LONG-TERM MANAGEMENT STRATEGY FOR THE PLACEMENT OF DREDGED MATERIAL IN THE SAN FRANCISCO BAY REGION

Management Plan 2001

Prepared by

U.S. Army Corps of Engineers (USACE)
U.S. Environmental Protection Agency (USEPA)
San Francisco Bay Conservation and Development Commission (BCDC)
San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)

LONG TERM MANAGEMENT STRATEGY

We the undersigned members of the LTMS Executive Committee are pleased to approve the *Final LTMS Management Plan*, as approved by the LTMS Management Committee. The Management Plan (1) has been developed using a consensus-based approach and public participation to coordinate management of dredging and dredged material disposal in the San Francisco Bay Region; (2) conforms with the goals set forth in the *Executive Management Plan for a Long-Term Management Strategy* that was approved by the undersigned agencies in 1990; (3) is based upon the voluntary efforts of all the interested parties; and (4) is supported by enforceable policies to achieve the adopted goals of the LTMS program.

Robert L. Davis
Colonel (P), Corps of Engineers
Division Engineer
U.S. Army Corps of Engineers, South Pacific Division

for Laura Yoshii, Acting Regional Administrator
U.S. Environmental Protection Agency, Region IX

John Muller, Chair
San Francisco Bay Regional Water Quality Control Board

Barbara Kaufman, Chair
San Francisco Bay Conservation and Development Commission

Celeste Cantú, Executive Director
State Water Resources Control Board

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105

San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

U.S. Army Corps of Engineers
South Pacific Division
&
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105

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

California State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Historically, dredged material from navigation channels in San Francisco Bay was disposed of throughout the Bay. Beginning in the early 1970s, disposal was limited to a few state and federally designated sites, with most material taken to a site near Alcatraz island. Although sediments disposed of at the Alcatraz site were expected to disperse, a large mound of dredged material was discovered in 1982. Despite attempts to improve site management, the material continued to mound posing potential navigation problems and demonstrating the site's limited capacity. At the same time, representatives from the fishing, scientific, and environmental communities expressed concern regarding the impacts of dredged material disposal on the Bay's fisheries and other ecological resources.

The limited capacity for disposal and the controversies over environmental impacts highlighted the need for improved management of and alternative disposal options for dredged material. In 1990, the U.S. Environmental Protection Agency (USEPA), the U.S. Army Corps of Engineers (USACE), the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), the San Francisco Bay Conservation and Development Commission (BCDC), and the State Water Resources Control Board (SWRCB) joined with navigation interests, fishing groups, environmental organizations, and other interested parties to form the Long-Term Management Strategy (LTMS) program for dredged material from the San Francisco Bay Area (Figure ES.1). The goals of the LTMS included managing dredging and disposal in an economically and environmentally sound manner, maximizing the beneficial use of dredged material, and developing a coordinated permit application review process for dredging and disposal projects.

The *Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region Policy Environmental Impact Statement/Programmatic Environmental Impact Report* (LTMS EIS/EIR) was jointly published by the LTMS agencies in 1998. The long-term strategy selected in the LTMS EIS/EIR, adopted in the federal Record of Decision (ROD) signed by the USACE and USEPA in 1999, and reflected in the SFRWQCB's *Water Quality Control Plan* (Basin Plan) amendments and the BCDC's *San Francisco Bay Plan* (Bay Plan) amendments of 2001 involves low disposal volumes at in-Bay sites, medium disposal volumes in the ocean, and medium volumes for beneficial reuse (Figure ES.2).

Since the initiation of the LTMS, substantial progress has been made toward meeting the program's goals. Allowable in-Bay disposal volumes have been reduced by more than 50 percent compared to pre-LTMS volumes, and actual in-Bay disposal in recent years has been about one-third of historical levels. Additionally, several dredged material disposal and beneficial reuse alternatives have been brought on-line, including the Sonoma Baylands restoration site, the Winter Island levee rehabilitation project, and the San Francisco Deep Ocean Disposal Site (SF-DODS)–to date, over 10 million cubic yards (mcy) of dredged material have been diverted from in-Bay disposal to these sites. Additionally, the interagency Dredged Material Management Office (DMMO) was established and has been successful in substantially streamlining the application and permitting process for dredging and disposal projects. Full implementation of the long-term dredging, disposal, and beneficial reuse strategy, however, will require further changes to existing management approaches and the creation

Figure ES.1

SOURCE: Final LTMS EIS/EIR, 1998

LTMS Management Plan Planning Area

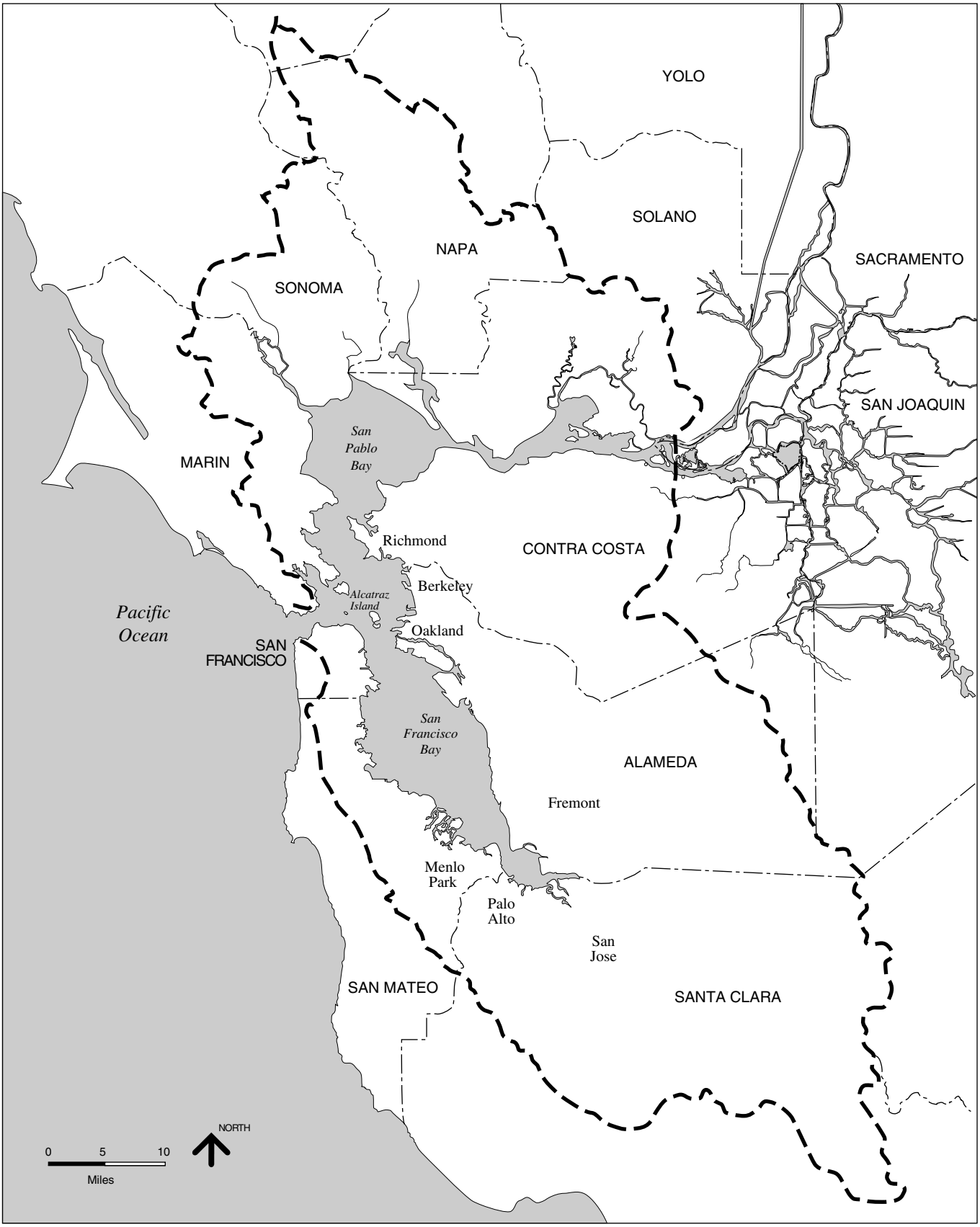
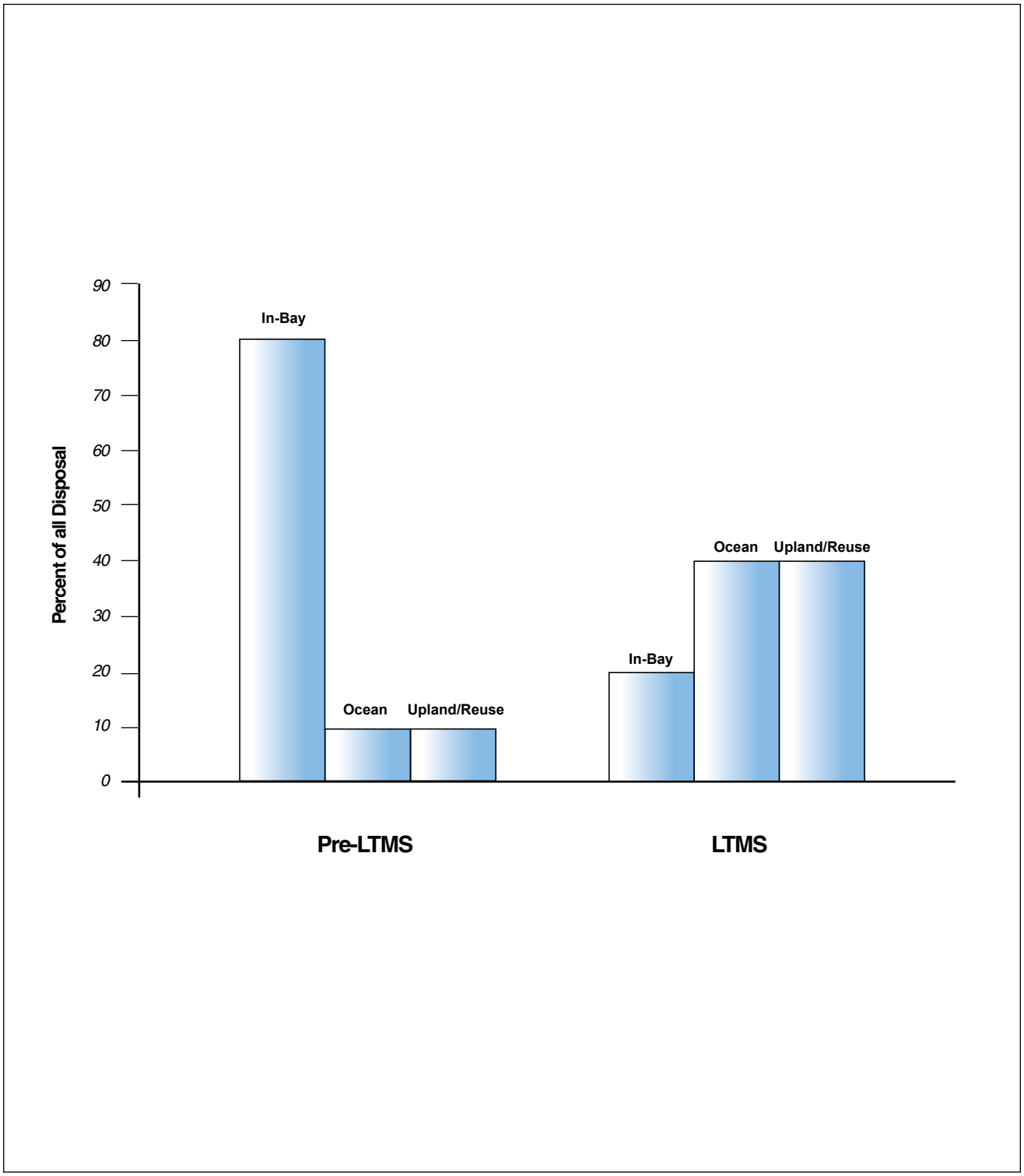


Figure ES.2

SOURCE: Final LTMS EIS/EIR, 1998.

Long Term Management Strategy for the S.F. Bay Area



of new approaches. The *LTMS Management Plan* (Management Plan) presents specific mechanisms needed to implement this strategy. The Management Plan does not prescribe any new laws or policies or supplant existing authorities or jurisdictions of the LTMS agencies. Instead, the Management Plan is based on the existing laws and policies of the LTMS agencies, and will help ensure that these agencies apply their policies in a coordinated and comprehensive manner.

During the first three years following publication of the Management Plan, the LTMS agencies will produce an annual report on the progress of the program and reaching the LTMS goals. At the end of the first three-year period, the Management Plan will be reviewed and, if necessary, revised to reflect changing statutory, regulatory, technical, and environmental conditions. Subsequently, a programmatic review will occur every three years, with each six-year review involving amendments to the Bay Plan or Basin Plan, if necessary.

The dredged material management issues covered in each chapter of the Management Plan, and the specific implementation measures for addressing those issues, are briefly discussed in the pertinent sections of this Executive Summary. In instances where management issues cannot be addressed fully at this time because of a lack of authority, a lack of resources, or for other reasons, the implementation measures call for ongoing effort and attention in future versions of the Management Plan.

ES.2 LTMS STRUCTURE (CHAPTER 2)

Considerable progress has been made toward achieving the original LTMS goals. The goals have been revised to reflect the current status of the LTMS program, and ensure that the long-term strategy for dredging, disposal, and reuse continues to be effective (see text box).

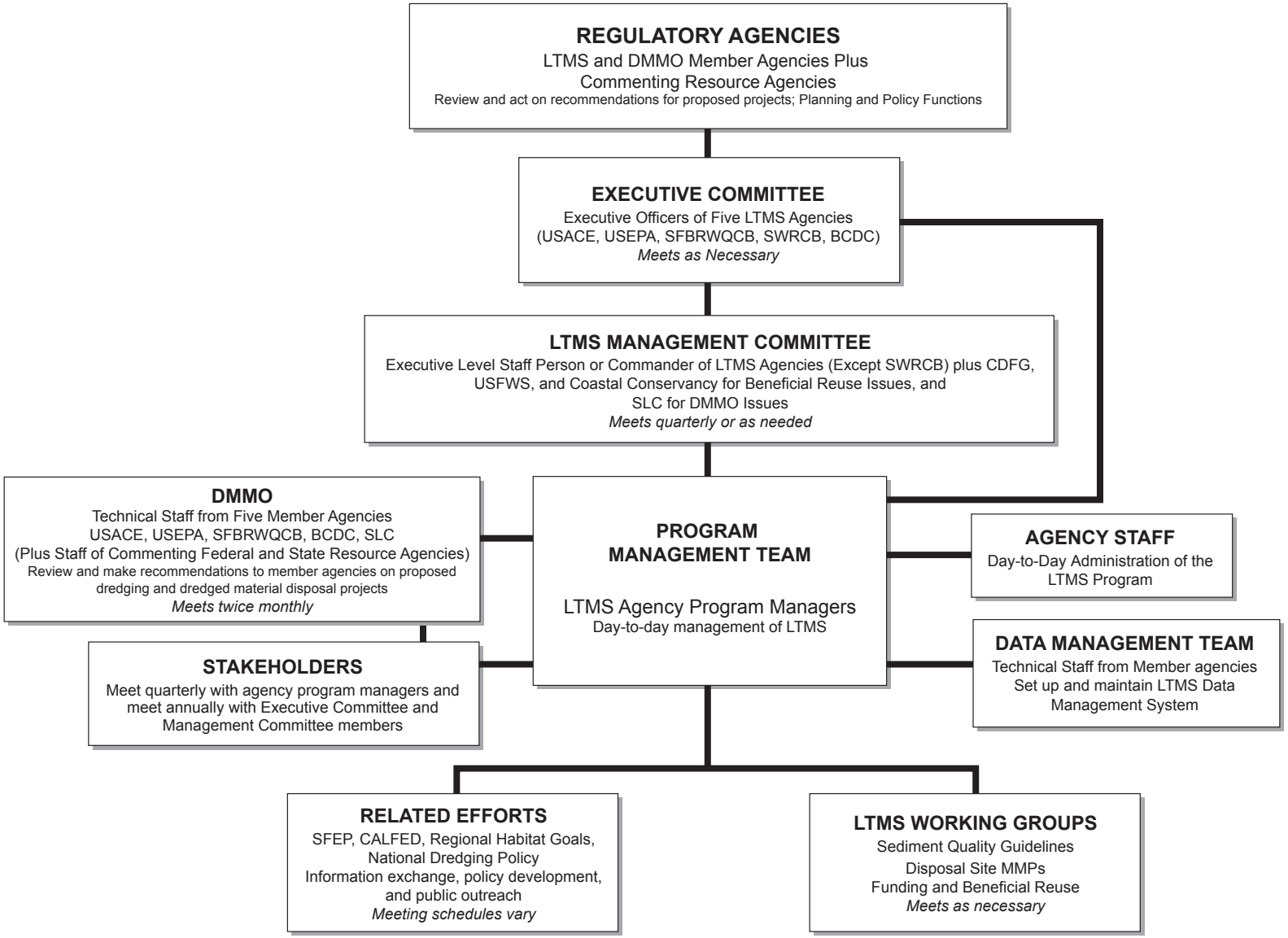
Revised LTMS goals (adopted by the LTMS Executive Committee)

- Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities in the Bay and Estuary;
- Conduct dredged material disposal in the most environmentally sound manner;
- Maximize the use of dredged material as a resource; and
- Maintain the cooperative permitting framework for dredging and disposal applications

The overall LTMS structure has been modified to address implementing and reviewing the program, as shown in Figure ES.3. The LTMS Executive Committee (Executive Committee), representing the five LTMS agencies, will meet as necessary to review policy guidelines and give direction on the overall program. The LTMS Management Committee (Management Committee) will manage and coordinate the LTMS effort, including review and revision of the Management Plan. To address beneficial reuse issues, the Management Committee will be joined by the California Coastal Conservancy, California Department of Fish and Game (CDFG), and U.S. Fish and Wildlife Service (USFWS). To address dredging and disposal issues that cannot be resolved at the staff level of the Dredged Material Management Office (DMMO), the Management Committee will be joined by the State Lands Commission (SLC).

Figure ES.3

LTMS Organizational Structure



The DMMO currently is a pilot program that is made up of representatives from the USACE, BCDC, SFBRWQCB, USEPA, and SLC. Following regulation changes by BCDC and SLC, the DMMO will be formalized. Lastly, in light of the changes to the LTMS, an integrated data management system that can provide a more comprehensive inventory of dredging and disposal information is needed. Therefore, the LTMS agencies implement the following measures:

- *The primary LTMS agencies—the USACE, USEPA, BCDC, SFBRWQCB, and SWRCB—will operate under a new LTMS structure that includes the Executive Committee, the Management Committee, the Program Management Team, and the DMMO. The California Coastal Conservancy, CDFG, and USFWS will participate on the LTMS Management Committee, as necessary, to implement beneficial reuse options. The SLC will participate on the Management Committee, as necessary, to settle dredging and disposal issues that cannot be resolved at the DMMO staff level.*

- *BCDC and SLC will initiate the regulation changes necessary to formalize the DMMO. Upon completion of these regulation changes, the DMMO General Operating Procedures will be revised, and a new Memorandum of Understanding will be adopted and signed by the DMMO member agencies.*

- *The LTMS agencies will create a Data Management Team to develop and maintain a data management system, which will be available to all interested parties.*

ES.3 AUTHORIZATION OF DREDGING AND DISPOSAL PROJECTS (CHAPTER 3)

The DMMO serves as a single point of entry for applicants to the dredging and disposal permitting process. The DMMO uses a single permit application form that meets the requirements of its member agencies, and makes consensus-based recommendations to these agencies on completeness of permit applications, adequacy of sampling and analysis plans, and suitability of sediments for disposal.

Under optimal conditions, coordination between the DMMO, the applicant, and the affected parties occurs early in and consistently throughout the permit and planning phases. A well-coordinated process helps to ensure that projects are consistent with the laws and policies of the DMMO member agencies, the California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA). Therefore, the LTMS agencies implement the following measure:

- *The LTMS agencies encourage early involvement of the interested parties in the project planning phase, and thus will encourage project proponents to, if appropriate, conduct early coordination with the DMMO, and establish project-related work groups.*

Part of the documentation required of DMMO permit applicants is evidence that proposed projects meet the provisions of CEQA and NEPA. Although, these laws require public notification of projects, in some cases the public learns of projects after the environmental review has been completed and after public input is possible. To ensure maximum public involvement in the environmental review of projects, the LTMS agencies implement the following measure:

- *The LTMS agencies will prepare an information resource document on potential environmental impacts of dredging, disposal, and beneficial reuse projects, and the relevant regulatory processes. This document will cite the LTMS goals, program-level mitigation measures, and the* LTMS Management Plan *implementation measures. The document will be distributed to potential lead agencies for such projects, and used by the LTMS agencies during CEQA and NEPA review.*

In reviewing permit applications, the DMMO will assess whether projects are designed to protect listed species and their critical habitat, as determined by the state and federal resource agencies (CDFG, USFWS, and National Marine Fisheries Service [NMFS]). To achieve this goal, the LTMS agencies implement the following measure:

- *Dredging and dredged material disposal activities that are conducted within the work windows as indicated in Figures 3.2 and 3.3 (and in Appendix F) of the* LTMS Management Plan *do not require further Endangered Species Act consultation. The permitting agencies will closely review the rationale for any dredging and disposal projects proposing work outside the work windows. Pursuant to the federal and California Endangered Species Acts, any projects proposing deviation from the work windows are required to undergo consultation with the appropriate resource agency.*

Under the federal Clean Water Act and BCDC's laws and policies regarding fill in the Bay, permit applications involving aquatic disposal of dredged material must include an evaluation of the logistical, technological, economic, and environmental practicability of disposal alternatives. One key criterion for assessing the practicability of a disposal site is the quality of material proposed for dredging and disposal. Because sediment testing is costly, and tests vary for different disposal or reuse environments, the DMMO will encourage project proponents to submit alternatives analyses prior to conducting sediment tests. Therefore, the LTMS agencies implement the following measure:

- *To minimize the need for sediment sampling and testing events for multiple disposal environments, the DMMO will encourage project proponents to submit alternatives analyses pursuant to the Clean Water Act and BCDC's laws and policies regarding Bay fill before conducting sediment testing.*

The DMMO is a permit application review body only; the member agencies issue the actual permits. These permits often contain conditions to ensure dredging, disposal, and reuse activities are carried out in a manner consistent with each approval. To ensure permit compliance, reduce regulatory overlap, and eliminate inconsistency among the different agencies' permit conditions, the LTMS agencies developed a model for consolidated permit conditions, and also implement the following measure:

- *The LTMS agencies, in issuing permits for dredging and disposal projects, will coordinate permit conditions and may use, on a case-by-case basis, consolidated conditions contained in the* LTMS Management Plan *(Appendix G). Each agency may include permit conditions other than those identified in Appendix G.*

Permit applications are not subject to any particular processing fee by the DMMO; however, the SFBRWQCB and BCDC impose fees that vary depending on the type of permit for which approval is

sought. Charging new fees as a possible mechanism for offsetting disposal site impacts or funding beneficial reuse sites was discussed during development of the LTMS but put on hold because of the inability to reach consensus on the issue. Instead, a Funding Work Group was established to explore funding mechanisms. Therefore, the LTMS agencies implement the following measure:

- *The LTMS agencies will reconsider funding mechanisms for the LTMS program, including possibly instituting a new fee for dredging and disposal activities, at the initial three-year transition review period.*

ES.4 DREDGED MATERIAL SUITABILITY DETERMINATIONS (CHAPTER 4)

Material to be dredged must be tested to determine whether it is suitable for a proposed disposal or reuse environment—unless an exclusion is granted by the DMMO—using general guidance documents including the "Green Book" for ocean disposal and the "Inland Testing Manual" for in-Bay disposal.

