requirements may contain additional

3-A

conditions to address barge overflow and other impacts at the dredging site. Permit conditions may include:

3-B

- a. <sup>•</sup> Special reporting procedures for the hydraulic pumping of dredged material into transport scows prior to disposal (marina slip applications);
- b. <sup>•</sup> Evidence of compliance with the conditions described in 6, above;
- c. <sup>•</sup> Time limit on the overflow from hopper-type hydraulic dredges in order to obtain an economical load; or
- d. <sup>•</sup> Precautions to minimize overflow and spillage from the dredging vessel when en-route to the authorized disposal site. (Appreciable loss during transit shall be considered unauthorized disposal, or “short dumping,” and such occurrences are subject to enforcement by the Regional Board or other applicable state or federal agencies.)

**8.9. POLICY ON LAND AND OCEAN DISPOSAL**

The Regional Board shall continue to encourage land and ocean disposal alternatives whenever practical. Regional Board staff have determined that there should be a high priority placed on disposing of dredged sandy material upland. At a minimum, incentives should be developed to limit disposal of any such material with a market value to upland uses. Staff may condition certifications so as to encourage upland reuse of high value sediments. Staff will also continue to work with staff from the Central Valley Regional Water Quality Control Board to provide appropriate options for

4-H

material use in levee maintenance in the delta or for use on delta islands, as appropriate.

**9.10. POLICY ON DREDGED MATERIAL DISPOSAL PERMIT COORDINATION**

The Regional Board will implement these measures through its issuance of waste discharge requirements, water quality certification under Section 401 of the Clean Water Act, or other orders. In addition, the Regional Board may require pre- and post-dredge surveys to determine disposal volumes and compliance with permit conditions. In order to better manage data and reduce paper files, Regional Board staff may request, but not require, that applicants submit testing and other project data in a specific electronic format. ~~The Regional Board has been an active participant in efforts to improve the overall dredging permit process and procedures. The goal of this effort is to provide the public with uniform testing and disposal guidelines, joint permit actions, a streamlined permit application process, and more uniform permit enforcement. Staff are working with other state and federal agencies to implement a combined state-federal dredging permit process. The process is generally based on the Washington State “Dredged Material Management Office,” a part of the Puget Sound Dredged Disposal Analysis program (PSDDA), which regulates dredging and disposal in the Seattle and Tacoma regions. Regional Board staff have been participating in a coordinated permitting process, the Dredged Material Management Office (DMMO), since 1995. The DMMO consists of staff representatives of the Regional Board, BCDC, U. S. EPA, USACE, and the California State Lands Commission, with active participation by the~~

4-I

California Department of Fish and Game and the National Marine Fisheries Service as commenting resource agencies. The DMMO meets regularly to review permit applications and sediment testing plans and results and to make recommendations on proposed dredging projects. While each agency retains its separate authority the agency representatives strive to provide clear and coordinated guidance to applicants and to reach a consensus-based recommendations.

**CHAPTER 5**

**REGIONAL BOARD PLANS AND POLICIES**

**DREDGING**

**~~REGULATION OF DREDGING SEDIMENT DISPOSAL – RESOLUTION NO. 80-10~~**

~~This resolution acknowledges the U. S. Army Corps of Engineers’ implementation of new procedures for evaluating dredged material. The Regional Board agreed that the Corps should be responsible for the administration of the new procedures for evaluating discharges of dredged materials. The Regional Board reserved the right to act to protect water quality, if necessary. The resolution also gave the Regional Board’s Executive Officer considerable discretion regarding additional water quality and sediment testing requirements, as well as monitoring for dredged sediment disposal impact.~~

**~~DELEGATION OF AUTHORITY TO WAIVE CERTIFICATION FOR SMALL DREDGING PROJECTS – RESOLUTION NO. 87-53~~**

~~In 1987, the Regional Board delegated authority to the Executive Officer to waive water quality certification for activities involving the excavation and disposal of 50,000 cubic yards or fewer of San Francisco Bay sediments and the filling of two acres or fewer of wetlands.~~

**~~POLICY ON DISPOSAL OF DREDGED MATERIAL AND NEW PROJECTS – RESOLUTION NO. 89-130~~**

~~In 1989, the Regional Board placed a limit on new dredging work, established annual and monthly targets for the volume of dredged material disposed of at designated sites, and restricted the disposal of dredged material to certain times of year in order to protect migrating fish. The State Board subsequently modified limits on new dredging (Resolution No. 90-10).~~

**~~SCREENING CRITERIA AND TESTING REQUIREMENTS FOR USE OF SEDIMENT FOR WETLAND CREATION AND OTHER UPLAND USES – RESOLUTION NO. 92-145~~**