Sediment quality criteria (SQC), which represent a single sediment concentration below which disposal poses minimal risk to the aquatic environment, have not been developed for the Bay Area. However, the LTMS agencies formed a work group that is considering development of sediment quality guidelines (SQG), including bioaccumulation trigger levels to help standardize when bioaccumulation testing is needed, and a preliminary list of bioaccumulative contaminants of concern with known presence in Bay sediments. To facilitate the ongoing effort of the work group, the LTMS agencies implement the following measure:

- *The LTMS agencies will continue to coordinate the efforts of the SQG Work Group and provide the work group's results for public review, including the technical basis for any proposed SQGs. The LTMS agencies also will hold at least one public meeting describing any such guidelines, their development, and their proposed use.*

Testing protocols are needed to better evaluate the suitability of Bay dredged sediments for the various beneficial reuse options. Currently, the wetland surface and wetland foundation material guidelines developed by the SFBRWQCB are used to help identify material suitability for beneficial reuse. To improve the evaluation of sediment suitability for beneficial reuse, the LTMS agencies implement the following measures:

- *The SFBRWQCB will revise* Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse, *which will provide guidelines on testing (including recommendations for reference sites) and sediment quality screening for various beneficial uses. A draft version of the revised document has been issued for public comment and, following the close of the comment period, will be revised and finalized through the formal administrative process.*

- *A long-term goal of the LTMS agencies is to develop testing protocols to further improve the evaluation of the suitability of Bay Area dredged sediments for various beneficial reuse options. The LTMS agencies plan to reevaluate the appropriateness of existing sediment testing protocols, particularly bioassays, to ensure that they*

address the environments and potential biological receptors likely to be of concern for beneficial reuse projects.

Reference sites serve as points of comparison to identify potential effects of contaminants in material proposed for disposal. Reference sites are generally selected based on similarities to the grain size, composition, geology, and habitat of a designated aquatic disposal site. If an appropriate reference site match has not been found for a proposed disposal environment, confounding factors can be incorporated during testing and can result in skewed results. In 1995, USEPA issued a draft rule to address this matter; once the rule is finalized, the LTMS agencies will recommend that project testing be carried out using reference sites that more accurately represent typical healthy, finer-grained areas of the Bay. Therefore, the LTMS agencies implement the following measure:

- *Upon finalization of USEPA's proposed rule on reference sites, the LTMS agencies will recommend that testing for dredging projects be carried out using new reference sites from the SFBRWQCB's* Evaluation and Use of Sediment Reference Sites and Toxicity Tests in San Francisco Bay.

The LTMS agencies plan to develop a single testing manual for aquatic disposal and beneficial reuse that documents local and regional test protocols, contaminants of concern, appropriate species for bioassays, and quality assurance information. Therefore, the LTMS agencies implement the following measure:

- *The LTMS agencies will work to develop a comprehensive regional implementation manual (RIM), which will incorporate existing local guidance for testing requirements for all disposal environments in the LTMS planning area. A draft version will be issued, revisions made per public comments, and a final version prepared. The document will be revised or updated as needed.*

ES.5 DISPOSAL AND REUSE SITE MANAGEMENT AND MONITORING (CHAPTER 5)

Management and monitoring are critical to understanding and addressing the impacts associated with disposal and reuse of dredged material. An established Site Management and Monitoring Plan (SMMP) exists for the SF-DODS, and a less-comprehensive program is in place for the in-Bay disposal sites. Management and monitoring plans for reuse sites are typically prepared on a case-by-case basis.

The LTMS agencies formed a work group to evaluate existing management and monitoring plans for the in-Bay disposal sites. This group's recommendations will be used to develop SMMPs for these sites, and likely will be included in the revision of the Management Plan prepared at the close of the first three-year period. This work group also will consider preparing a general guidance document for developing site-specific SMMPs for beneficial reuse projects. Therefore, the LTMS agencies implement the following measures:

- *As previously stated in the LTMS EIS/EIR, "[t]he LTMS agencies will develop and implement site management and monitoring plans for all multi-user placement or disposal sites. These plans will specify the [management measures] necessary to*

ensure that impacts are minimized and/or benefits are realized. The plans will also specify the monitoring requirements and post-closure activities as appropriate for each site. Site management and monitoring plans will identify specific conditions that would constitute acceptable performance, as well as adjustments to site use parameters (including termination of continued site use) that would be triggered by specific findings of non-performance." The LTMS agencies will continue to sponsor the efforts of the SMMP Work Group, which will serve as a vehicle for developing SMMPs.

- *As previously stated in the LTMS EIS/EIR, "[t]he LTMS agencies will provide opportunity for public input and comment on proposed site management and monitoring plans for new disposal or placement sites and on proposed substantive revisions to existing plans. Information from site monitoring efforts will be made available to the public, and opportunity for comment will also be provided as part of the periodic review for existing sites."*

- *Until formal SMMPs are prepared for the in-Bay disposal sites, existing management and monitoring practices will continue. The SMMP Work Group will meet, and formal SMMPs for the in-Bay disposal sites will be developed and included in the* LTMS Management Plan *prepared at the end of the first three-year period. At that time, the progress of the SMMP Work Group on beneficial reuse sites also will be included in the Management Plan*.

ES.6 MANAGEMENT OF THE IN-BAY DISPOSAL GOAL (CHAPTER 6)

The primary goals of the LTMS are to significantly reduce in-Bay disposal and to increase the beneficial use of dredged material and disposal at the SF-DODS. These goals will be achieved gradually over a 12-year transition period. The first step toward reaching this goal was the signing of the federal ROD for the LTMS EIS/EIR in 1999. Next, the BCDC's Bay Plan and SFBRWQCB's Basin Plan were amended, and BCDC's implementing regulations were changed. The 12-year transition begins with an overall in-Bay disposal volume of 2.8 mcy plus a contingency volume (for unforeseen events) of up to 250,000 cubic yards (cy). During this period, the volume of material allowed for in-Bay disposal will decrease by 387,500 cy every three years (Figure ES.4).

The LTMS agencies will use a two-phased management approach to reduce in-Bay disposal. During Phase I, the LTMS agencies will work with dredgers to voluntarily reduce dredging and disposal volumes. The LTMS agencies will initiate a regional planning effort to enhance coordination of dredging projects and cooperation among project proponents. Efforts also will be made to reduce unnecessary dredging and excessive disposal in the Bay through improved project planning and design, preparation and use of the USACE's dredged material management plans for the federal maintenance projects in the Bay, continued involvement in the BCDC's *Seaport Plan* planning process; implementation of existing regulatory mechanisms (e.g., permit requirements), and coordination with watershed planning efforts to improve management of sediment in the Bay.

During the 12-year transition period, the LTMS agencies will track the in-Bay disposal volumes. If the annual transition goals are not met through the voluntary efforts to reduce in-Bay disposal, Phase II will be triggered and individual in-Bay disposal volume allocations will be implemented. If Phase

II is initiated, individual allotments will not confer a right to dispose in the Bay if practicable or feasible disposal or reuse alternatives are available. To ensure the success of the transition and ultimately to achieve the goals, the LTMS agencies implement the following measures:

- *To achieve the long-term dredging, disposal, and reuse goals for the Bay Area, the LTMS agencies will create a regional planning initiative to coordinate dredging projects and foster greater economic efficiencies, ensure consideration of environmental issues and mechanisms to minimize potential impacts, maximize beneficial use of dredged material, and facilitate project consistency with other regional planning efforts and affected local communities.*

- *As previously indicated in the EIS/EIR, in 2001, the USACE will initiate preparation of dredged material management plans for the federal maintenance dredging projects in San Francisco Bay, and perform NEPA reviews as required, including supplementing the* Composite Environmental Impact Statement for Maintenance Dredging. *These reviews will include consideration of potential project design changes to reduce the dredging volumes necessary to meet navigational needs, such as modifications to channel widths and depths.*

- *As previously stated in the EIS/EIR for the LTMS, "BCDC, in consultation with other LTMS agencies, will continue to work with area ports within the framework of its joint seaport planning process within the Metropolitan Transportation Commission to identify potential means to reduce the need for dredging while meeting the navigational needs of each port facility." Further, within the framework of its seaport planning process, BCDC will consider the need for dredging—in addition to minimizing fill.*

- *As part of the permitting process, the LTMS agencies will require that permit applications include data demonstrating whether proposals involve dredging the minimum volume necessary, and include measures in permits that ensure projects are carried out in compliance with the authorized terms.*

- *As part of a regional planning initiative, the LTMS agencies will establish a work group to explore coordination with watershed planning efforts to improve the understanding and management of sediment dynamics in the Bay related to natural and human processes (including dredging and disposal, water diversions, and shoreline armoring), and to establish links with the Natural Resources Conservation Service.*

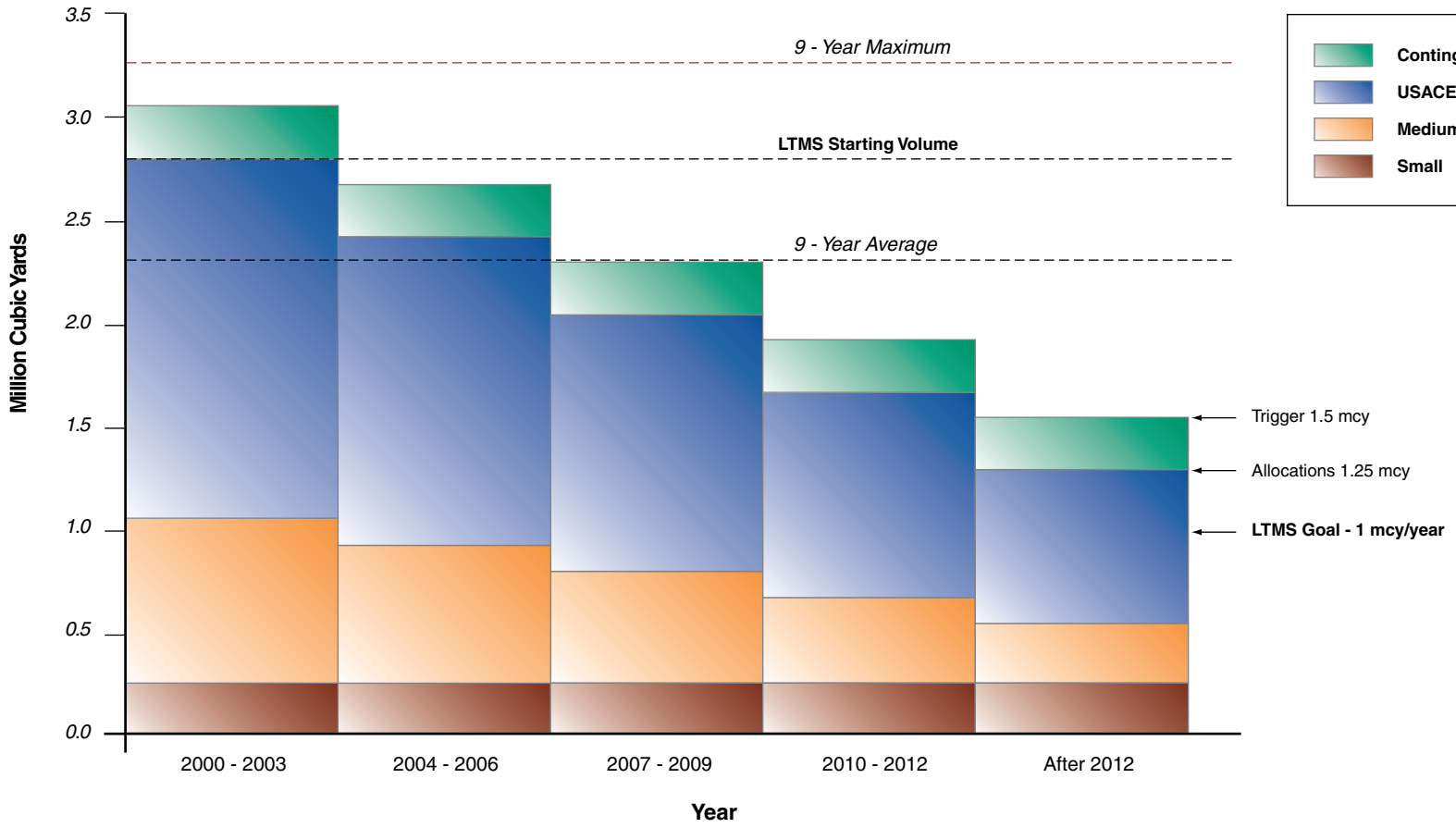
ES.7 IMPLEMENTATION OF BENEFICIAL REUSE AND DISPOSAL PROJECTS (CHAPTER 7)

Dredged material from the Bay can be used for wetland restoration, levee reconstruction, and in-Bay habitat creation. After processing is completed at rehandling facilities, material can also be used at landfills for cover or construction purposes. Although multi-user sites and reuse opportunities for

Figure ES.4

SOURCE: Final LTMS EIS/EIR, 1998.

In-Bay Transition Allocations



material that is unsuitable for unconfined aquatic disposal are currently limited, planning efforts are under way for major new projects (e.g., the wetland restoration sites at the former Hamilton Army Airfield and adjacent sites, and the Montezuma Wetlands site). (Figure ES.5 identifies existing and potential beneficial reuse and disposal projects.) Because the success of the long-term strategy depends heavily on the availability of beneficial reuse and upland disposal options, efforts to develop such options are critical. Therefore, the LTMS agencies implement the following measures:

- *The LTMS agencies will work closely with the dredging and environmental communities to implement and fund beneficial reuse projects.*

- *With the California Coastal Conservancy, BCDC and USACE will implement the Hamilton Wetlands Restoration project. Further, the LTMS agencies will continue to participate in the Hamilton Restoration Group.*

- *The LTMS agencies will continue to work to resolve issues and process applications for implementation of the Montezuma Wetlands Project.*

- *The LTMS agencies will create one new staff position with responsibility for facilitating selection and implementation of beneficial reuse and upland disposal options, including serving as the point of contact for such projects, attending relevant meetings, and pursuing funding and legislative opportunities for project implementation.*

- *The LTMS agencies will provide status reports regarding potential and existing beneficial reuse and disposal options through the LTMS Program Management quarterly public workshops.*

The typical dredger seeking a beneficial reuse or disposal option is not likely to single-handedly design or implement a new project, but rather use an existing site. The LTMS agencies will work with proponents to facilitate planning, design, and implementation of projects, and therefore implement the following measures:

- *To facilitate preliminary investigation and selection of beneficial reuse and upland disposal sites, the LTMS agencies will work with project proponents during the project planning stage to assess potential sites.*

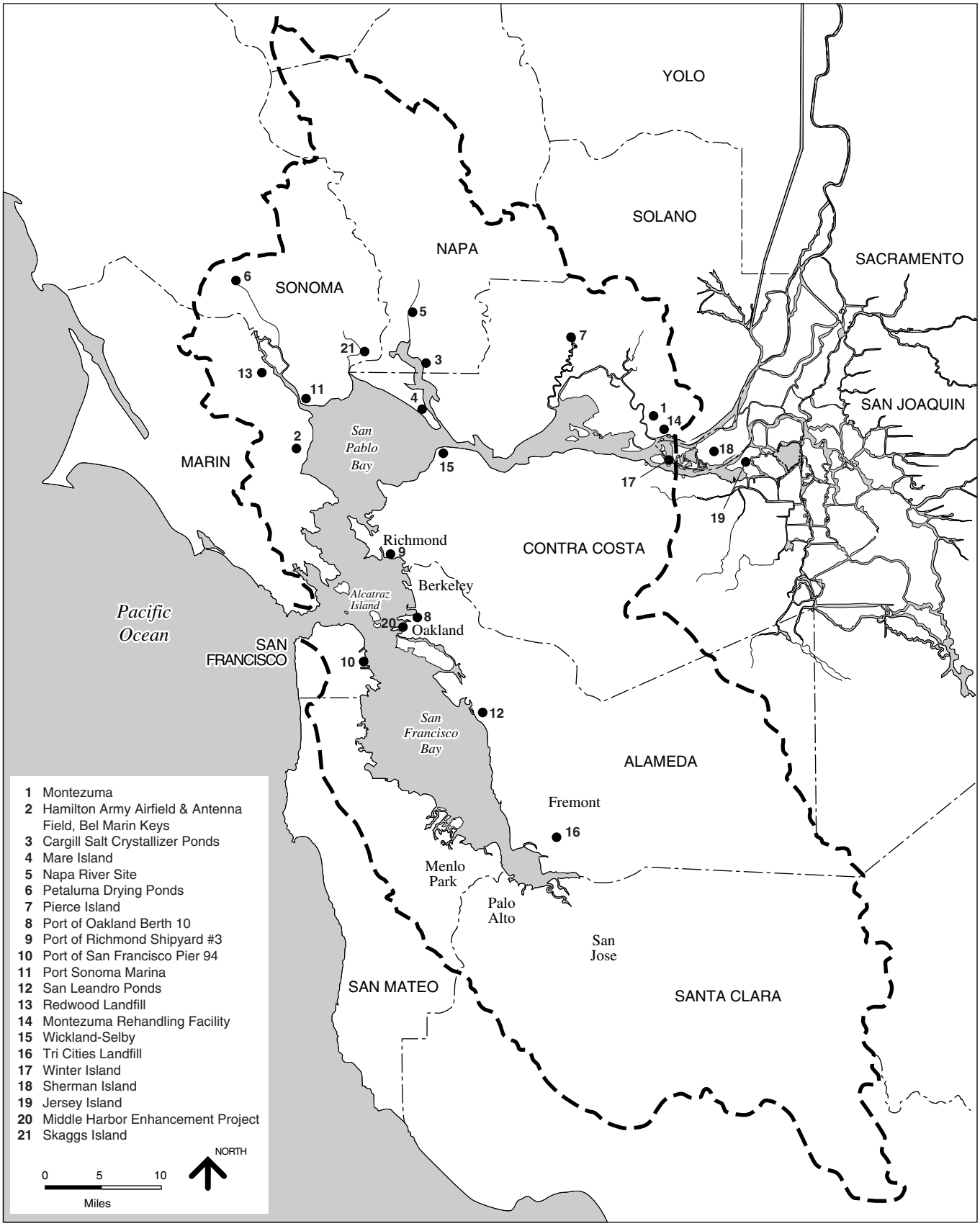
- *The LTMS permitting agencies will work with project proponents during the design phase of habitat restoration projects using dredged material to ensure the development of biological goals and physical design features (including fill elevations and material placement guidelines, and appropriate physical and chemical characteristics of dredged material) to achieve these goals. Additionally, the LTMS permitting agencies will require, as legally appropriate, that proposed restoration projects include biological goals, physical design features, and monitoring and remediation measures.*

Every reuse project has a unique set of site-specific physical and environmental conditions, regulatory requirements, CEQA and NEPA review, and technical issues. Implementation of certain reuse

Figure ES.5

SOURCE: Final LTMS EIS/EIR, 1998

Existing and Potential Beneficial Reuse and Upland Disposal Sites



projects could result in the conversion or loss of existing habitat. In the case of dredged material reuse at landfills and at existing rehandling facilities, habitat conversion or loss is possibly a minor issue in light of the already disturbed nature of these sites. Habitat conversion or loss can take on greater significance where diked historic baylands are used for habitat restoration, a new rehandling facility is constructed or expanded, and levees are restored. To foster an ideal mix of habitat patterns and types in the region and minimize habitat conversion impacts, the LTMS agencies implement the following measures:

- *To ensure an ideal mix of wetland patterns and types and to minimize impacts of local habitat conversion, the LTMS agencies will work to maximize the consistency of projects with applicable regional habitat goals (e.g., USFWS's Endangered Species Recovery Plans, the San Francisco Bay Area Wetlands Ecosystem Goals Project, and the San Francisco Bay Joint Venture). As stated in the LTMS EIS/EIR, "the LTMS agencies will encourage and authorize as legally appropriate, restoration efforts using dredged material that are designed to be consistent, to the maximum extent practicable, with specific habitat goals established by regional planning efforts—with the understanding that such projects are dynamic, changing processes—for managing the region's natural resources." To ensure restoration of the full range of Bay habitats, the LTMS agencies will require dredged material restoration proposals to include, as appropriate, an assessment of project consistency with regional habitat goal projects.*

- *As stated in the LTMS EIS/EIR, for restoration projects using dredged material in areas not covered by regional habitat goals, "the LTMS agencies will also encourage and authorize as legally appropriate, such projects which would clearly result in an overall net gain in habitat quality and would minimize loss of existing habitat functions. Whenever feasible, such projects will provide, as part of the project design, for a no net loss in the habitat functions existing on the project site or, where necessary, provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements."*

- *The LTMS agencies recognize that temporal losses in existing habitat may occur at sites and will work with project proponents to minimize such losses. During the planning stage, project proponents should clearly define, evaluate, and, if feasible, incorporate existing habitat types at a potential reuse site. Proposed projects could be sited in areas that minimize loss of existing seasonal wetland habitat, where possible. Further, restoration projects could be designed to include restoration of seasonal and other important habitat types.*

- *Where possible, proposed rehandling facilities should be located in areas that minimize loss of existing habitat or alternatively on sites located outside of the diked historic baylands with limited habitat value.*

- *During the planning stage, rehandling project proponents should, if feasible, incorporate habitat values at proposed facilities by including individual ponds that could be managed solely for habitat use or by managing the facility for habitat use*

during periods when dredged material is not processed. Where necessary, project proponents should provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements.

- *Project proponents should develop long-term management plans for beneficial reuse and upland disposal sites, and appropriate mechanisms to ensure permanent protection of restored habitat values. In projects where significant existing habitat is proposed to be impacted, project proponents could be required to develop project-specific mitigation goals, conduct monitoring, and, if necessary, remediate. The LTMS agencies will fully and appropriately apply existing laws, regulations, and policies to ensure that adverse impacts associated with project implementation will be minimized and, as necessary, mitigated.*

Mechanisms, such as state and federal regulatory requirements, and site design features exist for preventing or minimizing impacts associated with the release of contaminants or salt from dredged material to on-site or surrounding waters. However, more information is needed regarding potential salinity impacts from Bay dredged material on the freshwater Delta environment. Because of the tremendous potential for using dredged material in the Delta for levee restoration, this issue is a potential obstacle to implementation and needs to be addressed. Therefore the LTMS agencies implement the following measures:

- *To facilitate implementation of Delta levee projects using material from the Bay, to ensure protection of Delta water quality, and to prevent unacceptable or contaminant-related effects, the LTMS agencies will work with the Central Valley Regional Water Quality Control Board, the California Department of Water Resources, local governments, and local reclamation districts. Further, the USACE will pursue a Water Resources Development Act Section 204 study to reuse Bay dredged material in the Delta. The LTMS agencies will develop a strategy to improve coordination with the CALFED program, and, as a first step, the LTMS Management Committee will send a letter to the CALFED Policy/Management Committee co-chairs urging CALFED to examine the potential for reuse of Bay dredged material in the Delta.*

- *The LTMS agencies will work to address potential salinity impacts in the Delta associated with using Bay dredged material for levee restoration. The LTMS agencies will pursue funding and research opportunities to help understand how Bay material affects the freshwater environment. Data collected and other "lessons learned" from initial projects will be analyzed by the LTMS agencies, in coordination with appropriate Delta entities, to determine the feasibility of other projects and to improve project design (including salinity control measures) and management.*

- *The LTMS agencies will foster, sponsor, or undertake, as resources allow, technical analyses of issues concerning habitat restoration using dredged material, and make scientific data available to improve the design and management of restoration sites.*

ES.8 MANAGEMENT PLAN REVIEW AND REVISION (CHAPTER 8)

The Management Plan will be periodically reviewed and modified, as necessary, to reflect changing statutory, regulatory, technical, and environmental conditions. Public review and comment will be an important component of each review. Therefore, the LTMS agencies implement the following measure:

- *During the initial three-year period of implementation, the LTMS agencies will produce an annual progress report of the program. Subsequently, the LTMS agencies will conduct three-year reviews. A more comprehensive review resulting in policy changes, if necessary, will be conducted every six years.*

ES.9 RESOURCE NEEDS (CHAPTER 9)

The LTMS agencies have determined that additional resources and funding are needed to fully implement the long-term strategy for dredging, disposal, and reuse in the region. The LTMS agencies prepared preliminary estimates that will require further refinement, in part through the efforts of the LTMS Funding Work Group. Therefore, the LTMS agencies implement the following measure:

- *The LTMS agencies will participate in the Funding Work Group, which will further assess the program's ongoing resource needs and potential funding sources. The work group's findings will be used to more accurately determine what is needed to achieve the goals of the LTMS program.*

ES.10 AMENDMENTS TO THE BAY AND BASIN PLANS AND CHANGES TO BCDC'S IMPLEMENTING REGULATIONS (CHAPTER 10)

The Bay Plan and Basin Plan provide the basic framework for the regulatory and planning activities of the BCDC and SFBRWQCB, respectively. To allow both agencies to implement the long-term strategy for dredging, disposal, and reuse, and to achieve the LTMS goals, the Bay Plan and Basin Plan have been amended. These amendments were similar in intent but had a slightly different focus for each agency because of their differing, but complementary, mandates.

The amendments support reducing in-Bay disposal of dredged material and developing disposal and reuse alternatives, and support the concept of a voluntary allocation program for in-Bay disposal with implementation of mandatory allocations, if necessary. Additionally, BCDC amended its implementing regulations to facilitate the in-Bay disposal site management strategy involving a two-phased allocation system. The formal process for approving the Bay Plan and Basin Plan amendments and BCDC's implementing regulations was completed in 2001.

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CHAPTER 1

1.0 INTRODUCTION

1.1 MANAGEMENT PLAN OVERVIEW

1.1.1 LTMS Program and LTMS Management Plan

In the early 1980s, a mound of dredged material was discovered at the Alcatraz (SF-11) disposal site. At the same time, concerns were mounting about the potential environmental and fishery impacts associated with in-Bay disposal activities. In light of the limited capacity of the Alcatraz site and associated potential navigational hazards, and environmental concerns, the primary agencies regulating dredging and disposal activities in San Francisco Bay (the Bay), U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (USEPA), San Francisco Bay Conservation and Development Commission (BCDC), and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), along with the State Water Resources Control Board (SWRCB), began to make decisions on a case-by-case and agency-by-agency basis reducing predictability for project sponsors, and public confidence that environmental resources were being adequately protected. In response, the USACE, USEPA, BCDC, SFBRWQCB, and SWRCB, along with representatives from the dredging, environmental, regulatory, and scientific communities, initiated the LTMS in 1990.

Initially, the LTMS agencies took specific policy actions to support their participation and to ensure that their regulatory decisions would be consistent with the original LTMS goals. In 1991, BCDC amended its *San Francisco Bay Plan* (Bay Plan) findings and policies on dredging and disposal activities to: (1) recognize the importance of dredging to the economic and social welfare of the Bay Area; (2) address the limited capacity of existing in-Bay sites and potential adverse impacts on the Bay's natural resources associated with dredging and disposal; and (3) encourage the placement of material at beneficial reuse sites or the ocean. In 1986, during its triennial review of the *Water Quality Control Plan* (Basin Plan), the SFBRWQCB recognized that dredging is necessary to maintain navigation and other water dependent activities, and stated its intention to update and revise the Basin Plan dredged sediment disposal policy and to enact guidelines to determine the suitability of dredged sediment for unconfined aquatic disposal in the Bay. In 1993, the USACE issued Public Notice (PN) No. 93-2 which promulgated interim guidelines for testing dredged material proposed for in-Bay disposal, and PN No. 93-3, which proposed several interim measures for

Original LTMS goals

(adopted by the LTMS Executive Committee June 7, 1991)

- Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities in the Bay and Estuary;
- Conduct dredged material disposal in the most environmentally sound manner;
- Maximize the use of dredged material as a resource; and
- Establish a cooperative permitting framework for dredging and disposal applications.

managing the in-Bay disposal sites (e.g., a reduction of in-Bay disposal site limits and restrictions as to the type of material that could be disposed at the sites).

The LTMS program is composed of five individual and sequential phases. Phase III involved preparation of the Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region Policy Environmental Impact Statement/Programmatic Environmental Impact Report (LTMS EIS/EIR), which evaluated alternative long-term dredged material management strategies, each involving a combination of volumes of material placement in the Bay and ocean, and beneficial reuse environments. The alternatives were compared to determine the degree to which each would achieve the goals of the LTMS. The alternative emphasizing the placement of approximately 80 percent of material at both the upland and ocean environments and approximately 20 percent in the Bay was selected because it came closest to matching the overall goals and objectives of the LTMS while combining substantial environmental benefit with the fewest environmental risks.

This new management strategy will require specific mechanisms and changes in existing institutional arrangements and policies of the LTMS agencies. This *Long-Term Management Strategy Management Plan* (Management Plan), which has been prepared by the primary LTMS agencies, in close cooperation with the interested parties, presents the specific guidance for implementing this strategy. Successful implementation of this strategy will require ongoing work and cooperation between the LTMS agencies and the interested parties, such as through the LTMS workshops and focused work groups regarding disposal and reuse site management and monitoring, funding and sediment quality guidelines (Chapter 2), the Dredged Material Management Office (DMMO) (Chapter 3), and efforts to bring beneficial reuse sites on-line, such as the Hamilton Restoration site.

1.1.2 Document Organization

The Management Plan presents:

- The institutional structure of the LTMS during the implementation phase of the program (Chapter 2).
- Procedures and requirements for obtaining authorization for dredging and dredged material disposal and/or reuse activities (Chapter 3).
- Criteria for determining the suitability of dredged material (Chapter 4).
- Management and monitoring plans for disposal and reuse sites (Chapter 5).
- Strategies for managing the in-Bay disposal goal (Chapter 6).
- Strategies for reuse and disposal of dredged material outside of the Bay (Chapter 7).
- Procedures and schedule for review and revisions of the Management Plan (Chapter 8).
- Resource and funding needs for implementing the long-term dredging and disposal strategy for the Bay Area (Chapter 9).

LTMS Management Plan: Key Issues
(listed in order of importance as identified by stakeholders)

- Sediment testing
- Disposal & reuse allocations
- Process for beneficial reuse sites (e.g., selection and use, impacts to diked baylands and seasonal wetlands, future site disposition and management)
- Use of dredged material at landfills
- Phasing of transition toward 40/40/20 strategy
- Reduction and/or elimination of unnecessary dredging
- Funding
- Public participation (e.g., in DMMO)
- CEQA review for individual projects

- Amendments to the Bay Plan and Basin Plan, and changes to BCDC's implementing regulations (Chapter 10).[1]
- Other relevant information (e.g., appendices).
- Response to public comments (Volume II).

1.1.3 Public Review and Comment

Preparation of the Management Plan began in April 1998 when the agencies held a set of initial public workshops to present and discuss issues related to implementation of the LTMS. Subsequently, the remainder of the public workshops focused on key issues identified by the stakeholders.

The public workshop process provided early input from the stakeholders regarding implementation issues and opportunities for comments which the LTMS agencies used in the development of the Management Plan (Appendix A).

Public review and comment of the Management Plan began in June 2000, followed by a series of public hearings. Over the 50-year LTMS planning period, the Management Plan will be reviewed and updated as necessary. During the initial three-year period following finalization of the Management Plan, the LTMS agencies will produce an annual progress report of the program. Subsequent to the initial three-year implementation period, the Management Plan will be reviewed and, if necessary, revised every three years to reflect changing statutory, regulatory, technical and environmental conditions. Every six-year review could involve Bay Plan and/or Basin Plan amendments.

1.1.4 Regulatory and Policy Changes

The LTMS agencies will also take specific actions to reflect necessary changes in their statutory, regulatory, or management activities to implement the selected long-term management alternative. For example, this Management Plan includes amendments to the Bay Plan and Basin Plan policies for regulating dredging and disposal activities in the Bay. Also, during Fiscal Year (FY) 2001, the USACE will begin preparing its Dredged Material Management Plans (DMMPs) for existing federal

1 California Code of Regulations, Title 14. Natural Resources, Division 5. San Francisco Bay Conservation and Development Commission, Vol. 19, Section 10602(e)(2)(A-D).

maintenance dredging projects in the Bay and undertake National Environmental Policy Act (NEPA) reviews, as needed, including supplementing the 1975 Composite EIS for Maintenance Dredging.[2]

1.2 DREDGING AND DISPOSAL IN THE BAY

The focus of this Management Plan is on the disposal of dredged material generated from maintenance and "new" (e.g., deepening projects) work projects in the Bay.[3] The LTMS Planning Area with existing dredged material disposal sites is shown in Figure 1.1. The Management Plan focuses on dredged material disposal not on the act of dredging itself, except as it relates to disposal activities, potential mechanisms for reducing dredging volumes or eliminating unnecessary dredging, and potential measures for mitigating dredging impacts to special status species.

1.2.1 Dredging Activities

Large-scale dredging has taken place in the Bay for more than 100 years. Sediments are regularly dredged in the Bay for navigation and the maritime industry. The USACE maintains 17 deep- and shallow-draft channels in the Bay. Smaller channels, marinas, and berthing areas that support shallow-draft commerce, commercial fishing, and recreational boating are regularly maintained by private-sector entities.

Dredging is characterized as either "maintenance" or "new" work. Maintenance work removes relatively soft, unconsolidated silts and clays accumulating along the bottom of the Bay. New work removes historical marine or riverine sediment deposits that are generally deeper, consolidated, and lower in moisture content.

Types of Dredging

- Maintenance: Removal of relatively soft, unconsolidated material located along the bottom of the Bay.
- New work: Removal of historical marine or riverine sediment deposits that are generally deeper, consolidated, and lower in moisture content.

1.2.1.1 Project Types and Volumes

The Management Plan deals with dredged material generated by: (1) small dredging projects defined by a project depth of less than -12 feet Mean Lower Low Water (MLLW) (not including over-depth), and generating less than 50,000 cubic yards (cy) per year on average; and (2) other dredging projects defined by a project depth greater than -12 feet MLLW or average annual volumes greater than 50,000 cy, including the federally authorized dredging projects.[4]

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2 It is important to note that the LTMS agencies that authorize dredging and dredged material disposal activities through the issuance of permits will still continue to require those permits and process them through their standard procedures.

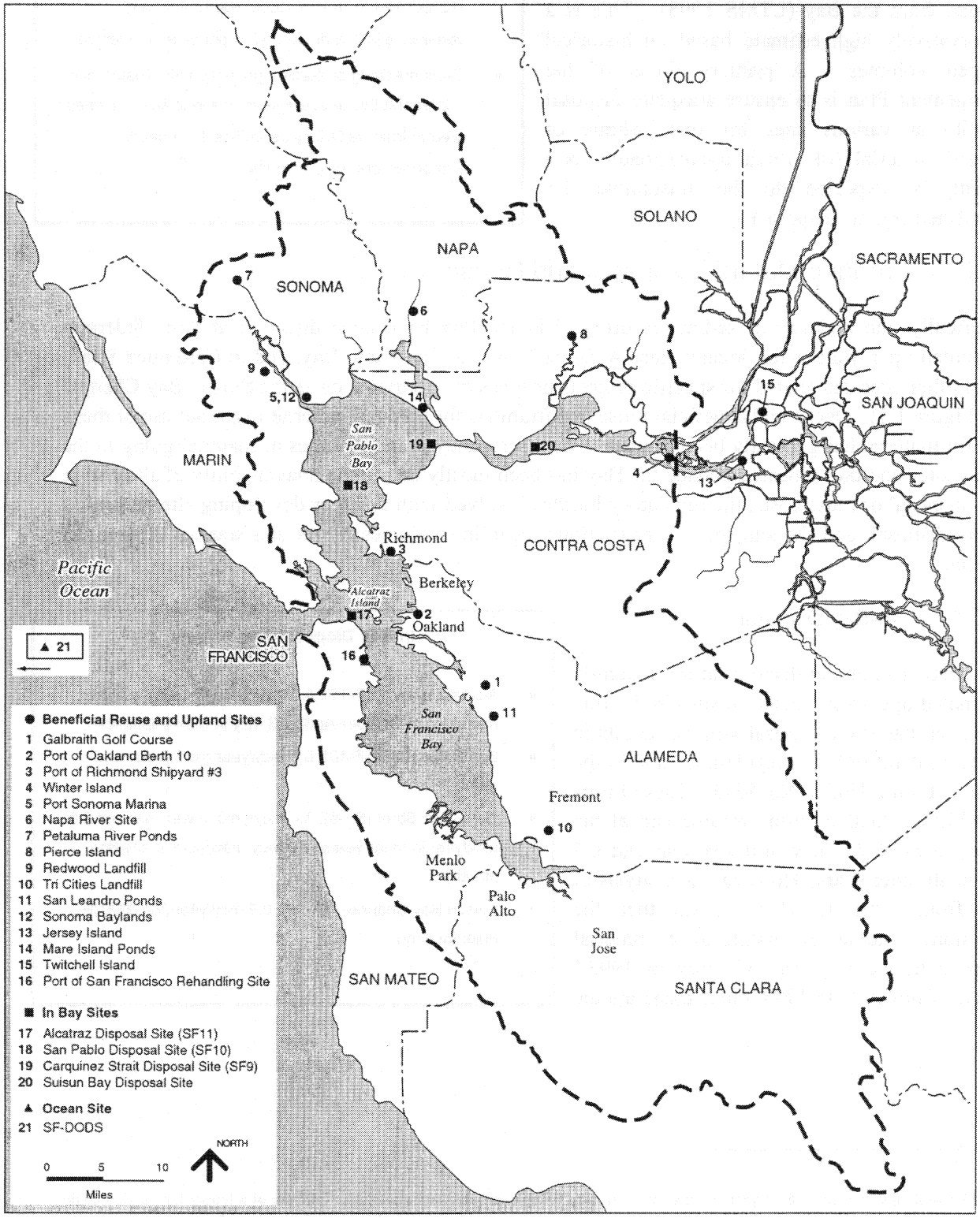
3 The document does not address specifically the management of material resulting from sand dredging, material dredged in the Delta region or at the San Francisco Bar Channel, or material that historically has been taken to dedicated upland disposal sites (e.g., the federal channels in the upper Petaluma River and the San Leandro marina).

4 The Management Plan deals primarily with dredging for navigational purposes. It does not specifically address dredging for the purpose of remediating contaminated sediments, dredging of flood control channels, or sand mining.

Figure 1.1

SOURCE: Final LTMS EIS/R, 1998

LTMS Planning Area with Existing Dredged Material Disposal and Reuse Sites



Over the 50-year LTMS planning period, it was estimated that approximately 6.0 million cubic yards (mcy) of material annually, or a total of approximately 296 mcy of material would be dredged from the Bay (LTMS 1998). This is a conservatively high estimate based on historical dredged volumes. A primary focus of the Management Plan is to ensure adequate disposal capacity at various sites for this volume of dredged material (of which approximately two percent is expected to be unsuitable for unconfined aquatic disposal).

Types of Dredging Projects

- Small dredging projects: a project depth not exceeding -12 feet MLLW (not including over-depth) and generating less than 50,000 cy per year on average.
- Other dredging projects: a project depth greater than -12 feet MLLW or average annual long-term volumes greater than 50,000 cy as well as the federally authorized dredging projects.

1.2.2 Dredged Material Disposal and Reuse

Historically, the majority of sediments dredged in the Bay have been disposed at three federally designated open-water sites, located near Alcatraz Island, in San Pablo Bay, and in Carquinez Strait, and at other sites designated for specific projects or types of material such as the Suisun Bay Channel site (Figure 1.1). Ocean and beneficial reuse opportunities for dredged material exist, but use of these sites for material has generally been limited. The discrepancy in the volumes of material going to the in-Bay sites and those located outside the Bay has been mostly due to the unavailability of alternative sites, disposal or reuse costs, the regulatory hurdles involved with using or developing alternatives to in-Bay disposal, and the site-specific restrictions regarding volumes, types and sources of dredged material.

1.2.2.1 In-Bay Disposal

The existing limits on disposal at the federally designated open-water disposal sites in the Bay have been based on disposal volume targets in the Basin Plan, BCDC's regulations, and in the USACE Public Notice No. 93-3. These limits reestablish a total disposal volume cap at the in-Bay sites of 7.7 mcy in a wet year and 6.7 mcy in all other years. However, an analysis of data from 1991 to 1999 shows that the maximum volume of maintenance material disposed in the Bay was 3.3 mcy in 1993.[5] Further, from 1991 to 1999, the average annual

In-Bay Disposal Site Targets

- Alcatraz Island (SF-11): 4.0 mcy/year (1.0 mcy monthly maximum in October-April; 0.3 mcy in May-September)
- San Pablo Bay (SF-10): 0.5 mcy/year (and in any one month)
- Carquinez Strait (SF-9): 3.0 mcy/year in wet year and 2.0 mcy/year in other years (1.0 mcy maximum in any one month)
- Suisun Bay Channel (SF-16): 0.2 mcy/year (for USACE material only)

5 Disposal volume records from years prior to 1991 are less reliable and thus were not used. The use of a longer time period could change this analysis.

in-Bay disposal volume of maintenance material from these sources was approximately 2.4 mcy (LTMS 2000) (Figure 1.2). [6]

1.2.2.2 Ocean Disposal

The San Francisco Deep Ocean Disposal Site (SF-DODS) was formally designated in 1994 by the USEPA. The site is located on the lower continental slope, approximately 50 nautical miles west of San Francisco. Water depth at the site ranges between approximately 8,200 feet and 9,800 feet. The SF-DODS encompasses an area of approximately 6.5 square miles. The annual volume limit for disposal at the site is 4.8 mcy as mandated by federal regulation (Figure 1.1). [7]

1.2.2.3 Beneficial Reuse and Disposal of Dredged Material

Dredged material can be reused for a variety of beneficial purposes, including habitat improvements at diked baylands (e.g., to restore tidal and seasonal wetlands), to create in-Bay habitat, to stabilize levees, and for capping and liner material at landfills.[8] Several of these beneficial reuse options require dredged material to first be dried at a rehandling facility prior to delivery to the end use site.[9] In some cases it may be necessary to permanently confine material dredged from the aquatic environment (for instance due to certain contaminant levels). Confined disposal facilities can be designed and operated for beneficial uses in some cases, as well. To date, a variety of beneficial reuse and disposal (e.g., rehandling facility) sites of varying capacities have been implemented around the Bay Area (Figure 1.1).[10]

1.2.3 Historical Management and Regulation

Dredged sediments disposed at the Alcatraz site—the most heavily used aquatic disposal site—were originally expected to disperse, but an 80-foot-high mound of dredged material was discovered at the site in 1982. Consequently, it became apparent that the site's capacity was limited and that the mound was a potential navigational hazard. Around this same period, concerns mounted about the potential environmental and fishery impacts associated with in-Bay disposal activities.

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6 The average annual maintenance dredging volume does not reflect (1) new projects; (2) sand dredging; (3) projects located outside the geographic scope of the LTMS planning area such as those in the Sacramento-San Joaquin Delta (e.g., New York Slough) and the San Francisco Bar Channel; (4) projects where dredging has not occurred over the past eight years (e.g., Bel Marin Keys lagoon); (5) historic military projects; and (6) projects with dedicated upland disposal sites, such as the federal channels at both the Petaluma River and at the San Leandro marina.

7 40 CFR Part 228.15(l)(3)(vii).

8 Reuse and/or disposal of dredged material would occur at a designated landfill or other permitted waste discharge unit.

9 It should be noted that the term "UWR" or Upland/Wetland/Reuse is no longer used to characterize sites where dredged material can be immediately reused, disposed, or processed for ultimate beneficial reuse. Instead, the LTMS Management Plan identifies such sites as beneficial reuse sites.

10 It is important to note that the capacity for dredged material at several of these sites (e.g., Sonoma Baylands, and Galbraith Golf Course) has been reached, and further that several sites are not currently accepting dredged material for various reasons (e.g., Mare Island, Jersey Island, and Twitchell Island).

The primary agencies responsible for governing dredging and disposal activities in the Bay Area responded to these problems in the early 1980s by making changes in their regulatory requirements. These agencies included the USACE, USEPA, BCDC, SFBRWQCB, and SWRCB.

Prior to the establishment of the LTMS, most regulatory actions were taken on a case-by-case and an agency-by-agency basis. This reduced predictability for dredging project sponsors, and public confidence that environmental resources were being adequately protected. These disposal site limitations, mounting environmental concerns, and project delays eventually became known as "mudlock." The capacity limitation and controversy over the environmental impacts of in-Bay disposal highlighted the need for a diverse array of alternative disposal options, so that the region would not be dependent on a single site to support its maritime needs.

1.3 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 environmental problems associated with disposal and dredging activities in general. These conditions led to the creation of the LTMS program in 1990, by the USACE, USEPA, BCDC, SFBRWQCB, and SWRCB, along with representatives from the dredging and environmental communities. The primary focus of the LTMS was on the various dredged material disposal options and their related impacts. The LTMS program is composed of five individual and sequential phases.

1.3.1 Evaluation of Existing Management Options (Phase I)

In Phase I of the LTMS, existing dredging and disposal options and needs were evaluated and 50-year dredging volumes estimated. Data indicated that dredging and disposal of unsuitable material could adversely impact resources, but that more information was needed to fully understand these impacts. The assumption that existing disposal sites possessed limited capacity particularly for material deemed unsuitable for unconfined aquatic disposal was confirmed, and a commitment was made to expand beneficial reuse and disposal opportunities at upland sites (LTMS 1991).