~~In this resolution, the Regional Board established screening criteria to be used to evaluate the appropriateness of using dredged material for beneficial purposes.~~

**~~TESTING GUIDELINES FOR DREDGED MATERIAL DISPOSAL AT BAY AREA SITES – RESOLUTION NO. 93-009~~**

~~The Regional Board endorsed a set of testing guidelines developed in cooperation with the U. S. Army Corps of Engineers, U.S. EPA, and the bay Conservation and Development Commission. To implement these guidelines, the Regional Board also directed staff to work towards~~

~~establishing a coordinated agency permit process for maintenance dredging permit applications.~~

**EVALUATION FRAMEWORK FOR DREDGED MATERIAL PROPOSED FOR IN-BAY DISPOSAL AND DREDGED MATERIAL MANAGEMENT OFFICE – RESOLUTION NO. 01-XXX**

4-J

This resolution, (1) adopted the federal guidance issued by the USACE and the U. S. EPA in 1998 for evaluating the suitability of dredged material for disposal at aquatic disposal sites like the in-Bay disposal sites: *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual, Inland Testing Manual (ITM)*, as well as the guidance for implementing the ITM locally, which was developed jointly by Regional Board staff, USACE San Francisco District, U. S. EPA Region IX, San Francisco Bay Conservation and Development Commission, and State Lands Commission through the multi-agency Dredged Material Management Office (DMMO); and (2) recognized the success of the DMMO in providing a coordinated permitting process for dredging and disposal projects in the Bay area and as an important component in implementing the Long Term Management Strategy for Disposal of Dredged Material in the San Francisco Bay Region (LTMS), and directed staff to continue to participate in the DMMO.

**TABLE 4-12 POTENTIAL CONSEQUENCES AND IMPACTS OF DREDGING AND DREDGED MATERIAL DISPOSAL**

Consequences	Impacts
Bottom disturbance	Mastication of sediment-inhabiting organisms; smothering of organisms living in or on the bottom; habitat disruption
Suspended solids loading	Abrasion and clogging of gills (fish and clams); impaired respiration, feeding, and excretory functions; reduced water pumping rates (clams); retarded egg development and reduced growth and survival of larvae
Dissolved oxygen reduction	Reduced efficiency of oxygen uptake by aquatic organisms; increased stress on organisms resulting in reduced ability to meet environmental and biological demands
Mobilization of toxicants adsorbed to sediments	Uptake and accumulation by aquatic organisms
Release of biostimulatory substances (nitrogen, phosphorus, ammonia)	Stimulation of algal growth; ammonia toxicity

**TABLE 4-13 GOALS OF LTMS**

- 1) Maintain those channels in the SF Bay Estuary which are necessary for navigation, in an environmentally and economically sound manner and eliminate unnecessary dredging activities in the region
- 2) Conduct dredged material disposal activities in the most environmentally sound manner
- 3) Maximize the use of dredged material as a resource
- 4) Establish a cooperative permitting framework for dredging permit applications



**TABLE 4-14 LTMS PARTICIPANTS**

**EXECUTIVE COMMITTEE**

- Corps of Engineers, South Pacific Division, Commander
- U.S. EPA, Region IX, Regional Administrator
- State Dredging Coordinator
- San Francisco Bay Conservation and Development Commission, Chairperson
- San Francisco Bay Regional Water Quality Control Board, Chairperson

4-A

**MANAGEMENT COMMITTEE**

- Corps of Engineers, San Francisco District, District Engineer
- ~~• Corps of Engineers, South Pacific Division, LTMS Program Manager~~
- U.S. EPA, Region IX, Regional Administrator
- San Francisco Bay Conservation and Development Commission, Executive Director
- San Francisco Bay Regional Water Quality Control Board, Executive Officer
- ~~• State Water Resources Control Board, Executive Director~~

As needed, depending on issues:

- Executive level staff member of California Department of Fish and Game, National Marine Fisheries Service, U.S. Fish and Wildlife Service, State Lands Commission, Coastal Conservancy

**POLICY REVIEW COMMITTEE**

- ~~• Other state and federal agencies with an interest in San Francisco Bay Area dredging (e.g., U.S. Navy, California State Department of Boating and Waterways, State Lands Commission)~~
- ~~• Bay Area ports and marinas~~
- ~~• Environmental and fishing organizations~~
- ~~• Development interests and other interested parties~~

**PROGRAM MANAGEMENT TEAM**

- LTMS Agencies' program management staff

**WORK GROUPS**

- ~~• Staff of RWQCB Chair of In-bay studies~~
- ~~• Staff of BCDC Chair of Upland/Non-aquatic and Reuse studies~~
- ~~• Staff of U.S. EPA Chair of Ocean studies~~
- ~~• Varying levels of participation by the organizations listed above~~
- Varying levels of participation by the organizations listed above, plus other interested parties
  - Disposal site management and monitoring
  - Sediment quality guidelines
  - Funding