1.3.2 LTMS Technical Studies (Phase II)

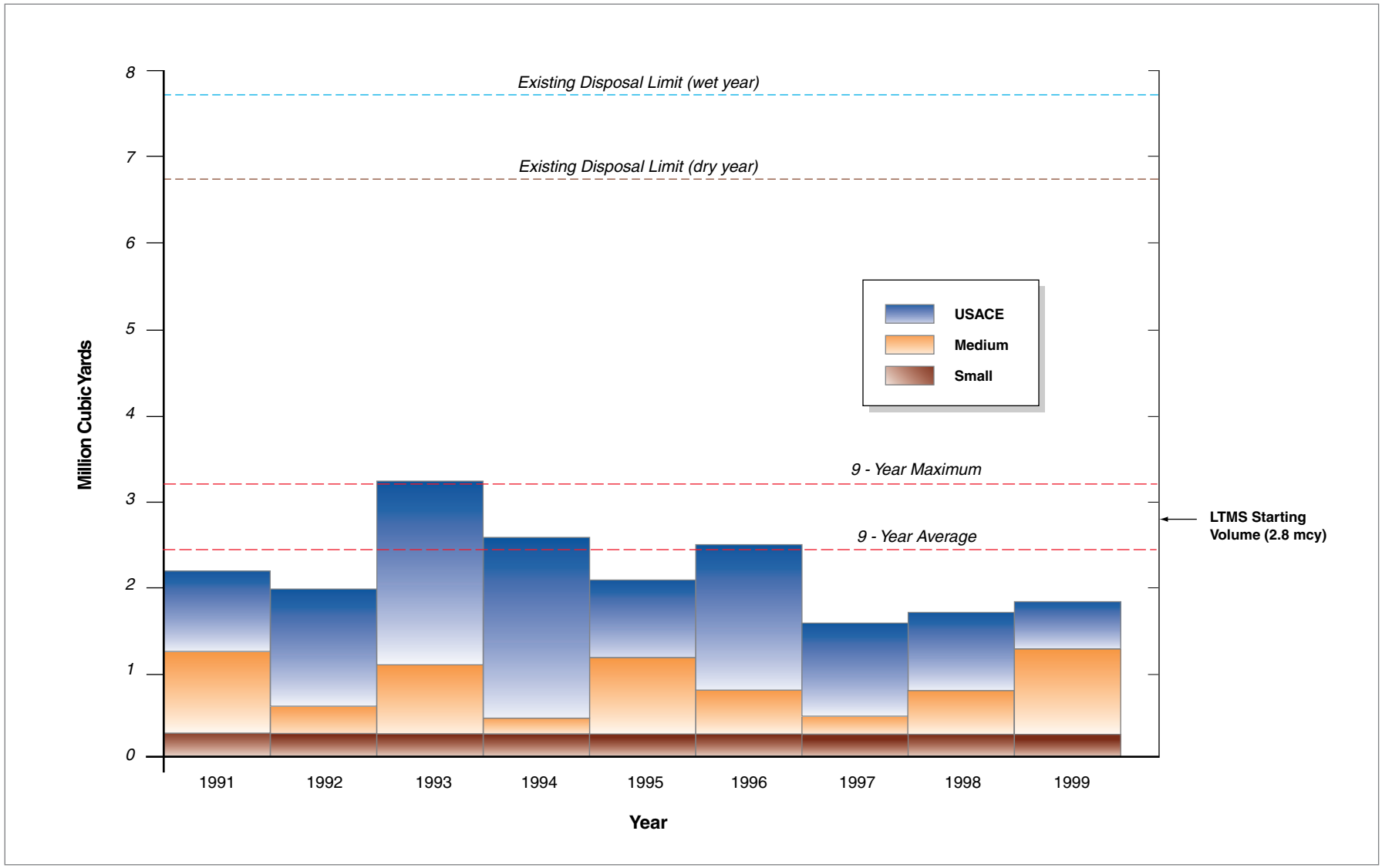
Phase II involved evaluating in-Bay, ocean, and beneficial reuse and disposal alternatives by conducting a series of technical studies. The USEPA led the effort to study disposal options in the ocean eventually designating the SF-DODS. The SFBRWQCB led the effort to study disposal options in the Bay. Lastly, the BCDC managed the studies regarding beneficial reuse options. (A complete list of the LTMS technical studies is contained in Appendix B.)[11]

11 A complete list of the LTMS technical studies is also available on the LTMS website: http://www.bcdc.ca.gov/ic/ic_ltms/mgmtplan/app-B.pdf.

Figure 1.2

SOURCE: Final LTMS EIS/R, 1998.

In-Bay Disposal of Maintenance Material (1991 - 1999)



1.3.2.1 Ocean Studies

Over 1,000 square miles off the coast of the San Francisco Bay Area were surveyed to identify candidate disposal sites with the appropriate sea floor stability, sediment types, and topographic features to accommodate and contain disposed dredged material. Thirteen reports were published in 1992 that focused on the resources at potential sites, geological and geophysical surveys, current patterns and circulation studies in the area of potential disposal sites, and modeling of potential deposition and water column turbidity at the sites. The *Environmental Impact Statement for Designation of a Deepwater Dredged Material Disposal Site off San Francisco, California* was prepared for USEPA's designation of a deep-water dredged material disposal site in the ocean (SF-DODS) in 1993.[12]

1.3.2.2 In-Bay Studies

In-Bay studies focused on reaching a better understanding of the Bay's complex estuarine system, which is influenced by river outflows, ocean tides, and multiple human uses of its waters and shores. The in-Bay studies examined the influence of water and sediment circulation around the Bay on disposed material, the toxicity of sediments to bottom-dwelling mollusks, whether fish in disposal areas are exposed to higher levels of contaminants, and the potential to distribute contaminants in sediments around the Bay via disposal operations. The behavior and fate of sediments in the Bay was analyzed through the LTMS in twelve different studies. At least six studies focused on bioaccumulation and effects on fish habitat. Studies also have been conducted on the effects of suspended solids on the Bay organisms.

1.3.2.3 Beneficial Reuse Studies

The beneficial reuse studies (formerly referred to as Upland/Wetland Reuse [UWR] studies) focused on evaluating and ranking sites for their potential to reuse dredged materials. The studies were conducted with the following objectives: to identify and analyze opportunities for reuse and, if necessary, disposal of dredged material at sites located outside the Bay (such as for levee stabilization, wetland restoration, and landfill operations); to identify and resolve any physical, regulatory, and institutional constraints associated with beneficial reuse projects; to develop and evaluate implementation strategies and programs for using material at these sites; and to prepare site-specific plans and implementation programs for certain projects. Approximately 100 sites were evaluated and ranked. Three sites were found to have high potential for the use of dredged material for restoring levees; three landfills were found to have high potential for using dredged material as a resource; eight sites were found to have high potential for the establishment of rehandling facilities where dredged material could be dried or stored permanently if necessary, and nine sites were found

12 For more detailed information regarding the SF-DODS site refer to *LTMS 1993 Environmental Impact Statement (EIS) for Designation of a Deepwater Dredged Material Disposal Site off San Francisco, California*. Prepared by USEPA with SAIC.

to have high potential for the restoration of wetlands using dredged material.[13] Studies were also prepared regarding engineering and other considerations for rehandling sites, reuse in solid waste landfills, and various aspects of wetland restoration using dredged material.

1.3.3 LTMS EIS/EIR (Phase III)

Phase III involved preparation of the LTMS EIS/EIR for the overall program. The EIS/EIR evaluated five alternative long-term dredged material management strategies for the Bay, in addition to the "no action alternative" representing current conditions. Each alternative reflected a combination of volumes of dredged material placement at the Bay, ocean, and beneficial reuse environments.

Through a preliminary screening, alternatives involving a "high" overall placement volume at any single environment—except the no action alternative (for which an evaluation is required per regulations)—were eliminated, since such a placement scenario could: (1) result in substantial environmental impacts; (2) prove unsound from an economic and management standpoint; or (3) preclude achievement of the LTMS goals regarding beneficial reuse of dredged material. The three remaining alternatives (in addition to the no action alternative) involved a diversity of placement environments and some degree of beneficial reuse. However, each alternative differed in terms of the relative emphasis on each placement environment, the potential impacts and benefits to different resources, and the potential costs to different sectors of the dredging-related economy. The alternatives were compared to determine the degree to which each would: (1) present potential environmental impacts or risks, as well as offer environmental benefits to the Bay, ocean, and beneficial reuse environments; (2) improve agency coordination, predictability for dredging project sponsors, and environmental protection; and (3) affect the dredging-related economic sectors.

"Policy-level mitigation measures" also were developed to ensure environmental protection at the three placement environments applicable to the remaining alternatives. These measures address potential adverse impacts on a broad regional and cumulative level and help direct how and when site-specific measures will be needed to preclude or mitigate potential impacts. Many of these measures are restatements of existing federal or state requirements and policies. Although, in some cases, specific measures may exceed the minimum requirements of a particular regulation or an individual agency's policies, together they are necessary to ensure that, for the region as a whole and across all placement environments, overall environmental impacts can be minimized and environmental benefits can be maximized in an economically prudent manner.[14]

Alternative 3 (also known as the "40/40/20" plan), emphasizing placement of dredged material at upland and ocean environments (approximately 40 percent of material at each) with limited in-Bay disposal (no more than 20 percent of material), was selected because it provided the best balance of

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13 For information about the results of these studies, refer to (1) LTMS. 1995b. *Reuse/Upland Site Analysis and Documentation, Feasibility Analyses of Four Sites (Volume II), Final.* Prepared By Gahagan & Bryant Associates, Inc. with Entrix, Inc. 102 pp. with Appendices, and (2) LTMS. 1995a. *Reuse/Upland Site Analysis And Documentation. Reuse/Upland Site Ranking, Analysis And Documentation (Volume I), Final Report*. Prepared by Gahagan & Bryant Associates, Inc. with Entrix, Inc. 410 pp. with Appendices.

14 The Policy-Level Mitigation Measures can be found in the Final LTMS EIS/EIR (Chapter 5.0) which is located on the LTMS website: http://www.spn.usace.army.mil/ltms.

the overall goals and objectives of the LTMS, and combined the maximum environmental benefit with the minimum environmental risks (Figure 1.3).[15]

1.3.4 Implementation (Phase IV)

The shift toward greater beneficial reuse and ocean disposal will be phased in over time, and requires changes in existing institutional arrangements. While the LTMS EIS/EIR identified the future disposal management strategy for the Bay Area, this Management Plan, prepared during Phase IV of the LTMS, contains specific guidance to implement the new dredged material management strategy for the region.

1.3.5 Periodic Review and Update (Phase V)

During Phase V of the LTMS, this Management Plan will be reviewed and modified to ensure that the document—and the implementation process—progress in step with a changing environment. During the first three years of implementation, the LTMS agencies will prepare an annual progress report. Subsequently, reviews will occur every three years for relatively minor "course changes" or modifications to the LTMS implementation strategy. More comprehensive reviews will occur every six years and, if necessary, will involve Bay Plan or Basin Plan amendments.

1.4 CEQA/NEPA REQUIREMENTS AND PROCESS

In 1992, the LTMS agencies began preparing the LTMS EIS/EIR to evaluate and solicit additional public input on approaches for dredged material management in the region. In 1998, the final LTMS EIS/EIR was published. In 1999, the federal Record of Decision (ROD) for the EIS was signed by the USACE and the USEPA, which completed the federal requirements under NEPA. In October 1999, the SWRCB certified the EIR pursuant to the requirements under CEQA. The LTMS agencies adopted the strategy specified in the ROD, and the associated policy-level mitigation measures, as the overall approach for implementation of the LTMS (LTMS 1998). The SFBRWQCB and BCDC are "certified agencies," and thus are exempt from CEQA's requirements to prepare EIRs and Negative Declarations, but must comply with CEQA's goals and policies, and requirements for public review, response to comments, and adoption of CEQA findings. Further, the agencies must prepare "substitute documents," which include an evaluation of the impacts, alternatives, mitigation measures, and cumulative effects of proposed actions. The BCDC and SFBRWQCB staff prepared "substitute documents" (staff report) regarding the amendments to the Bay Plan and Basin Plan (and changes to BCDC's implementing regulations (Chapter 10), which were presented to the BCDC Commissioners and SFBRWQCB members. The process included public comment periods and public hearings, and response to comments by the agencies.

The federal LTMS partners are not required by NEPA to take any specific or formal action with regard to the Management Plan. However, the Management Plan will be signed by all of the LTMS agencies to formally acknowledge their agreement with, and implementation of, the measures contained in the document.

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15 When compared to the other alternatives, it was determined that this alternative would result in significant environmental benefits, no direct risk to the ocean site, and only a low risk to sensitive resources at beneficial reuse areas.

1.5 IMPLEMENTATION OF THE LTMS

The long-term strategy of the LTMS is to dispose an average of no more than 1.0 mcy of dredged material per year at the in-Bay sites, with the remainder of the material going to beneficial reuse sites or the SF-DODS. The original goals of the LTMS program included sound maintenance of the Bay's navigation channels, the elimination of unnecessary dredging, environmentally sound disposal of dredged material and maximum use of material as a resource, and the establishment of a cooperative framework for dredging and disposal permit applications. Since the inception of the LTMS program in 1990, there has been considerable progress toward reaching these goals, and the volume of dredged material disposed at the in-Bay sites is currently considerably lower than historical volumes (Figure 1.4).

Accomplishments

- Current in-Bay disposal volume lower than historical volumes.
- DMMO established in 1995.
- Beneficial reuse projects: Sonoma Baylands wetlands restoration project, Galbraith Golf Course reconstruction project, Port of Richmond former shipyard No. 3 remediation project, Jersey Island and Winter Island levee restoration projects, Port of Oakland's Berth 10 rehandling facility.
- Beneficial reuse planning efforts for Hamilton Army Airfield (and adjacent sites) wetland restoration and Montezuma wetland restoration.

The DMMO, a coordinated permit application review program of the USACE, BCDC, SFBRWQCB, USEPA, and the State Lands Commission (SLC), was established in 1995 to ensure consistent permit decisions and reduce redundancies and delays while maintaining adequate environmental protection. Additionally, several working groups have recently been formed, as a part of the Management Plan process, that are focusing on the development of sediment quality guidelines, management and monitoring plans for disposal and reuse sites, and funding mechanisms for implementing the LTMS program.

Several beneficial reuse projects also have been implemented, including the Sonoma Baylands wetlands restoration project (Sonoma County), the Galbraith Golf Course reconstruction project (Alameda County), the Port of Richmond former shipyard No. 3 remediation project (Contra Costa County), the Jersey Island and Winter Island levee rehabilitation projects (Contra Costa County), and the Port of Oakland's Berth 10 dredged material rehandling facility (Alameda County) (Figure 1.1).

1.5.1 Beneficial Reuse Planning and Implementation

Efforts are currently underway for additional reuse projects, at the former Hamilton Army Airfield and adjacent sites (Marin County) and the Montezuma wetland site (Solano County).

1.5.1.1 Hamilton Wetland Restoration Project

The former Hamilton Army Airfield has been in the base closure process pursuant to the Base Realignment and Closure Act (BRAC) since the early 1970s. Over the past years, the California Coastal Conservancy, BCDC, and USACE, in close coordination with the City of Novato and the

Figure 1.3

SOURCE: Final LTMS EIS/R, 1998.

Long Term Management Strategy for the S.F. Bay Area

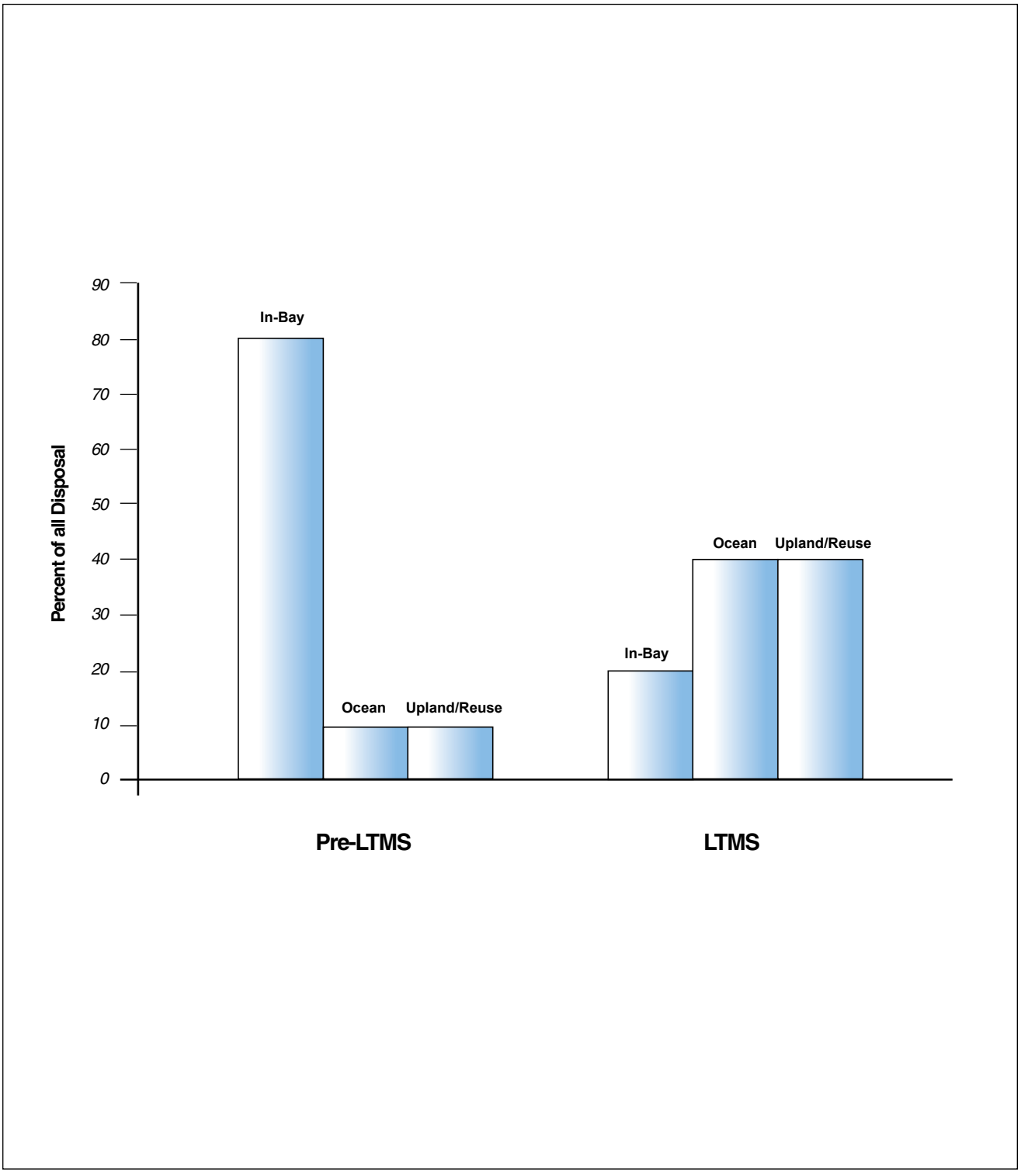
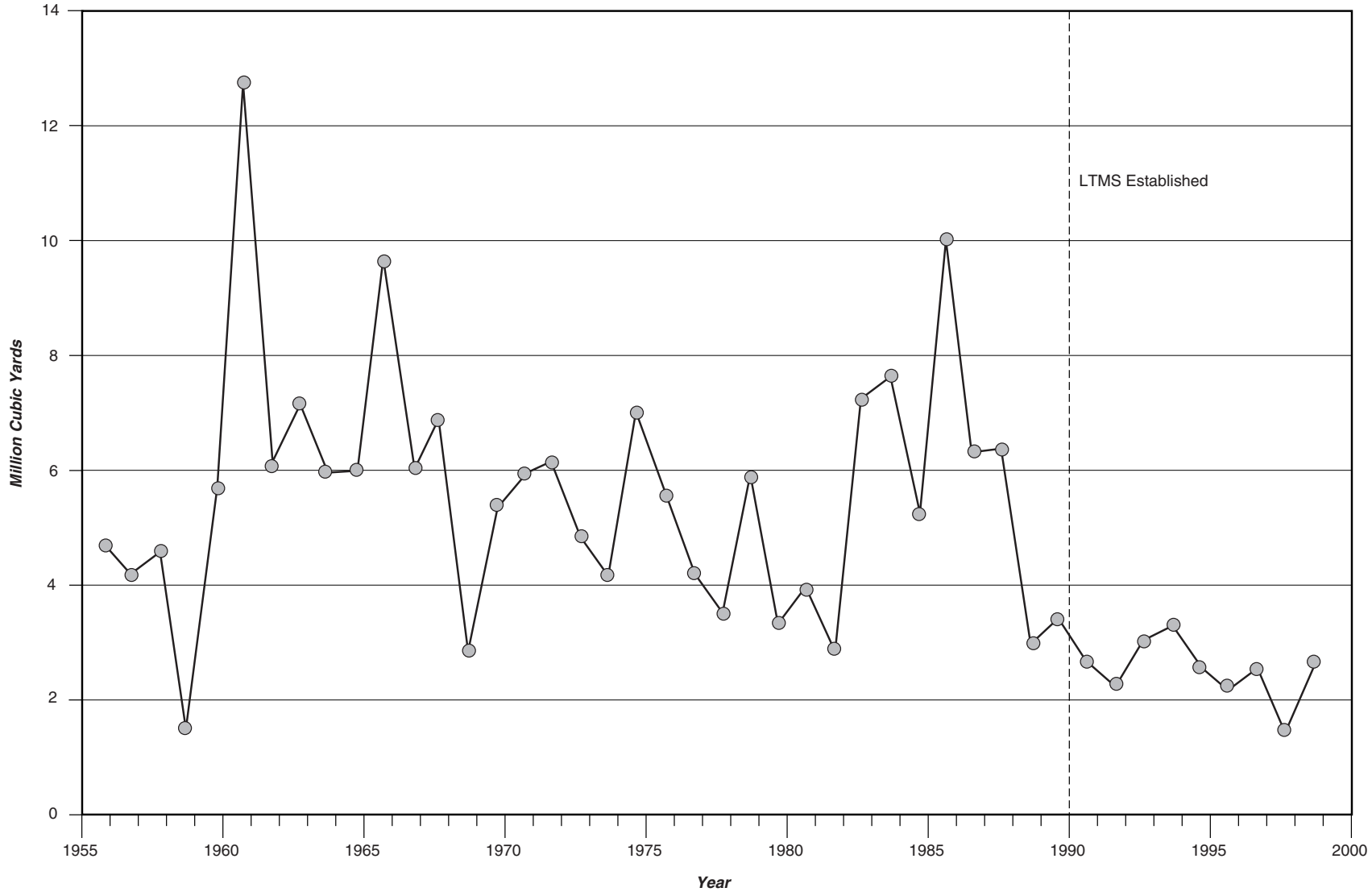


Figure 1.4

SOURCE: LTMS (1992e) Sediment Budget Study for San Francisco Bay; BCDC Road Map; USACE Quarterly Disposal Reports to SFBRWQCB

In-Bay Disposal (1995-1999)



Hamilton Restoration Group, comprised of federal, state, and local government representatives, as well as technical experts, nonprofit organizations, and interested citizens have conducted an intensive planning effort to restore tidal and seasonal wetlands at this diked bayland. The potential restoration area includes the adjacent SLC's decommissioned antenna field and the Bel Marin Keys Unit V site. The potential restoration area totals approximately 2,600 acres.

In April 1998, the technical studies needed to develop a conceptual wetland restoration plan and assess the project's feasibility were completed, followed by completion of the final EIS/EIR for the project. The planning studies determined that restoration would best be achieved by using dredged material or by relying on natural sedimentation to raise existing elevations to facilitate marsh development.[16] Up to 10.6 mcy of dredged material could be used to bring the subsided site up to marsh plain elevations and restore 988 acres of the site. The final site restoration plan has not yet been developed, yet it is anticipated that site construction will commence in 2001, and, if determined feasible, the site will be ready to accept dredged material starting in 2002.[17]

Presently, material from the Port of Oakland's 50-foot deepening project is under consideration to construct the tidal and seasonal wetlands at the Hamilton site. However, implementation of the Hamilton restoration site depends on completion of environmental remediation of the Airfield, finalization of a transfer of the Airfield to the State of California, and adequately addressing endangered species concerns regarding temporary impacts.

1.5.1.2 Montezuma Wetland Restoration Project

The proposed privately sponsored Montezuma Wetlands site will involve using approximately 17.0 mcy of dredged material over 1,822 acres of the 2,398-acre site to raise site elevations, and thereby restore a variety of wetland habitat. The restoration project is proposed to be constructed in four phases, so that existing wetland functions and values are restored at a rate that will mitigate short-term impacts to existing wetland resources, and engineered placement of dredged materials can be facilitated. Thus, restoration will be accomplished by constructing cells, separated by levees, grading channels in the cells, and connecting the four phases of the project to tidal flows. Construction of wetland habitat at the site would allow for the disposal of both clean cover material and material with slightly elevated contaminant levels buried under the clean material.[18] The Final EIR/EIS for the project was completed in 1999. Currently, clean dredged material from the Port of Oakland's 50-foot deepening project is under consideration for use at the site.

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16 Studies to date have not considered or included the Bel Marin Keys site in light of its only recent inclusion in the project. However, a supplemental EIS/EIR and conceptual design plan will need to be prepared for restoration of the site.

17 Site construction is estimated to take up to 6 years: two years for site preparation; one year to place 2.1 mcy of dredged material for restoration of seasonal wetlands; 3 years to place 8.5 mcy of dredged material for restoration of tidal wetlands; and one year to consolidate material. Following site construction and consolidation of dredged material, the bayward levee will be breached. Site monitoring and adaptive management of the site will take place over a 13-year period. Complete restoration of the Hamilton site is estimated to take 30 years.

18 The sponsor also proposes to construct a dredged material rehandling and dewatering facility on a 165-acre portion of the site.

1.5.1.3 Winter Island and Sherman Island Levee Restoration Projects

In 1998, the USACE, in cooperation with Winter Island's owner and local sponsor, the Winter Island Reclamation District, used dredged material from Suisun Channel to restore levees at Winter Island (Contra Costa County). The site capacity is approximately 100,000 cy per drying cycle. For currently planned Suisun Bay Channel maintenance episodes, the USACE is considering use of material at nearby Sherman Island (Sacramento County), owned almost entirely by the State of California and under the jurisdiction of the California Department of Water Resources (DWR). To that end, planning efforts are now under way between the USACE, DWR, Central Valley Regional Water Quality Control Board and the local government to bring about this project and address ongoing concerns about using saline dredged material in a freshwater environment. In the event the material cannot be taken to Sherman Island, the maintenance material will be used again at Winter Island.

1.5.2 LTMS Transition and Initiation

Reaching the in-Bay disposal goal will involve a significant decrease in the total volume presently allowed. One of the primary purposes of the Management Plan is to identify potential mechanisms for achieving this goal. One of these mechanisms will be a new strategy for allocating use of the in-Bay disposal sites and gradually decreasing the overall volume of dredged material allowed in the Bay over time.

During the early stages of implementation, beneficial reuse sites will be available, but their capacity will not be adequate to immediately accommodate up to 40 percent of the material dredged from the Bay. During this time, the SF-DODS will provide capacity for material diverted from in-Bay disposal and for which sufficient beneficial reuse capacity is not available or not practical, and thus act as a "safety valve" for dredging projects. Although the use of in-Bay disposal sites will be reduced, these sites will continue to provide some capacity for projects for which alternatives to in-Bay disposal are infeasible and to other projects dredged under contingency and emergency conditions. Therefore, the transition from present disposal practices to the 40/40/20 disposal goal of the LTMS will not be immediate, but rather it will be implemented gradually over a 12-year period. This phased approach is intended to reduce economic dislocations to dredgers by allowing time for new equipment and practices to be implemented, funding mechanisms and arrangements to be established, and permits to be obtained. In addition, this phased approach will allow new beneficial reuse sites to come on-line, thereby expanding the options for dredged material reuse and disposal. Over the course of the 12-year transition period, the capacity of beneficial reuse and disposal options is expected to increase significantly (Figure 1.5).

The transition began with the July 1999 signing of the ROD on the LTMS EIS/EIR by the USACE and USEPA. At that time, the LTMS agencies began implementing the early stages of the transition by managing disposal at the existing in-Bay sites based on an initial limit of 2.8 mcy per year (Chapter 6).

1.5.3 LTMS Implementation Mechanisms

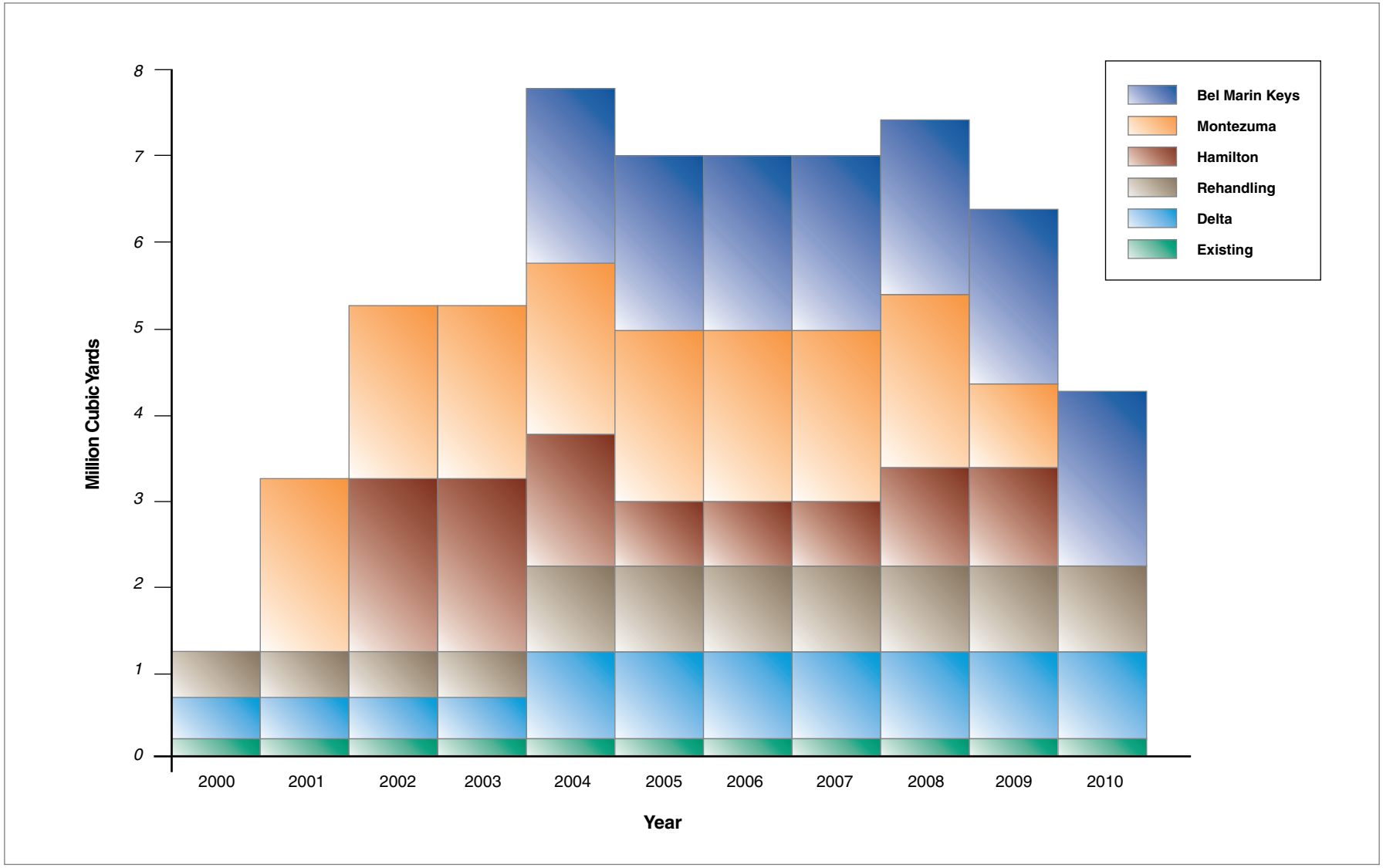
Additional mechanisms for achieving the LTMS goal must be implemented during the transition period. Some mechanisms will be put into place immediately following the finalization and

publication of the *LTMS Management Plan*; others will be implemented at later stages during the transition. These mechanisms are highlighted in each chapter. The Management Plan distinguishes between proposed measures which would be implemented immediately following finalization of the document and measures which could be implemented during later stages of the transition. Additionally, a preliminary estimate of resources needed to carry out these measures is given in Chapter 9.

Figure 1.5

SOURCE: Final LTMS EIS/EIR, 1998.

Projected Beneficial Reuse and Upland Disposal Capacity



CHAPTER 2

2.0 LTMS ORGANIZATION

2.1 INTRODUCTION

The LTMS was initiated in 1990 by the federal and state agencies with the primary responsibility and authority to regulate dredging and disposal activities in the Bay Area: U.S. Army Corps of Engineers (USACE), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), State Water Resources Control Board (SWRCB), San Francisco Bay Conservation and Development Commission (BCDC), and U.S. Environmental Protection Agency (USEPA). Over the past decade, these agencies have worked in coordination with representatives from the business, environmental, and scientific communities to develop a comprehensive approach for the management of the Bay Area's dredging activities for the next 50 years and to complete the earlier phases of the LTMS program. This chapter presents the future organization of the LTMS during the implementation and review phases.

During the earlier phases of the LTMS, the organizational structure was designed to facilitate public input and policy discussion during the planning phases of the program. Broad public input was gained through the Policy Review Committee (PRC), composed of other interested parties and agencies. Technical committees or work groups, directed by the LTMS agency staff and made up primarily of representatives from the environmental, business, port, and fishing communities, addressed technical issues associated with in-Bay, ocean, and beneficial reuse options.[1] The LTMS Management Committee (Management Committee), comprised of executives from the five primary LTMS agencies, oversaw the technical work groups and considered input from the PRC. A Technical Review Panel of independent experts also reviewed selected LTMS studies and reports and provided comments to the Management Committee. The Management Committee took direction from the LTMS Executive Committee (Executive Committee) made up of the chairpersons of the SFBRWQCB and BCDC, the USEPA Regional Administrator, the State Dredging Coordinator from the SWRCB, and the Commander of the South Pacific Division of the USACE.

During the implementation and review phases of the LTMS, the five LTMS agencies will continue to carry out the specific mandate(s) of their individual agencies, which includes reviewing dredging and disposal permit applications through the Dredged Material Management Office (DMMO) and presenting proposed dredging and disposal projects for consideration and authorization by their respective agencies. Each of the LTMS agencies will retain their individual permitting and/or authorization authority and continue to act independently on proposed projects. When it comes to collective actions related to or needed to implement the LTMS, the individual agencies will continue working under the aegis of the LTMS and with interested members of the public, whose continued involvement will be critical to the ongoing success of the program and achievement of the LTMS's goals.

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1 As noted earlier, USEPA had the lead responsibility for matters related to ocean disposal, SFBRWQCB led the effort for matters related to in-Bay disposal sites, and BCDC was responsible for matters related to beneficial reuse sites.

2.2 LTMS IMPLEMENTATION MEASURES

The LTMS agencies are adopting several implementation measures to achieve the goals of the LTMS as they relate to the overall structure of the program as part of this Management Plan. These implementation measures are shown as bulleted, italicized text in this chapter.

2.3 LTMS GOALS AND ORGANIZATION

In 1990, when the LTMS was initiated, the goals of the program included the sound maintenance of San Francisco Bay's (the Bay's) navigation channels, the elimination of unnecessary dredging, environmentally sound disposal of dredged material and maximum use of material as a resource, and the establishment of a cooperative framework for dredging and disposal permit applications. Since that time, there has been considerable progress toward reaching these goals. Therefore, the original goals have been revised to reflect current conditions and to ensure that issues raised in this Management Plan and ongoing efforts of the LTMS will be consistent with these goals.

Revised LTMS goals

(adopted by the LTMS Executive Committee)

- Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities in the Bay and Estuary.
- Conduct dredged material disposal in the most environmentally sound manner.
- Maximize the use of dredged material as a resource.
- Maintain the cooperative permitting framework for dredging and disposal applications.

During the implementation phase of the LTMS, the overall structure will be changed to reflect needs more specific to implementation and review of the program, and thus the LTMS agencies implement the following measure:

- *The primary LTMS agencies—the USACE, USEPA, BCDC, SFBRWQCB, and SWRCB—will operate under a new LTMS structure that includes the Executive Committee, the Management Committee, the Program Management Team, and the DMMO. The California Coastal Conservancy, CDFG, and USFWS will participate on the LTMS Management Committee, as necessary, to implement beneficial reuse options. The SLC will participate on the Management Committee, as necessary, to settle dredging and disposal issues that cannot be resolved at the DMMO staff level.*

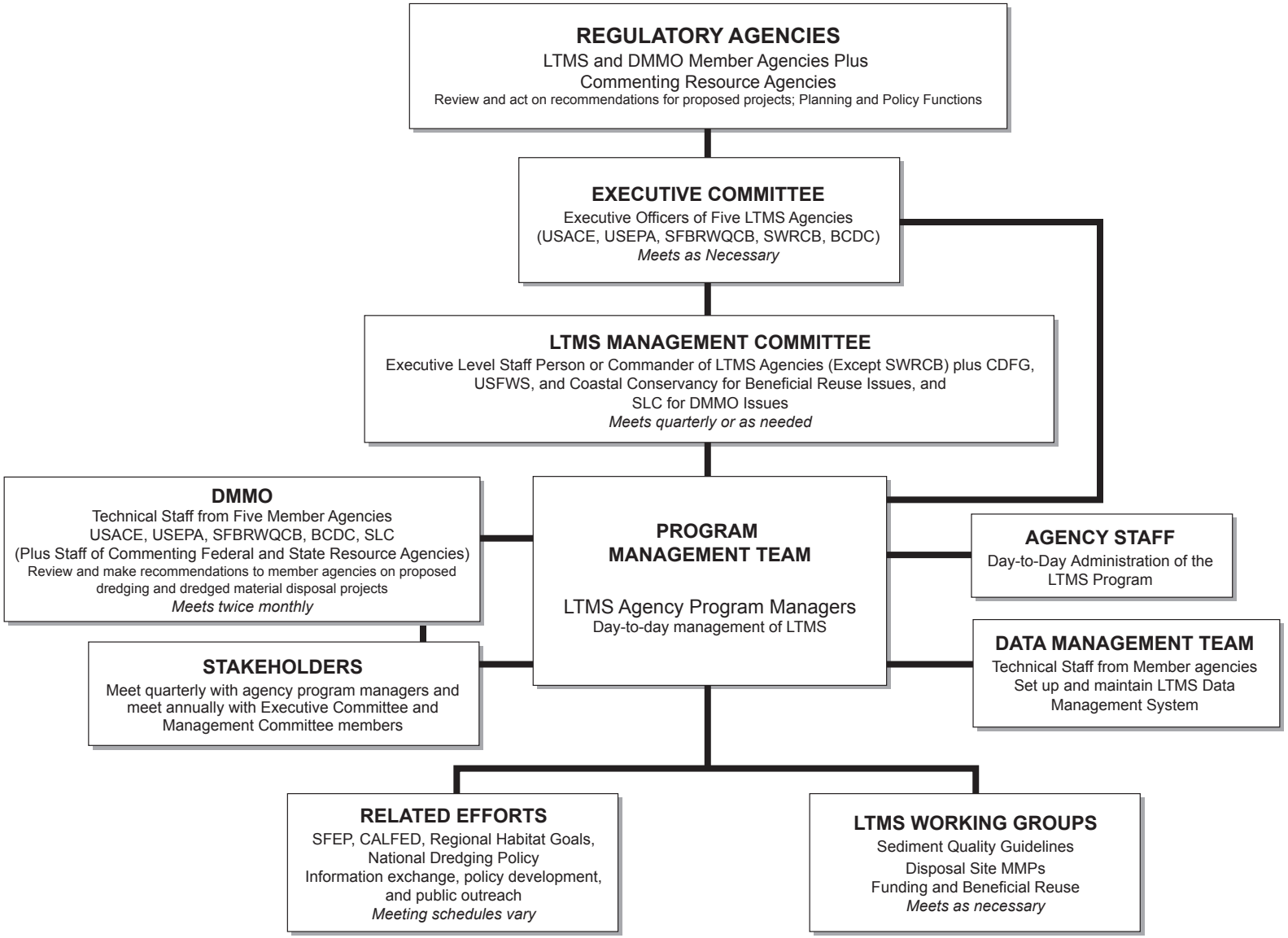
The proposed change in the LTMS structure is discussed below and shown on Figure 2.1.

2.3.1 LTMS Executive Committee

The Executive Committee, made up of the executive officers of the original five LTMS agencies (USACE, USEPA, SWRCB, SFBRWQCB, and BCDC) will continue to meet, as necessary, to review policy guidelines and give direction on the overall LTMS program. The Management Committee will remain responsible to the Executive Committee. Additionally, the Executive

Figure 2.1

LTMS Organizational Structure



Committee will be invited to attend a Program Management Team workshop once a year to receive comments from the stakeholders regarding the overall LTMS program and policy issues.

2.3.2 LTMS Management Committee

The key LTMS agencies will focus on maintaining a viable implementation strategy that reflects changing conditions and concerns. During the initial implementation phase of the LTMS, the Management Committee will meet quarterly or as needed to manage and coordinate the LTMS effort including the periodic reviews of the overall LTMS program. The Management Committee will be made up of the directors/managers of four of the original five LTMS agencies: USACE, USEPA, SFBRWQCB, and BCDC. The SWRCB will no longer participate at the Management Committee level. However, the executive officer of the SWRCB will participate at the Executive Committee level (as noted above). The Management Committee will attend a Program Management Team workshop once a year to receive comments from the stakeholders regarding the overall LTMS program and policy issues. The Management Committee—joined by the director/manager of the SLC—also will deal with DMMO issues that cannot be resolved at the staff level. Lastly, the three following agencies, whose assistance and input will be critical to facilitating implementation of beneficial reuse sites, will join the Management Committee.

2.3.2.1 California Coastal Conservancy (Coastal Conservancy)

The Coastal Conservancy is a state agency that works to preserve, improve, and restore public access and natural resources along the coast and around the Bay. It is funded primarily by bonds authorized by California voters. The Coastal Conservancy oversaw the effort to implement the Sonoma Baylands site where tidal wetlands were restored using dredged material. Currently, the Conservancy is co-managing—along with the USACE and BCDC—the planning effort to restore wetland habitat at the former Hamilton Army Airfield and two adjacent sites (the decommissioned antenna field and Bel Marin Keys Unit V) in Marin County. In addition, the Conservancy has provided funding for this restoration effort. The Coastal Conservancy also oversaw management of the Dredged Material Reuse Project (DMRP), which focused on the implementation of projects at specific sites around the Bay Area where dredged material could be dried and/or processed to be used ultimately as a resource. For other future beneficial reuse projects, the Coastal Conservancy could continue to serve as project manager, provide funding, and oversee implementation and long-term management of sites.

2.3.2.2 California Department of Fish and Game (CDFG)

CDFG currently manages several wildlife areas around the Bay including the Sonoma Baylands wetland restoration site. Additionally, CDFG has been actively involved with various aspects of the LTMS, in the DMMO, and as a part of the Management Plan process. In the future, CDFG could continue to manage beneficial reuse sites, such as the proposed Hamilton restoration site, and possibly provide funding through the Wildlife Conservation Board (WCB), which is a branch of the CDFG that provides funding for implementation of specific projects around the Bay, to oversee implementation and long-term management of sites in the region.

2.3.2.3 U.S. Fish and Wildlife Service (USFWS)

The USFWS has been actively involved with facilitating various beneficial reuse sites. The agency's role in permitting beneficial reuse projects has involved reviewing USACE permit applications for the purpose of providing site-specific comments regarding special status species. In addition, USFWS operates the federal wildlife refuges around the Bay and could potentially oversee the implementation and long-term management of beneficial reuse sites in the region.

2.3.3 LTMS Program Management Team

The Program Management Team will be led by the senior technical managers of USACE, USEPA, SFBRWQCB and BCDC and will be responsible for the day-to-day management and operation of the LTMS program. The Program Management Team will work with the LTMS stakeholders to ensure that their issues are considered during implementation of the long-term management strategy for dredging. In addition, the Program Management Team will work closely with the DMMO and the staff of their respective agencies. The Program Management Team will organize and hold quarterly public workshops to present and review new or changing statutory, regulatory, technical, and environmental information as it relates to the LTMS and to help develop necessary mechanisms for achieving the goals of the program. In addition, the Program Management Team will head the effort to review and revise the Management Plan.

As issues arise that require more focused attention, individual work groups will be formed within the context of the Program Management Team. The individual work groups will operate similarly to those developed through the Management Plan process: (1) Site Management and Monitoring Work Group; (2) Sediment Quality Guidelines Work Group; and (3) Funding and Beneficial Reuse Site Work Group. The progress and findings of the work groups will be reported at quarterly Program Management Team meetings.

Once a year, the Executive Committee and Management Committee will be invited to attend a Program Management Team public workshop to receive comments from the stakeholders regarding the LTMS program and policy issues and to assess progress.

2.3.4 Dredged Material Management Office (DMMO)

The DMMO is a joint program of the USACE, BCDC, SFBRWQCB, USEPA and the SLC. The DMMO provides coordinated review of dredging and dredged material disposal project proposals. The CDFG, National Marine Fisheries Service (NMFS) and USFWS also actively participate in the DMMO as commenting resource agencies. In accordance with the goals of the LTMS program, the DMMO was initiated to coordinate review of dredging and disposal project proposals and reduce delays and redundancy in the permitting process while ensuring environmental protection. In 1995, the member agencies adopted General Operating Procedures and signed a joint memorandum of understanding (MOU) further clarifying the goals and procedures for the DMMO (Appendix O).

During the implementation phase of the LTMS, the DMMO will continue to provide a comprehensive approach to handling dredged material management issues, a single point-of-entry into the state and federal regulatory processes for applicants, and a single point-of-contact for interested parties inquiring about the process or about specific projects. The DMMO is currently a pilot program,

operating under existing laws and regulations. The DMMO will be formalized following regulation changes by both the BCDC and SLC to reflect use of the consolidated permit application form for dredging and dredged material disposal projects by both agencies, and thus, the LTMS agencies implement the following measure:

- *BCDC and SLC will initiate the regulation changes necessary to formalize the DMMO. Upon completion of these regulation changes, the DMMO General Operating Procedures will be revised, and a new Memorandum of Understanding will be adopted and signed by the DMMO member agencies.*

2.3.5 Data Management Team

Many of the ongoing and new LTMS implementation measures will produce large amounts of data. With the Management Plan in place it will be necessary to have access to the historical and current data for determining allocations and tracking disposal volumes. Typical data will include the following: (1) pre-dredging sediment testing, (2) reference site sediment testing, (3) upland site sediment testing, (4) pre- and post-dredge surveys, (5) disposal volume tracking, (6) data from disposal site management and monitoring, and (7) sediment quality guidelines development.

To date, the LTMS agencies have not had a comprehensive data management system that can inventory data and be accessible to the agencies and the interested public. Data have been kept in multiple systems by each agency. Some data have been stored electronically, but much have only been available as hard copy. An electronic data management system common to all the LTMS agencies would not only benefit the agencies, but also project proponents and other interested parties, as it would ensure public access to the process, help ensure regulatory consistency, save time and money for all parties who need data, and help maximize the return on resources spent on data collection by increasing the probability of the data being used.

Although the DMMO member agencies have made efforts to develop such a common database, adequate resources have not been available to date to create the type of system needed for the LTMS program.[2] Further, creation of a data management system will require an information systems expert and a Data Management Team to devise an appropriate system for implementing the LTMS program. Therefore, the LTMS agencies implement the following measure:

- *The LTMS agencies will create a Data Management Team to develop and maintain a data management system, which will be available to all interested parties.*

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2 Both the state and the federal agencies have processes for justifying, acquiring, and maintaining information systems. The state process is described in their Statewide Information Management Manual and in the Information Technology Project Initiation and Approval Report. The Environmental Protection Agency process is described in EPA directive 2182, System Design and Development Guidance. The USACE program is described in Engineering Regulation ER 25-1-2, Life Cycle Management of Information Systems (LCMIS) and the Manager's Guide to Life Cycle Management of Automated Information Systems, 2nd Edition. An integrated system will need to comply with all of the respective agencies' policies guidelines and data requirements. This introduces yet another layer of complexity, but is manageable if the guidelines provided by the agencies and good project management practices are followed.