**IMPLEMENTATION COMMITTEE**

- ~~• Ad hoc leadership and varying levels of participation by the organizations listed above~~

**TECHNICAL/SCIENCE ADVISORY PANEL**

Semi-annual meetings of panel by five experts in the areas of:

- ~~• Physical processes,~~
- ~~• Chemistry,~~
- ~~• Benthic community analysis,~~
- ~~• Sediment toxicology, and~~
- ~~• A representative of the Corps of Engineers' national laboratory.~~

**STAKEHOLDERS**

- Meets quarterly with Program Management Team
- Meets annually with Executive Committee

**DMMO**

Staff members of:

- Corps of Engineers, San Francisco District
- U.S. EPA, Region IX
- State Lands Commission
- San Francisco Bay Conservation and Development Commission
- San Francisco Bay Regional Water Quality Control Board

Plus:

- Staff members of California Department of Fish and Game, National Marine Fisheries Service, and U.S. Fish and Wildlife Service as available in an advisory capacity

**OTHER EFFORTS**

- Data Management Team
- Coordination with related efforts such as CALFED, RMP, National Dredging Policy information Exchange

**TABLE 4-15 DREDGED MATERIAL VOLUME TARGETS**

**ANNUAL**

The following volume targets shall be utilized each calendar year (i.e., January to December) at each aquatic disposal site:

Alcatraz Island (SF-11)	4.0 million cubic yards
San Pablo Bay (SF-10)	0.5 million cubic yards
Carquinez Straits (SF-9)	2.0 million cubic yards (Normal Water Year) <sup>a</sup> 3.0 million cubic yards (Wet Water Year)

**MONTHLY INDIVIDUAL DISPOSAL SITES**

The following volume targets shall be utilized on a monthly basis at each aquatic disposal site:

Alcatraz Island (SF-11)	October-April	4.0 <del>0.4</del> million cubic yards per month	4-D
	May-September	0.3 million cubic yards per month	
San Pablo Bay (SF-10)	Any Month	0.5 million cubic yards per month	
Carquinez Straits (SF-9)	Any Month	1.0 million cubic yards per month	
Suisun Bay (SF-16)	Any Year	0.2 million cubic yards per year	

**OVERALL IN-BAY DISPOSAL**

The following volume target shall be utilized each calendar year (i.e., January to December) for the total amount of disposal at the aquatic disposal sites.

Alcatraz Island (SF-11), San Pablo Bay (SF-10), Carquinez Straits (SF-9), and Suisun Bay (SF-16)	2.8 million cubic yards <sup>a, b</sup>	1-B
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**NOTES:**

a. Water year classifications are designated by the California Department of Water Resources (DWR). The DWR water year begins on October 1 and is based on unimpaired flows as defined in the State Board's Water Rights Decision 1485.

a. The average of the most recent three years of in-Bay disposal volumes shall not exceed this value.

b. This value does not include the 0.25 mcy contingency volume

**TABLE 4-16      TRANSITION VOLUME TARGETS FOR IN-BAY DISPOSAL OF  
 DREDGED MATERIAL**

1-B

<u>Year</u>	<u>Target Volume</u>
<u>2001-2003</u>	<u>2.8 million cubic yards</u>
<u>2004-2006</u>	<u>2.41 million cubic yards</u>
<u>2007-2010</u>	<u>2.03 million cubic yards</u>
<u>2010-2013</u>	<u>1.64 million cubic yards</u>
<u>After 2013</u>	<u>1.25 million cubic yards</u>

**NOTES:**

a. These volumes do not include the allowable contingency volume of 250,000 cy per year.

The Insertion of Table 4-16 requires the following table numbers to be changed, along with references to these Tables in subsequent sections of Chapter 4 of the Basin Plan. Table contents are unchanged.

**TABLE 4-16 ~~4-17~~      KEY TO FIGURE 4-5: INACTIVE MINE SITES**

4-K

**TABLE 4-17 ~~4-18~~      EXISTING AND POTENTIAL BENEFICIAL USES OF WETLANDS**

**TABLE 4-18 ~~4-19~~      SUMMARY OF LOCAL AGENCY UNDERGROUND STORAGE TANKS  
 (UST) PROGRAMS (AS OF APRIL 1992)**

**TABLE 4-19 ~~4-20~~      OPTIONS FOR FUTURE MANAGEMENT STRATEGIES AT  
 GROUNDWATER CLEANUP SITES**