2.3.6 Other Related Efforts

Several regional planning efforts and entities with related or overlapping interests and goals of the LTMS program are expected to be involved during the implementation phase of the LTMS, and their ongoing efforts and data will feed into the efforts of the LTMS Program Management Team. These entities include the following:

2.3.6.1 San Francisco Estuary Project (SFEP)

In 1987, the SFEP was established "to promote effective management of the San Francisco Bay-Delta Estuary and to restore and maintain its water quality and natural resources." Among other things, the SFEP set out to develop a Comprehensive Conservation and Management Plan (CCMP) to restore and maintain the chemical, physical, and biological integrity of the Estuary. The CCMP, completed in 1993, included action recommendations to address problems facing the Estuary, including dredging and waterway modification. The LTMS agencies further refined the SFEP's specific management issues, identified key gaps in technical knowledge, and conducted numerous technical studies. The information gathered as a part of the LTMS and CCMP efforts was used to prepare the LTMS EIS/EIR.[3]

2.3.6.2 National Dredging Policy

In late 1993, an interagency effort was initiated to develop a national dredging policy. The interagency working group recognized the important role ports play in the economy, defense and environment, but also recognized the potential of port activities to adversely affect the nation's ecological resources. The group's report stressed the need to promote regulatory certainty and the importance of long-term management strategies, such as the LTMS, to better address dredging and disposal issues at a local level. The group's proposed solutions include pursuing many actions already underway as a part of the LTMS, such as dredging permit pre-application meetings between project proponents and agencies (as has been accomplished through the DMMO) and other actions which are discussed as management measures in this document.[4]

2.3.6.3 CALFED Bay - Delta Program (CALFED)

CALFED was initiated in 1994 to develop and implement a long-term, comprehensive plan to restore ecological health and improve water management for beneficial uses of the Bay-Delta system. One component of the program is to ensure the integrity of Delta levees and restore habitat, both of which potentially could be accomplished through the reuse of dredged material.[5]

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3 For more information refer to San Francisco Estuary Project, Comprehensive Conservation and Management Plan 1993, 236 pp. This information is also available at http://www.abag.ca.gov/bayarea/sfep/reports/ccmp.

4 More information can be found by referring to The Dredging Process in the United States: An Action Plan for Improvement (December 1984), which is available at: http://www.epa.gov/OWOW/oceans/ndt/report.html.

5 For more information, refer to CALFED's website at: http://calfed.ca.gov.

2.3.6.4 San Francisco Bay Area Wetlands Ecosystem Goals Project

In 1993, the SFEP identified a need for defined habitat goals for the Bay Area. Subsequent discussions with representatives of resource agencies confirmed this need. In 1995, the San Francisco Bay Area Wetlands Ecosystem Goals Project (Regional Habitat Goals Project) was initiated and involved more than 100 participants representing local, state, and federal agencies, academia, and the private sector. The geographic scope of the Regional Habitat Goals Project included portions of the Estuary that are downstream of the Delta including Suisun Bay, San Pablo Bay, and San Francisco Bay. The participants in the Regional Habitat Goals Project focused their attention on the baylands—the lands within the historical and modern boundaries of the tides—and adjacent areas. The resulting report, *Baylands Ecosystem Habitat Goals: A Report of Habitat Recommendations*, issued in 1999, presented recommendations for the kinds, amounts, and distribution of wetlands and related habitats needed to sustain healthy and diverse resources throughout the region. The report states that "[a]chieving the Goals region-wide would have major environmental benefits," and further that "implementing the Goals recommendations will require close coordination among landowners, agencies, and others."[6]

6 For more detailed information refer to *Baylands Ecosystem Habitat Goals: A Report of Habitat Recommendations*. 1999. Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project, 209 pp. with appendices. This information is also available at http://www.sfei.org/sfbaygoals.

CHAPTER 3

3.0 AUTHORIZATION PROCESS FOR DREDGING AND DREDGED MATERIAL DISPOSAL PROJECTS

3.1 INTRODUCTION

A number of state and federal agencies regulate dredging and dredged material disposal in the Bay Area. Different laws and regulations govern their roles and responsibilities, but often their purposes and goals overlap (Table 3.1). The primary state and federal agencies involved in permitting such projects are the San Francisco Bay Conservation and Development Commission (BCDC), State Lands Commission (SLC), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), U.S. Army Corps of Engineers (USACE), and U.S. Environmental Protection Agency (USEPA). These agencies have established the Dredged Material Management Office (DMMO) to coordinate regulatory processes for dredging and disposal projects, thus providing better service to the public while ensuring environmental protection. This chapter describes the role and general operating procedures of the DMMO and its review process for dredging and dredged material disposal projects.

Table 3.1
Basis for Regulatory Authority and Mandates of Primary State and Federal Agencies with Jurisdiction over Dredging and Dredged Material Disposal Projects in the San Francisco Bay Region

USACE	***USEPA***	***BCDC***	***SFBRWQCB***	***SLC***
Basis for Regulatory Authority				
CWA[1] MPRSA[2] Rivers & Harbors Act of 1899	CWA MPRSA	McAteer-Petris Act Suisun Marsh Protection Act Coastal Zone Management Act	Porter-Cologne Water Quality Control Act CWA	Ownership of State Lands
Mandate includes				
Regulate placement of dredged or fill material into waters of the U.S. Regulate transportation of dredged material for the purpose of ocean disposal Protect and maintain navigable capacity of	Maintain integrity of nation's waters Oversee disposal of materials, including dredged material, into ocean waters	Reduce Bay fill Protect and manage coastal zone resources	Protect the beneficial uses of waters of the state	Manage state's sovereign lands for purposes consistent with the public trust

1 Clean Water Act (33 U.S.C. 151, et seq.).

2 Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1401-1445).

nation's waters				

3.2 IMPLEMENTATION MEASURES

The implementation measures related to the review and authorization of dredging, dredged material disposal, and beneficial reuse projects are shown as bulleted, italicized text.

3.3 DREDGED MATERIAL MANAGEMENT OFFICE

3.3.1 DMMO Role and Operating Procedures

The DMMO provides coordinated review of dredging and dredged material disposal projects and consistency in recommendations to decision-makers regarding these projects. The permitting system for such projects can be lengthy and complex, because several federal and state agencies issue permits or other approvals. Furthermore, other state and federal agencies consider and comment on these permit actions. The number and types of permits and approvals required for dredging and disposal projects vary depending on the location and ownership of the dredging and disposal sites, the volume of material, and whether the project requires new permits or is considered an episode under an existing multi-episode permit. Although the DMMO is presently a pilot program, and hence projects are not legally required to undergo its review, coordination of the primary responsible agencies through the DMMO decreases redundancy and unnecessary delays in the permitting process, ensures environmental protection, and provides a single point-of-entry into the permitting process, for project proponents and interested parties. The coordinated exchange of technical information by the DMMO also ensures that regulatory actions are taken in an informed and consistent manner.

DMMO Responsibilities

- Serve as a single point-of-contact for permitting
- Review and approve the adequacy of Sampling and Analysis Plans (SAPs) and Tier I requests
- Review sediment test reports and make recommendations on the suitability of dredged material for proposed disposal environments.

The DMMO does not issue permits; rather, it makes consensus-based recommendations to the member agencies on completeness of permit applications, adequacy of sediment sampling and analysis plans, and suitability of sediments for proposed disposal environments. The member agencies also recommend permit conditions, as appropriate, to be included in individual member agency permits. The individual agencies have agreed to support the consensus recommendations of the group, subject to final approval by each of the individual member agencies through their normal regulatory processes.

The USACE serves as the "host" agency for the DMMO and provides logistical support for meetings by providing meeting rooms, preparing agendas and meeting minutes, and distributing information among participants, applicants, and interested parties. The USACE also maintains files related to the DMMO and maintains a DMMO Web site containing information on the DMMO and on dredging-related issues. Finally, the USACE acts as the initial point of contact and main information clearinghouse for DMMO matters.

Contacting the DMMO

To contact the DMMO regarding application forms, meeting schedules and agendas, to request to address the DMMO at a meeting, or to get general information about the regulatory process for dredging projects or projects under consideration, contact the DMMO Coordinator at the USACE:

Mr. David Dwinell
U.S. Army Corps of Engineers, San Francisco District
333 Market Street
San Francisco, California 94105-2197
Telephone: (415) 977-8471
Fax: (415) 977-8483
e-mail: ddwinell@spd.usace.army.mil

The DMMO Web site contains meeting schedules, agendas, the DMMO consolidated application form, guidance documents on sediment testing, and links to documents regarding dredged material management, and can be accessed at:

www.spn.usace.army.mil/conops/dmmo.htm

DMMO meetings are usually held twice a month at the USACE offices in San Francisco, and are open to the public. Meeting agendas are posted at least one week before each meeting at the DMMO Web site. Items submitted for review at least one week before a scheduled meeting are added to the agenda for discussion, if time allows. DMMO meetings provide a forum for the member agencies to jointly review project documentation and to ask clarifying questions of applicants, for applicants to get feedback from all agencies at once, and for interested parties to get information about projects under review. When the member agencies come to consensus on a project recommendation, the applicant is officially notified in writing within two weeks of the meeting, except in the case of USACE projects, for which letters are not issued. After DMMO review, applicants must obtain approvals from the individual member agencies.

3.3.2 DMMO Review of Projects Beyond the Jurisdiction of One or More DMMO Agencies

Not all dredging and disposal projects fall under the jurisdiction of each of the DMMO member agencies (Table 3.2). For example, the disposal portions of projects proposing to use the San Francisco Deep Ocean Disposal Site (SF-DODS) fall beyond the jurisdictions of BCDC, SLC, and the SFBRWQCB. Such projects are still reviewed by the DMMO, but only the agencies with regulatory authority participate in approving sediment sampling plans or making recommendations on sediment suitability. Agencies without regulatory authority will review such project proposals, participating in an advisory capacity only. Similarly, the DMMO will consider reviewing projects involving beneficial reuse and upland disposal that are located outside some of the DMMO agencies' jurisdictions, unless it is determined that such projects would proceed more rapidly under existing regulatory processes (e.g., USACE Nationwide Permit process).

Table 3.2
Roles of DMMO Member Agencies in Reviewing Proposals for Dredged Material Disposal in Different Environments

Regulatory Authority of DMMO Agencies for Dredged Material Disposal Environments				
USACE	***USEPA***	***BCDC***	***SFBRWQCB***	***SLC***
In-Bay				
Department of the Army permit pursuant to CWA and Rivers and Harbors Act of 1899	CWA permit oversight	Permit, pursuant to McAteer-Petris Act (MPA) or Suisun Marsh Preservation Act (SMPA), or federal consistency determination (CD), pursuant to Coastal Zone Management Act (CZMA), for dredging and disposal	CWA Section 401 Water Quality Certification (WQC) or Waste Discharge Requirements (WDRs) pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
Ocean				
Department of the Army permit pursuant to MPRSA for transport of dredged material	Site designation and MPRSA permit oversight; determination of material suitability for disposal	Advisory	Advisory	Advisory
Wetland (existing) enhancement				
Department of Army permit pursuant to CWA	CWA permit oversight	Permit, pursuant to MPA or SMPA, or CD, pursuant to CZMA, for dredging, permit or CD for disposal if site within BCDC jurisdiction	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
Restoration of diked historic baylands				
Department of the Army permit pursuant to Rivers and Harbors Act of 1899, and to CWA if disposal site in waters of the US	CWA permit oversight if disposal site in waters of the US	Permit, pursuant to MPA or SMPA, or CD, pursuant to CZMA, for dredging, permit or CD for disposal if site within BCDC jurisdiction	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
Upland disposal (other than diked historic baylands, waters of the US)				
Advisory, Department of Army permit pursuant to CWA for return flows to waters of US	Advisory, CWA permit oversight	Advisory	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands
Landfill				
Advisory	Advisory	Advisory	CWA Section 401 WQC or WDRs pursuant to Porter-Cologne Water Quality Control Act	Permit or lease if disposal on state lands

3.4 PROJECT REVIEW AND AUTHORIZATION BY DMMO AGENCIES

Figure 3.1 shows the steps in the authorization process for dredging and dredged material disposal projects. Initially, projects are reviewed by the DMMO and later move through the permitting processes of the individual agencies. The process for obtaining approvals has three phases: (1) suitability determination; (2) permit process; and (3) episode approval, described below. The DMMO serves as the single point-of-entry into the process, although applicants and permittees must eventually obtain separate approval from the appropriate DMMO member agencies.

3.4.1 Suitability Determination

The suitability determination process (Figure 3.1, top) occurs at the DMMO level. During this process, the DMMO member agencies make a joint recommendation to the individual member agencies on whether the sediments to be dredged are appropriate, in terms of potential for environmental impacts, for the proposed disposal or reuse site. The recommendation is usually based on the results of sediment testing. The applicant must submit results from recent sediment testing or submit sufficient data (usually in the form of previous test results) to support a finding by the agencies that the sediments are suitable for the proposed disposal environment. (Details on the testing requirements and criteria for suitability at different disposal environments are described in Chapter 4.)

The applicant should submit to the DMMO either a sediment Sampling and Analysis Plan (SAP), or a written request (with supporting information) requesting a "Tier I" exclusion from testing requirements based on factors such as previous testing history and physical characteristics of the material proposed for dredging.[3]

The DMMO reviews SAPs to determine their consistency with state and federal guidance on testing protocols and to determine whether the proposed testing program would provide the agencies with sufficient information to make a suitability determination of the material for disposal at a specific site. Upon review of a SAP, the DMMO may do the following:

- **Approve the SAP,** the applicant may proceed with sediment testing,
- **Approve the SAP with conditions,** the applicant may proceed with sediment testing but should adhere to the approval conditions, or
- **Not approve the SAP,** the applicant is provided with specific explanations and a recommended course of action, usually that the SAP be revised and resubmitted.

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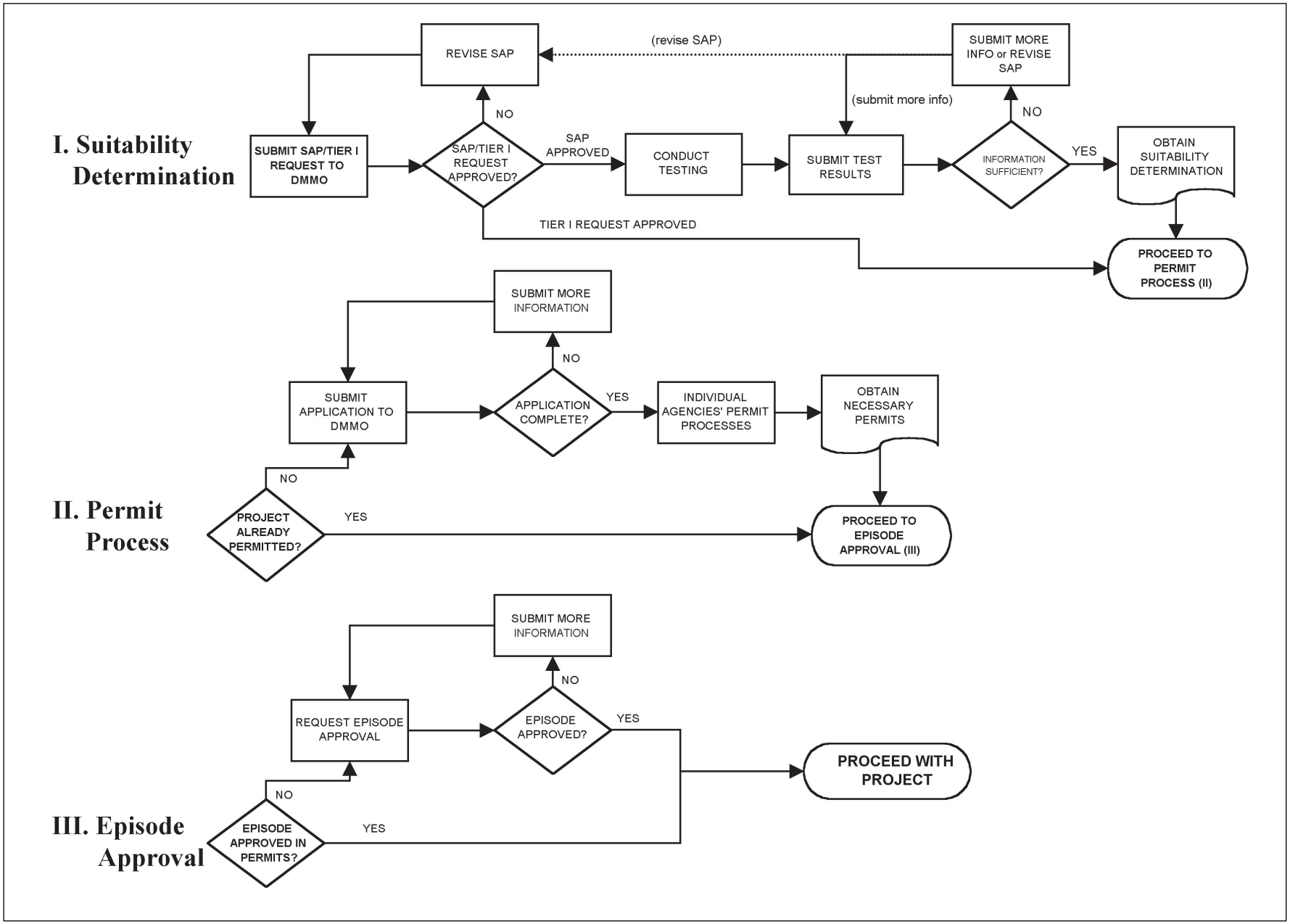
3 The term "Tier I" comes from joint USACE and USEPA guidance for testing of dredged material for disposal in aquatic environments. The term refers to different tiers of information needed for decision-making, based on the degree of potential environmental risk associated with a proposed project. For more information about the tiered testing approach for in-Bay and ocean disposal, see Chapter 4.

Similarly, a request for a Tier I determination may be approved, approved with conditions, or not approved. Approval conditions might include a requirement that sediments be tested for certain

Figure 3.1

SOURCE: SFBRWQCB, 2000

Project Review and Authorization by DMMO Agencies



chemical constituents to confirm data presented in support of the request. A Tier I determination constitutes a recommendation by the DMMO member agencies that the sediments are suitable for the proposed disposal environment, and that the applicant may proceed with the next phase of project authorization (Permit Process, Figure 3.1, center). If there is insufficient information to make a determination, the applicant may be advised to revise and resubmit the request, or the agencies may determine that a Tier I determination is not justified and request that a SAP for sediment testing be submitted for review.

Upon approval of a SAP, the applicant can proceed with testing the sediments proposed for dredging. Upon completion of testing, a report of testing results is submitted to the DMMO for review. Based on its review of the sediment testing report, the DMMO may recommend one of the following to their respective agencies:

- **Sediments are suitable for the proposed disposal environment,** the applicant may proceed to the next phase (permit process) of authorization.

- **Require further information, such as additional testing of sediments,** to make a recommendation, the applicant may provide the requested information or choose to alter the project in such a way that the agencies can make a determination without additional information.[4]

- **Some or all of the sediments are not suitable for the proposed disposal environment,** the applicant may elect to not undertake or modify the project, such as by proposing another disposal location, and obtain a suitability determination for the modified project (often the suitability determination process can proceed more quickly for a modified project because of the availability of information from the original project proposal).

3.4.2 Permit Process

The Permit Process section of Figure 3.1 (center) shows the steps by which project proponents obtain authorizations from DMMO member agencies for dredging and dredged material disposal projects. While the process begins within the DMMO, final authorization must be obtained from each member agency individually. Table 3.2 summarizes the DMMO member agencies' regulatory authority for different dredged material disposal environments. The processes of the individual agencies are described in Appendix C.

A consolidated permit application form for dredging and disposal projects has been developed that is accepted by all of the DMMO member agencies. Applicants submit a completed application form and supporting documents to the DMMO. The agency representatives to the DMMO review and discuss the applications as a group and may make recommendations to applicants about the proposed project.

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4 For example, if the sediment testing for a project proposing in-Bay disposal showed high concentrations of a potentially bioaccumulative substance, the agencies might request further information, such as testing the bioaccumulation potential of the sediments, before making a determination. The applicant, rather than perform the expensive bioaccumulation tests, could elect to change the proposed disposal location, such as to use as daily cover at a landfill. Existing information might be sufficient to make a suitability determination for the modified project.

Since each agency has different laws and regulations governing the issuance of approvals, at this point the applicant must go through the process of obtaining authorization from each of the DMMO member agencies individually. However, the DMMO may continue to be used as a forum to discuss the project. The DMMO also serves as a point of contact for the applicants and interested parties throughout the project authorization process.

Because permits are issued by the individual DMMO agencies, any necessary enforcement activities are also carried out by the individual agencies, although the DMMO may serve as a forum for initial discussions of problems. Appendix D contains information on the enforcement authorities of the DMMO agencies.

3.4.3 Episode Approval

Some permits for maintenance dredging projects authorize multiple dredging and disposal episodes, over a period of several years. Such permits require that permittees obtain formal approval, after a recommendation of suitability by the DMMO, for each dredging episode under the permit (Figure 3.1, bottom). Episode approvals, when appropriate, are issued by the individual DMMO member agencies. Because episode approvals occur in conjunction with a suitability determination for the sediments proposed for dredging, the DMMO should serve as a point of entry into this process, as a forum for the agencies to discuss the project, and as a point of contact for applicants and interested parties.

3.5 PROJECT REVIEW BY OTHER AGENCIES

Dredging and dredged material disposal projects may be subject to the review and permitting authority of other federal, state, and local agencies. At the federal and state level, resource agencies (U.S. Fish and Wildlife Service [USFWS], National Marine Fisheries Service [NMFS], California Department of Fish and Game [CDFG]) may review and comment on projects. The Sacramento District of USACE and the Central Valley Regional Water Quality Control Board may have jurisdiction over projects involving reuse of dredged material in the Delta. The California Coastal Commission regulates the transport of dredged material to SF-DODS. Dredging and disposal projects may also require permits from local agencies such as county planning departments. Appendix E describes the roles of other agencies in the review and authorization of dredging and disposal projects.

3.6 REVIEW OF INDIVIDUAL PROJECTS PURSUANT TO CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) AND NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

CEQA requires California public agencies to consider the environmental impacts of projects they carry out and outlines specific procedures for considering those impacts.[5] Further guidance on CEQA implementation is found in the CEQA Guidelines.[6] The issuance of a permit is considered a "project" under CEQA; therefore, dredging and dredged material disposal projects that require permits from

5 California Public Resources Code, Sections 21000-21178.1.

6 California Code of Regulations, Title 14, Sections 15000-15387.

public agencies are subject to the CEQA process. The CEQA process is undertaken by the "lead agency," which is the agency that has the principal responsibility for approving a proposed project. For dredging and disposal projects, the lead agency may be a local planning department or port, one of the LTMS state agencies, or another state agency.

NEPA requires that federal agencies consider environmental impacts of recommendations, reports on proposals for legislation, and other major federal actions.[7] Federal agencies are required (by regulations promulgated by the Council on Environmental Quality [CEQ]) to establish specific procedures for ensuring that their actions give appropriate consideration to the potential environmental effects of their decision-making.[8] The USACE has published regulations supplementing regulations promulgated by the CEQ.[9] For most dredging and disposal projects in the Bay area, the NEPA process is carried out by the USACE as part of the permitting process.

To assist with the preparation and review of CEQA and NEPA documents regarding dredging and disposal projects and to facilitate project consistency with the LTMS goals, the programmatic mitigation measures (in the LTMS EIS/EIR), and implementation measures in the Management Plan, the LTMS agencies implement the following measure:

- *The LTMS agencies will prepare an information resource document on potential environmental impacts of dredging, disposal, and beneficial reuse projects, and the relevant regulatory processes. This document will cite the LTMS goals, program-level mitigation measures, and the* LTMS Management Plan *implementation measures. The document will be distributed to potential lead agencies for such projects, and used by the LTMS agencies during CEQA and NEPA review.*

3.7 INVOLVEMENT OF AGENCIES AND INTERESTED PARTIES DURING PLANNING PHASES OF PROJECTS

Early involvement of agencies and interested parties during the project planning phases is important, as it can streamline the authorization process by allowing issues to be raised and resolved early on, give the LTMS agencies the opportunity to make project proponents aware of the LTMS goals and policies, and allow for coordination with other projects (see Chapter 6, Regional Planning). To facilitate early involvement by agencies and interested parties in the project planning phase, the LTMS agencies implement the following measure:

- *The LTMS agencies encourage early involvement of the interested parties in the project planning phase, and thus will encourage project proponents to, if*

7 42 USC 4331-4375.

8 40 CFR parts 1500-1508.

9 For USACE Civil Works functions, including dredging, the NEPA guidance is contained in 33 CFR 230. For regulatory actions (permits), NEPA guidance is contained in 33 CFR 325, Appendix B.

appropriate, conduct early coordination with the DMMO, and establish project-related work groups.

3.8 WORK WINDOWS FOR PROJECTS TO PROTECT BIOLOGICAL RESOURCES

Whenever a federal action is taken that might impact a species that is federally listed as threatened or endangered, the federal agency taking that action must consult with the USFWS and NMFS, pursuant to the Endangered Species Act of 1973, as amended (ESA). This consultation is required to ensure that the action (such as a Section 404 permit) is not likely to jeopardize the continued existence of species that are federally listed as endangered or threatened or result in the destruction or adverse modification of the critical habitat of the species.[10] Likewise, the California Endangered Species Act requires that each state lead agency consult with CDFG to ensure that any action authorized, funded, or carried out by that state lead agency is not likely to jeopardize the continued existence of any state-listed endangered, threatened, or rare species.[11]

Federal and state lead agencies involved in the development of the LTMS EIS/EIR worked closely with USFWS, NMFS, and CDFG to identify potential impacts on listed species during dredging and disposal operations. Additionally, the LTMS agencies entered into formal consultation pursuant to Section 7 of the ESA with the resource agencies to address the potential impacts that implementing the LTMS could have on listed species. The purpose of consultation was to provide the LTMS agencies, the resource agencies, and the dredging community with a set of common guidelines to minimize adverse impacts on listed species from dredging and disposal activities, and to establish a more predictable regulatory environment for these activities.

The consultations with NMFS, USFWS, and CDFG resulted in each of these agencies issuing a Biological Opinion addressing listed species and designated critical habitats under their respective jurisdictions. The Biological Opinions adopted the proposed restrictions on the timing and design of dredging and disposal projects developed in the LTMS planning effort. The Biological Opinions evaluate dredging and disposal activities relative to the LTMS guidelines and environmental windows. If the project can be accomplished during the work windows, the project is authorized for incidental take under the ESAs. However, this section also describes the process that should be followed if a proposed project does not fall within the environmental windows set forth in the ROD.[12]

When planning dredging activities, project proponents should consider whether their project could be accomplished during the work window for that geographic area. (See Figures 3.2 and 3.3.) If the activity proposed is in the work window, the project is covered by the existing Biological Opinions and can take place with the normal permits and conditions. However, if the activity is proposed outside the work windows for that geographic area, project proponents will need to request that the

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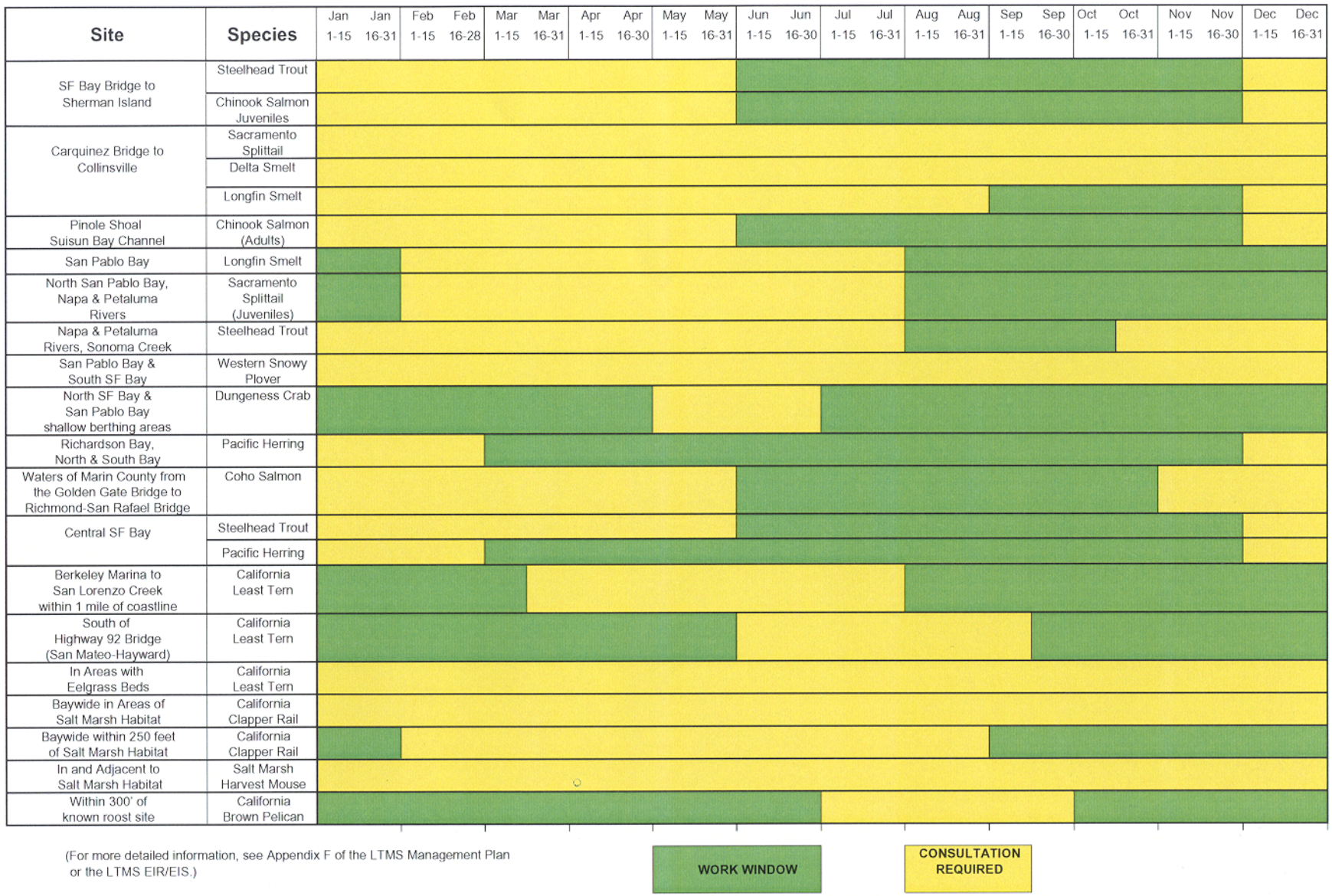
10 50 CFR Part 402.

11 Fish and Game Code Section 2090.

12 For complete information, please refer to the Biological Opinions in the ROD, 1999.

Figure 3.2

Dredging Work Windows by Area



(For more detailed information, see Appendix F of the LTMS Management Plan or the LTMS EIR/EIS.)

USACE initiate either informal or formal consultation on their behalf, with the appropriate resource agency for listed species and designated critical habitats.

If a listed species is not federally listed, but is state listed (e.g., Pacific herring), the project proponent must consult with CDFG. This process involves contacting CDFG directly and discussing the rationale for dredging or disposal during the restricted period. If CDFG concurs with the determination of *no adverse effect* on listed species or designated critical habitat, it drafts a waiver for the project, which may contain additional conditions, and sends the waiver to the appropriate permitting agencies.

To ensure protection of biological resources in the Bay, the LTMS agencies implement the following measure:

- *Dredging and dredged material disposal activities that are conducted within the work windows as indicated in Figures 3.2 and 3.3 (and in Appendix F) of* the LTMS Management Plan*, do not require further Endangered Species Act consultation. The permitting agencies will closely review the rationale for any dredging and disposal projects proposing work outside the work windows. Pursuant to the federal and California Endangered Species Acts, any projects proposing deviation from the work windows are required to undergo consultation with the appropriate resource agency.*

3.8.1 Consultation

If some aspect of the project requires dredging or disposal to take place outside the work windows, consultation must occur. The USACE will initiate either informal or formal consultation for the project with the appropriate resource agency. If the restriction is the result of CDFG's Biological Opinion, the *project proponent* should initiate consultation with CDFG.

The informal consultation process is initiated when the USACE provides a complete package of information regarding the project to the appropriate resource agency. Initially, the USACE reviews the project for potential impacts on listed species and designated critical habitat. Some of the information that is necessary for making this determination is shown in Figure 3.4. If the USACE is able to determine that this project *is not likely to adversely affect* the listed species or designated critical habitat, the USACE will request that the appropriate resource agency (NMFS or USFWS) concur with this determination. In cases where listed species or designated critical habitats are present, the use of special mitigation measures may enable dredging and disposal outside the work windows. If the resource agency concurs with the USACE's determination, the resource agency will write a letter formalizing the determination of *not likely to adversely affect* listed species or designated critical habitat (see Figure 3.4).

The formal consultation process is required when the USACE or the appropriate resource agency determines that the proposed project *may adversely affect* listed species or designated critical habitat. If a project is determined to be in this category, formal consultation with the resource agency is necessary and will require the resource agency to develop a Biological Opinion for the project. Federal regulations allow 135 days to complete consultation.

Summary of Disposal Work Windows

Location & Designation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bar Channel (SF-8)												
Carquinez (SF-9)												
San Pablo (SF-10)												
Alcatraz (SF-11)												
Suisun (SF-16)												
Beneficial Reuse Sites												

Disposal Work Windows

Species	Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook Salmon	SF-9 & SF-16												
Steelhead Trout	SF-9, SF-10, & SF-11												
Recreational Marine Fishes	SF-10 & SF-11												
California Brown Pelican	Within 300' of known roost site												
California Clapper Rail, Snowy Plover, Salt Marsh Harvest Mouse, Delta Smelt	Beneficial Reuse Site												
Delta Smelt	Suisun Bay & marshes (not SF-16)												
Least Tern	All eelgrass beds, or within 3 miles of nesting area at Alameda Naval Air Station												

(For more information, see Appendix F or the LTMS EIS/EIR)

WORK WINDOW

MINIMIZED DISPOSAL

CONSULTATION REQUIRED

3.9 REQUIREMENTS FOR CONSIDERING ALTERNATIVE DREDGED MATERIAL DISPOSAL LOCATIONS

The Clean Water Act (CWA) and BCDC's Bay Plan do not authorize aquatic disposal of dredged material unless an analysis of potential alternatives is first performed and the alternatives prove to be either environmentally unacceptable or infeasible.

3.9.1 Clean Water Act Alternatives Analysis and Definition of Practicability

Fundamental to the CWA Section 404(b)(1) Guidelines (Guidelines) is the precept that dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or cumulatively on the ecosystem(s) of concern. The Guidelines provide the substantive criteria used by the USEPA, USACE, and SFBRWQCB in evaluating proposed discharges to waters of the U.S.

According to the Guidelines, no discharge of dredged or fill material to waters of the U.S. may be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. Practicable alternatives that should be considered include, but are not limited to, activities that do not involve a discharge into waters of the U.S. or ocean waters, and discharges at other aquatic locations that would have less adverse impact. An alternative is practicable if it is available and capable of being done, after taking into consideration cost, existing technology, and logistics.[13] An alternative is practicable only if it fulfills the applicant's project purpose (e.g., maintaining navigability of channels and other subtidal areas).

Practicability is determined on a case-by-case basis; no national or regional guidance exists for evaluating the practicability of any particular alternative. Nevertheless, certain general policies exist that regulatory decision-makers may use to help determine practicability. For example, an alternative that is not capable of fulfilling the applicant's project purpose is clearly not practicable. Alternatives that would require technological advances that are not currently available (e.g., shallow-draft ocean-going barges) are not considered practicable. Similarly, the absence of available alternatives to aquatic disposal (i.e., beneficial reuse sites) may render these alternatives impracticable. Logistics, such as the need to employ equipment that is unavailable, may also make an alternative impracticable. In addition, all practicable alternatives that do not involve discharge to a special aquatic site are presumed to have less adverse impact on the aquatic environment, unless clearly demonstrated otherwise.[14] The DMMO has developed a list of questions to guide applicants in preparing an alternatives analysis (Table 3.3).

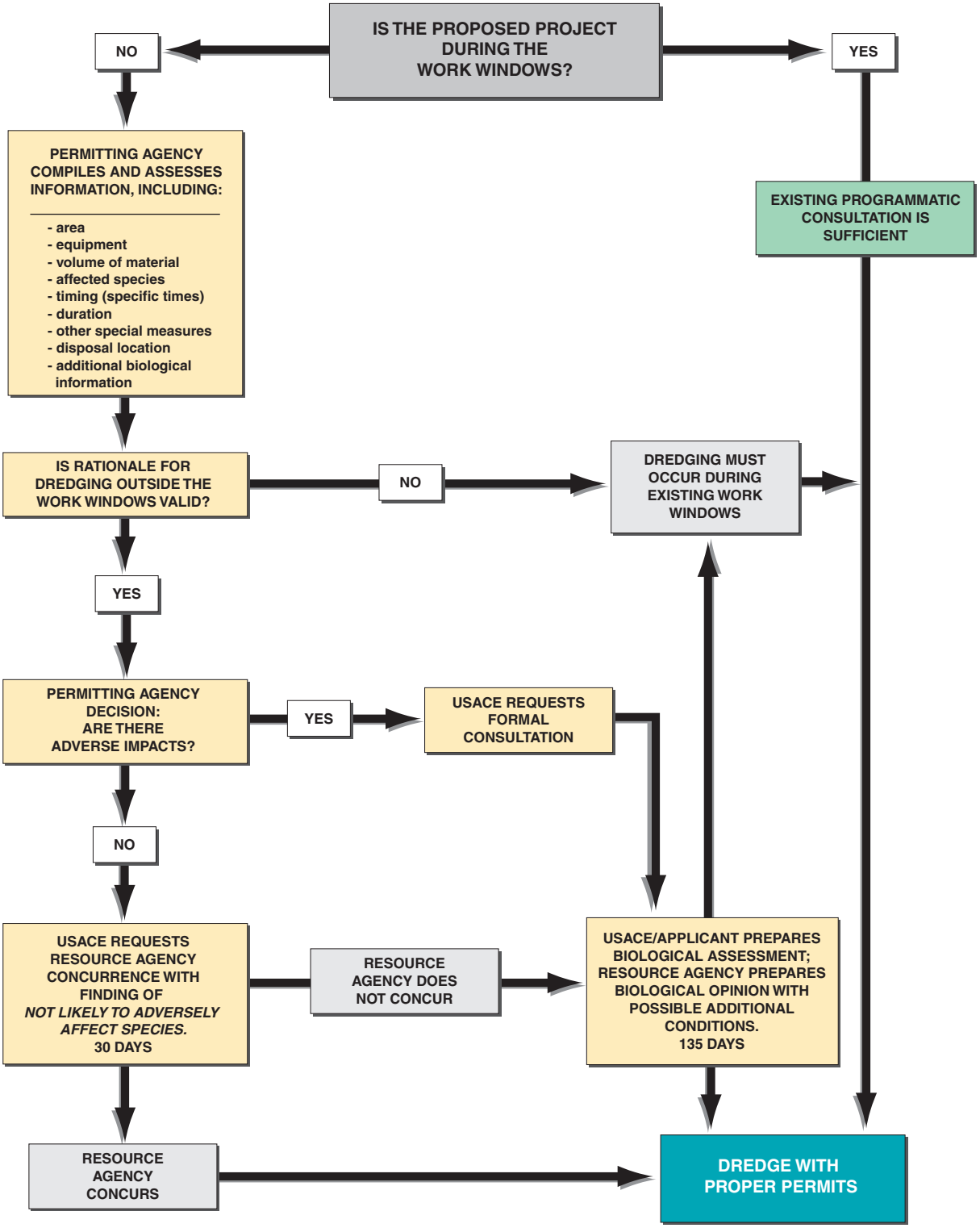
Cost factors often play a large role in assessments of the practicability of alternatives to aquatic disposal of dredged material. The Guidelines are clear that cost must be considered in terms of the overall scope of the proposed project. Therefore, practicable alternative disposal options for a small

13 40 CFR 230.3(q).

14 Special aquatic sites are defined in the Guidelines at 40 CFR 230.3 (q-1); the definition includes jurisdictional wetlands.

Figure 3.4

Consultation Process Flowchart



marina will differ from those for the USACE maintenance dredging or for major port dredging projects. Similarly, the alternatives analysis prepared for a small marina will not require the same level of effort as would be required of a major port. The Guidelines preamble also clarifies that the term "cost" does not necessarily account for the applicant's financial status, investment, or market share. The preamble to the Guidelines states that an alternative is not practicable if it is "unreasonably expensive" to the applicant, and is determined on a case-by-case basis.

Table 3.3 Alternatives Analysis for In-Bay Disposal

Questions that should be addressed by permit applicants in an analysis of alternatives to aquatic discharge of dredged material

In order for projects proposing the discharge of dredged material to waters of the U.S. to be approved under Section 404 of the Clean Water Act, it must be shown that there is no practicable alternative to the proposed discharge that would have less impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. Applicants for permits for such discharges must submit a written analysis of the alternatives to the proposed discharges. The DMMO has developed a list of questions to guide applicants in preparing the discussion.

- Do alternative disposal sites capable of accepting the proposed dredged material exist?
- What logistical and/or technological issues associated with alternative disposal options exist?
- What are the potential impacts associated with alternative disposal options (e.g., air, water quality, traffic, etc.)?
- Can alternative disposal for this project be made practicable by combining disposal with other projects?
- What is the cost of alternative disposal options?
- What is the cost of disposal site monitoring (taking into account other projects)?
- Do other aquatic sites exist that may be less environmentally damaging?
- If so, what logistical and technical issues exist? What are costs?
- Can the material be used as a resource (e.g., construction material)?
- If so, what costs would accrue to the project proponent?
- If so, what other environmental impacts (e.g., air quality) may result?

3.9.2 BCDC Requirements Regarding Feasible Alternatives to In-Bay Disposal

BCDC's Bay Plan Dredging Policy 3 states in part that dredged material disposal in the Bay should not occur "unless disposal outside these areas is infeasible." Further, Bay Plan Dredging Policy 4 states in part that in the event in-Bay disposal is proposed, which "exceeds either disposal site limits or any disposal allocation" adopted by the Commission the project proponent "must demonstrate that the potential for adverse environmental impact is insignificant and that non-tidal and ocean disposal is infeasible because there are no alternative sites available or likely to be available in a reasonable period, or because the cost of disposal at alternate sites is prohibitive." (Chapter 10 presents the complete text of the Bay Plan's dredging policies.) Therefore, as part of any permit application for disposal of dredged material in the Bay, applicants must analyze the feasibility of alternative disposal locations. BCDC policies are stated broadly and do not have more detailed guidance similar to the

404(b)(1) Guidelines. However, BCDC will work with the other permitting agencies to coordinate implementation of their feasibility determination.

3.9.3 Determining Practicable Disposal Alternatives Prior to Determining Sediment Testing Framework

The dredging community has expressed concerns about the expense of sediment testing as alternatives to in-Bay disposal become available. They have expressed particular concern that a project proponent could test sediments for in-Bay disposal only to be told by the agencies that an alternative disposal site was practicable, and be required to remobilize and test sediments again for a new disposal environment (Chapter 4 contains a discussion of sediment testing requirements). To address this concern, the LTMS agencies implement the following measure:

- *To minimize the need for sediment sampling and testing events for multiple disposal environments, the DMMO will encourage project proponents to submit alternatives analyses pursuant to the Clean Water Act and BCDC's laws and policies regarding Bay fill before conducting sediment testing.*

The LTMS agencies strongly recommend this course of action for the following projects: new work projects, maintenance projects exceeding 10,000 cubic yards, and maintenance projects proposing a change from beneficial reuse or ocean disposal to in-Bay disposal.[15]

3.10 CONSOLIDATED PERMIT CONDITIONS

Authorizations for dredging and dredged material disposal projects issued by the LTMS agencies include permit conditions, specific requirements about how the project is to be performed. Each LTMS agency has conditions that are included in most project authorizations. In some cases, these requirements are similar in each agency's authorization, but not identical, making it difficult for the permittees to ensure they are complying with all conditions of all permits, and for the agencies to track compliance.

In keeping with the LTMS goal of establishing a cooperative permitting framework for dredging and dredged material disposal applications, the LTMS agencies have reviewed and compared permit conditions, and determined that they could be modified to be more consistent throughout. Appendix G contains a list of model permit conditions that will be included, as appropriate, in USACE, USEPA, BCDC, and SFBRWQCB authorizations for dredging and disposal projects. Consequently, the LTMS agencies implement the following measure:

- *The LTMS agencies, in issuing permits for dredging and disposal projects, will coordinate permit conditions and may use, on a case-by-case basis, consolidated conditions contained in the* LTMS Management Plan *(Appendix G). Each agency may include permit conditions other than those identified in Appendix G.*

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15 If the sediments turn out to be unsuitable for in-Bay disposal, another placement alternative must be proposed, which could involve additional testing, regardless of the initial evaluation of practicability and feasibility.

3.11 CONSOLIDATED PERMIT

A number of the interested parties requested that the LTMS agencies develop a single consolidated permit for dredging and disposal projects, as a step in fulfilling the fourth goal of the LTMS to "establish a cooperative permitting framework for dredging and dredged material disposal applications." DMMO has made substantial progress toward this goal by providing a single point of entry into the permitting process, developing a joint application form, and providing coordinated review of applications and supporting documents. Further, the LTMS agencies have made progress toward this goal through modification of certain permit conditions.

Through review of the existing laws and regulations, it appears that the only available method for a consolidated permit is issuance of a programmatic general permit (PGP). The USACE could, after opportunity for public comment, issue a PGP to one of the LTMS state agencies. That agency would then be responsible for administering the PGP for dredging and dredged material disposal in the geographic area specified by the PGP. The New England District of the USACE has issued a number of PGPs to states within its jurisdiction, which could serve as models for a San Francisco PGP.

However, several factors limit the usefulness of a PGP for the Bay Area:

- A PGP would not be applicable to SF-DODS. The Marine Protection, Research, and Sanctuaries Act (MPRSA) does not provide for USEPA to yield control of the program. Moreover, because SF-DODS is located beyond the boundary of the State of California, the LTMS state agencies do not have jurisdiction at the site.

- There are currently no PGPs pursuant to Section 404 of the CWA in California because no state agency has the statutory authority to administer a PGP.

- While a PGP could eliminate the need for individual federal permits for in-Bay disposal projects, there is no mechanism for the state agencies to yield control of their regulatory programs to one another.

Based on a thorough consideration of the time and effort needed to develop a PGP, the lack of statutory authority for the state to assume a PGP, and its limited usefulness, the LTMS agencies have decided not to pursue a consolidated permit at this time.

3.12 DREDGING AND DISPOSAL FEES

Processing fees for permits and/or authorizations from the BCDC and the SFBRWQCB vary, and project proponents should contact the individual agencies for more information or refer to the DMMO website. Through the course of the LTMS planning process, the implementation of new fees for dredging and dredged material disposal in the Bay Area was discussed. Existing fees include: (1) the above-referenced permit processing fees (including fee for the disposal of materials in waters of the State that are subject to Waste Discharge Requirements and/or require CWA 401 Water Quality Certification); (2) the disposal fee collected and used for the Regional Monitoring Program; and (3) the State Lands Commission fee for resource extraction. The discussion among the LTMS agencies

and the interested parties covered the potential for assessing new fees—which would require state legislation prior to implementation—and the possible use of fees for disposal site impact analysis, and the development and management of beneficial reuse sites. In general, participating members from the environmental community supported the concept of a new fee while representatives from the dredging and business communities did not. In light of the inability to reach consensus among the members of the group, the LTMS agencies decided to put the issue on hold. However, so as to facilitate further consideration of a new fee for dredging and disposal activities, the LTMS agencies implement the following measure:

- *The LTMS agencies will reconsider funding mechanisms for the LTMS program, including possibly instituting a new fee for dredging and disposal activities, at the initial three-year transition review period.*

CHAPTER 4

4.0 DREDGED MATERIAL SUITABILITY DETERMINATIONS

4.1 INTRODUCTION

As part of the process for authorizing dredging and disposal projects, the agencies involved must determine whether the material proposed for dredging is suitable for the proposed disposal environment. This chapter discusses how suitability determinations are made and describes the LTMS agencies' plans for continued improvement of the process.

4.2 IMPLEMENTATION MEASURES

The LTMS agencies will implement several measures to achieve the goals of the LTMS as they relate to dredged material suitability determinations. These implementation measures are shown as bulleted, italicized text.

4.3 OCEAN DISPOSAL AND THE GREEN BOOK

Disposal of dredged material outside of the baseline[1] is regulated under Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA).[2] Suitability of dredged material for ocean disposal is determined through compliance with USEPA's Ocean Dumping Regulations.[3] National guidance for the MPRSA Section 103 program was published by USEPA and USACE in a document titled *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual* (USEPA and USACE 1991), known as the "Green Book."

The USACE, in consultation with USEPA, determines the suitability of dredged material proposed for ocean disposal under criteria defined in the regulations. Material is determined to be suitable for ocean disposal if it meets the limiting permissible concentration (LPC).[4] USEPA has independent authority to determine suitability. No material may be disposed at San Francisco Deep Ocean Disposal Site (SF-DODS) until USEPA provides written concurrence.

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1 The baseline is generally where the shore directly contacts the open sea (33 CFR 329.12(a)(1)).

2 Use of dredged material as fill within the geographic limit of the territorial sea (within three nautical miles of the baseline) is regulated under Section 404 of the Clean Water Act rather than Section 103 of MPRSA.

3 40 CFR 220-228

4 40 CFR 227.27

4.3.1 Tiered Testing Approach

The Green Book implements a tiered testing approach. It is necessary to proceed through the tiers only until sufficient information exists to determine if the proposed dredged material is suitable or unsuitable for disposal. One of three decisions can be made:

- Information is sufficient to determine that the material is suitable for disposal.
- Information is sufficient to determine that the material is not suitable for disposal.
- Information is insufficient to make a determination.

Ocean Testing – "Green Book"

- Tier I – Review of existing data; determine exclusion from testing
- Tier II – Bulk sediment chemistry; evaluation of compliance with Water Quality Criteria; Theoretical Bioaccumulation Potential
- Tier III – Liquid/Suspended Phase bioassays; benthic bioassays; bioaccumulation tests and tissue analyses
- Tier IV – If necessary, and in consultation with USACE (and USEPA)

4.3.1.1 Tier I Evaluation

Tier I evaluations include examination of existing data and determination of whether the proposed dredged material meets at least one of the exclusion criteria, which are listed in Part 227.13(b) of the regulations. If the proposed dredged material does not meet any of the exclusion criteria, the USACE and USEPA may use prior decisions regarding suitability and recent data obtained from the project area to evaluate suitability of the material for disposal. In some cases, it may be appropriate to supplement available information with confirmatory physical and chemical analyses of the proposed dredged material.

4.3.1.2 Tier II Evaluation

Tier II consists of a determination of compliance with applicable marine water quality criteria (WQC) and an evaluation of the theoretical bioaccumulation potential (TBP) for certain contaminants of concern. Because WQC generally do not exist for all contaminants of concern, project proponents usually proceed to Tier III to determine compliance with the LPC.[5]

5 Details regarding evaluation of Tier II data may be found in the Green Book, Chapter 10.

Tier II analyses cannot be used to make a definitive determination of suitability. Therefore, the only decisions that can be made at Tier II are either to continue to Tier III or to find the material unsuitable for disposal. The results of TBP calculations, however, may be used to eliminate the need for certain analyses in Tier III. For example, if TBP results indicate that a particular contaminant of concern does not have the potential to bioaccumulate, the regulatory agencies may determine that analysis of test organisms' tissue is not necessary.

4.3.1.3 Tier III Evaluation

The Green Book, Chapter 11 provides general guidance on how to assess the effects of dredged material on "appropriately sensitive" marine organisms. In addition, regional testing protocols and other information contained in the Inland Testing Manual (ITM) (Section 4.4) may be used, as appropriate.

Water column/suspended phase acute toxicity bioassays (Green Book, Section 11.1) are used to assess the effects of disposal of the proposed dredged material on pelagic organisms. Suspended phase testing must include the use of three different appropriately sensitive marine organisms.

Whole sediment acute toxicity bioassays are used to evaluate the effects of disposal of the proposed dredged material on benthic organisms. Dredged material is considered unsuitable for ocean disposal if mortality of test organisms exceeds mortality in the reference sediment by 10 percent (20 percent for amphipods) or more and is statistically significantly greater in the dredged material than in the reference sediment. Testing must include two benthic organisms, generally an amphipod (always required) and a polychaete. Reference sediment is from an area similar to the SF-DODS which experiences substantially the same influences as the disposal site, with the exception of disposal of dredged material.[6]

Bioaccumulation analyses also evaluate the capacity of contaminants in dredged material to bioaccumulate or biomagnify, and thus the potential for adverse impacts on higher trophic levels. Guidance regarding the USACE's and USEPA's evaluation of bioaccumulation analyses results is found in the Green Book, Chapter 12. Contaminant concentrations in the tissues of the test species are evaluated relative to the Food and Drug Administration's (FDA's) published list of action limits (current values may be found in Table 6-1 of the ITM).[7] If any of the contaminants of concern measured in test organism tissues statistically exceed FDA action limits, the dredged material is considered unsuitable for ocean disposal.

Contaminant tissue concentrations from organisms exposed to the proposed dredged material that do not exceed the FDA action limits, or for which action limits do not exist, are compared to tissue

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6 The reference site for the SF-DODS is located at 37°39.0' N 129°29.0' W, approximately 10 to 15 nautical miles from the disposal site. The reference site is subject to essentially the same oceanographic influences and consists of sediments of similar grain size, composition, and geology.

7 ITM located at: http://vm.cfsan.fda.gov/~lrd/fdaact.html.

concentrations of species exposed to reference sediment. If concentrations of the contaminants of concern exceed those in the reference sediment by a statistically significant amount, USEPA and USACE use a number of factors to evaluate whether the material is suitable for ocean disposal (Green Book, Chapter 10 and ITM, Chapter 12).

Results from Tier III tests are usually sufficient to evaluate the suitability of the proposed dredged material for ocean disposal. Situations arise, however, where data from composite sample(s) indicate that the material is unsuitable for ocean disposal. In these cases, the USACE and USEPA generally recommend additional Tier III testing of subareas within the region characterized by the composite sample. The intent is to identify localized "hot spots," thus allowing the remainder of the material represented by the composite to be found suitable for disposal.

4.3.1.4 Tier IV Evaluation

In rare cases, Tier III results may indicate that Tier IV testing is necessary (Green Book, page 6-1). For example, evaluation of long-term effects on marine organisms (such as reduced fecundity or mutations) may be necessary. In this case, the USACE, in consultation with USEPA, determines the required tests to evaluate chronic or other sublethal effects. Project proponents, however, may choose to suspend testing at Tier III. In these cases, the regulatory agencies must determine that the material is not suitable for ocean disposal.

4.4 IN-BAY DISPOSAL AND THE INLAND TESTING MANUAL

Dredged material disposal inside the baseline[8] is regulated under Section 404 of the Clean Water Act (CWA). In addition, return flow from upland dredged material disposal sites into waters of the U.S. is regulated administratively as disposal under Section 404. Disposal is subject to compliance with the CWA Section 404(b)(1) Guidelines (Guidelines).[9]

National guidance for evaluation of material to be disposed in waters of the U.S. was published in 1998 by the USACE and USEPA. This document, *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (USEPA and USACE, 1998), is also referred to as the "Inland Testing Manual". The ITM was developed to be consistent with the Green Book. Like the earlier guidance, the ITM uses a testing approach that is tiered and effects-based. This approach is designed to ensure that adequate information is generated to satisfy the requirements of the Guidelines, without making applicants test unnecessarily. The LTMS agencies have published draft guidance on testing under the ITM (PN 99-3).[10] PN 99-3 is consistent with the ITM and should be used in conjunction with the national guidance.

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8 For the purposes of this Management Plan, this includes disposal in San Francisco Bay and in adjacent waters of the U.S., including wetlands.

9 40 CFR 230.

10 PN 99-3 can be found on the DMMO Web site.

4.4.1 Tier I Evaluation

As with the Green Book, Tier I of the ITM focuses on existing information regarding the proposed dredged material. Review of this information may result in the decision that further analyses are not needed, or that confirmatory chemical measurements may be adequate for determination of the material's suitability for unconfined aquatic disposal. In general, the regulatory agencies have greater flexibility under Section 404 than under MPRSA, in terms of testing requirements to determine suitability.

4.4.2 Tier II Evaluation

In Tier II, bulk sediment chemical concentrations are used to evaluate the likelihood that disposal of the proposed dredged material would violate water quality standards. TBP may also be calculated (Section 4.3). Results from Tier II are useful for informing testing choices in Tier III and may be used to determine that material is *not* suitable for unconfined aquatic disposal. However, as with ocean disposal, Tier II results generally are not adequate for determining that material may be disposed in waters of the U.S.

4.4.3 Tier III and Tier IV Evaluations

Tier III tests focus on direct evaluation of water column and benthic toxicity expected to result from disposal of the proposed dredged material. Testing requirements and criteria to determine suitability for disposal are essentially identical for both ocean and in-Bay disposal. The increased flexibility of the CWA, however, allows for the testing of a single water column organism (described in PN 99-3), as opposed to the three species required under MPRSA. Two benthic organisms, including an amphipod, must be subject to acute toxicity tests. If there is reason to believe that disposal may result in bioaccumulation, the agencies may also require bioaccumulation testing and tissue analyses. Generally, evaluation at Tier III should be sufficient for determining the material's suitability for unconfined aquatic disposal, although Tier IV analyses may be needed in infrequent cases.

Clean Water Act Flexibility

- More discretion than MPRSA regarding testing requirements (particularly water column bioassays and bioaccumulation testing)
- Allows disposal if controls ensure minimal exposure of the material to the aquatic environment, such as
  - Isolation using bulkheads or other structures
  - Capping dredged material with clean sediment

4.4.4 Sediment Quality Guidelines

Sediment Quality Criteria (SQC) have not been developed for the Bay Area that represent a single sediment chemical concentration below which disposal poses minimal risk to the aquatic environment.

However, the LTMS agencies initiated a work group composed of agency staff, consultants,

environmentalists and scientists to consider developing sediment quality guidelines (SQGs) that could be used in the region. The LTMS agencies propose to use these guidelines, as appropriate, to require additional testing, primarily bioaccumulation and related tissue chemistry. The SQG Work Group was established to address concerns expressed by interested parties.

The SQG Work Group has focused on the development of bioaccumulation trigger levels to help standardize when bioaccumulation testing is needed. The Work Group also has identified a preliminary list of "contaminants of concern" using an unbiased, scientific method to identify those compounds with known presence in the Bay Area. This list currently includes polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dichlorodiphenyl-trichloroethane (DDT), and mercury. To facilitate the development of SQGs, the LTMS agencies implement the following measure:

- *The LTMS agencies will continue to coordinate the efforts of the SQG Work Group and provide the work group's results for public review, including the technical basis for any proposed SQGs. The LTMS agencies also will hold at least one public meeting describing any such guidelines, their development, and their proposed use.*

4.4.5 Reference Sites

The reference sediment serves as the point of comparison to identify potential effects of contaminants in the proposed dredged material. The Guidelines, however, currently require a comparison of "excavation" and "disposal" sites, the latter serving as "reference sediment." However, ongoing disposal at a designated site may degrade the area over time, resulting in increasing levels of contaminants. Moreover, use of the disposal site as a reference is inconsistent with the practice employed in the ocean disposal program. As a result, USEPA (headquarters) published a draft "reference rule" on January 4, 1995 to rectify this inconsistency.

Several potential reference sites were investigated by the SWRCB (1998). The report, *Evaluation and Use of Sediment Reference Sites and Toxicity Tests in San Francisco Bay* (1998), concluded that three specific sites are probably representative of the least-impacted areas of the Bay.[11] LTMS agencies will propose these areas, identified in Table 4.1, for reference sites upon finalization of USEPA's reference rule, and implement the following measure:

- *Upon finalization of USEPA's proposed rule on reference sites, the LTMS agencies will recommend that testing for dredging projects be carried out using new reference sites from the SFBRWQCB's* Evaluation and Use of Sediment Reference Sites and Toxicity Tests in San Francisco Bay.

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11 State Water Resources Control Board, San Francisco Bay Regional Water Quality Control Board, California Department of Fish and Game, Marine Pollution Studies Laboratory, and Institute of Marine Sciences UCSC. April 1998. *Evaluation and Use of Sediment Reference Sites and Toxicity Tests in SF Bay, Final Report*. 132pp plus appendices.

Table 4.1
Proposed In-Bay Reference Sites

Site Name	*Latitude*	*Longitude*
Paradise Cove	37° 53.95' N	122° 27.86' W
Tubbs Island	38° 06.87' N	122° 27.86' W
Island # 1	38° 06.72' N	122° 19.71' W

4.5 BENEFICIAL REUSE AND SEDIMENT SCREENING CRITERIA AND TESTING REQUIREMENTS FOR WETLANDS CREATION AND UPLAND BENEFICIAL REUSE

To facilitate and promote the reuse of dredged material, the SFBRWQCB prepared *Sediment Screening Criteria and Testing Requirements for Wetlands Creation and Upland Beneficial Reuse* (SFBRWQCB, 1992). The screening criteria were based on statistical estimates of sediment toxicity and ambient concentrations of chemicals found in the sediments of San Francisco Bay. The SFBRWQCB issued a revised draft of the screening criteria document in May 2000. This revision is in response to updated data on sediment toxicity and additional information on Bay sediment quality.

The screening criteria document identifies two general classes of dredged material suitable for reuse. Wetland surface material exhibits bulk sediment concentrations that fall within the range of ambient conditions in the central portions of San Francisco Bay (the Bay). Wetland surface material is not expected to pose a threat to water quality or the aquatic environment, even where it is in direct contact with surface waters or aquatic organisms, or is likely to erode into surface waters.

The second class of dredged material (wetland foundation) generally falls within the range of ambient conditions typically found around the margins of the Bay. This material is not of a quality that constitutes a hazardous or listed waste (SFBRWQCB, 1992), but has been found to be generally unsuitable for unconfined open water disposal. Wetland foundation material is not expected to be a threat to water quality when it is used such that there is minimal risk for it to come in direct contact with the aquatic environment or erode into surface waters. Wetland foundation material must be tested using the California Waste Extraction Test[12] to ensure that any water that leaches through the material will not adversely impact the aquatic environment. Final determination of sediment suitability for any specific permit action, however, considers site location, design and proposed construction methodology(-ies). Projects proposing to use wetland foundation material are expected to require Waste Discharge Permits from the SFBRWQCB to ensure that there will be minimal risk of adverse impacts. Permit requirements will typically include design constraints, monitoring requirements, discharge prohibitions, effluent limits and receiving water limits.

12 As described in CCR Title 22.

4.5.1 Sediment Quality Guidelines

As described in Section 4.5, the SFBRWQCB is in the process of revising its 1992 document providing testing guidance and sediment quality guidelines for beneficial reuse of dredged material. These have not been adopted by the Board and are undergoing external review. In addition, the long-term goal of the SQG work group is to establish guidelines for beneficial reuse of dredged material and to encourage and facilitate beneficial uses. Although the group hopes to develop beneficial reuse SQG, the highly variable nature of beneficial reuse projects and sites may place a severe constraint on this goal. To facilitate and promote beneficial reuse of dredged material, the LTMS agencies implement the following measure:

- *The SFBRWQCB will revise* Sediment Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Reuse, *which will provide guidelines on testing (including recommendations for reference sites) and sediment quality screening for various beneficial uses. A draft version of the revised document has been issued for public comment and, following the close of the comment period, will be revised and finalized through the formal administrative process.*

4.5.2 Standardized Beneficial Reuse Testing Requirements

The LTMS agencies recognize that certain biogeochemical changes that occur when dredged material is placed outside of the aquatic environment may affect the bioavailability of contaminants. As a result, the SQG work group plans to examine existing "upland" bioassays to evaluate their appropriateness for beneficial reuse projects. The LTMS agencies expect that a number of regional and perhaps site specific modifications may be required and that verification and scientific peer review may be needed. Therefore, extensive laboratory and field testing will likely be required prior to their use as a regulatory tool. Although this effort is likely to be a long-term goal, the LTMS agencies implement the following measure:

- *A long-term goal of the LTMS agencies is to develop testing protocols to further improve the evaluation of the suitability of Bay Area dredged sediments for various beneficial reuse options. The LTMS agencies plan to re-evaluate the appropriateness of existing sediment testing protocols, particularly bioassays, to ensure that they address the environments and potential biological receptors likely to be of concern for beneficial reuse projects.*

4.6 REGIONAL IMPLEMENTATION MANUAL (RIM)

The LTMS agencies plan to develop a RIM describing testing and analysis requirements for disposal of dredged material in the Bay Area. The RIM will include regional test protocols, contaminants of concern, appropriate species for bioassays, and quality assurance guidance. Sediment quality guidelines, new or modified testing procedures, reference sites, and other testing and suitability-related information will be included as they become available.

The RIM will complement the *LTMS Management Plan* and be used in conjunction with it. Substantive changes or additions will be subject to public review and comment. To facilitate

development of the RIM, which will serve as a testing manual for the three disposal and reuse environments, the LTMS agencies implement the following measure:

- *The LTMS agencies will work to develop a comprehensive regional implementation manual (RIM), which will incorporate existing local guidance for testing requirements for all disposal environments in the LTMS planning area. A draft version will be issued, revisions made per public comments, and a final version prepared. The document will be revised or updated as needed.*

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CHAPTER 5

5.0 MANAGEMENT AND MONITORING OF DREDGED MATERIAL DISPOSAL AND REUSE SITES

5.1 INTRODUCTION

This chapter focuses on management and monitoring for in-Bay disposal sites, the deep ocean disposal site, and beneficial reuse sites. Chapter 4 discusses the sediment testing required for suitability determinations prior to dredging or disposal, a key part of site management. Specific recommendations for modifications of the existing monitoring framework are not included in this chapter, because additional time is needed to evaluate existing data and monitoring and management practices. The next three-year cycle of the LTMS process should include more active management of the in-Bay disposal sites and it is expected that any additional monitoring requirements for the in-Bay sites will be identified during this period and incorporated in a future revision of the Management Plan, and possibly in amendments to San Francisco Bay Conservation and Development Commission's (BCDC's) Bay Plan and San Francisco Bay Regional Water Quality Control Board's (SFBRWQCB's) Basin Plan. Table 5.1 provides a summary of existing and probable future monitoring requirements for the three disposal and beneficial reuse environments.

Disposal and Reuse Site Monitoring and Management

- Three disposal environments - in-Bay, ocean, and beneficial reuse
- Management and monitoring for in-Bay sites is based on the premise that sites are predominantly dispersive
- Site management and monitoring for SF-DODS is already established
- Management and monitoring for beneficial reuse sites will be determined on a case-by-case basis and will be specific to the project environment

5.2 IMPLEMENTATION MEASURES

The LTMS agencies will implement several measures to facilitate continued and improved management and monitoring of the disposal and beneficial reuse sites. These implementation measures are shown as bulleted, italicized text.

5.3 IMPORTANCE OF SITE MONITORING AND MANAGEMENT PLANS

SMMPs for disposal and beneficial reuse sites are necessary to ensure proper management of sites, to minimize the potential for adverse environmental impacts, and to ensure compliance with laws,

Table 5.1
Components Relevant to Monitoring Requirements
for Disposal and Beneficial Reuse Environments

Monitoring Type	*Disposal or Beneficial Reuse Location*		
	In-Bay	**Deep Ocean**	**Beneficial Reuse**
Bathymetry	R	H	NA
Material type	R	R	P
Physical/Chemical/Biological Characterization[1]	R	R	R
Benthic studies	N	R	P
Pelagic studies	N	R	NA
Water column	R	R	P
Volume tracking	R	R	R
Placement/Engineering	R	R	R
R= Currently required			NA = Not applicable
P = Probably required in the future			N = Not required
H = Historical (has been done, but is not required)			

regulations, and permit conditions. Public input into the development of such plans is critical to ensuring that concerns are addressed. Therefore, the LTMS agencies implement the measures below.

- *As previously stated in the LTMS EIS/EIR, "[t]he LTMS agencies will develop and implement site management and monitoring plans for all multi-user placement or disposal sites. These plans will specify the [management measures] necessary to ensure that impacts are minimized and/or benefits are realized. The plans will also specify the monitoring requirements and post-closure activities as appropriate for each site. Site management and monitoring plans will identify specific conditions that would constitute acceptable performance, as well as adjustments to site use parameters (including termination of continued site use) that would be triggered by specific findings of non-performance." The LTMS agencies will continue to sponsor the efforts of the SMMP Work Group, which will serve as a vehicle for developing SMMPs.*

- *As previously stated in the LTMS EIS/EIR, "[t]he LTMS agencies will provide opportunity for public input and comment on proposed site management and monitoring plans for new disposal or placement sites and on proposed substantive revisions to existing plans. Information from site monitoring efforts will be made available to the public, and opportunity for comment will also be provided as part of the periodic review for existing sites."*

[1] Prior to dredging.

5.4 IN-BAY DISPOSAL SITE MANAGEMENT AND MONITORING

There are no formal SMMPs in place for any of the in-Bay disposal sites. The USACE currently manages the sites and performs monitoring activities, some of which are required by SFBRWQCB Order No. 99-030. The USACE and the dredging community provide funding and in-kind services for additional off-site monitoring. The following sections describe current management and monitoring of the in-Bay disposal sites, the costs of current management and monitoring efforts, and the status of a work group that is developing formal SMMPs for the three in-Bay disposal sites.

5.4.1 Management of the In-Bay Disposal Sites

Many of the management practices at the in-Bay disposal sites are designed to maximize dispersion of dredged material primarily to prevent mounding and, thus, navigation hazards at the sites. Monthly and annual targets on disposal volumes apply at the sites. Additionally, disposal at the in-Bay sites is limited to unconsolidated dredged material—typically material from maintenance dredging projects—with sandy or smaller grain sizes.

A large mound has developed at the Alcatraz site (SF-11), which has, at times, grown so large as to be a navigation hazard. Additional management practices have been taken at this site in order to deal with the problem. Based on experience with managing the site, the USACE determined that the monthly target for the Alcatraz site was not low enough to prevent build-up of dredged material. Therefore, USACE imposed a lower monthly target, via Public Notice 93-3 (Appendix P). Also, dredgers disposing of dredged material at the Alcatraz site are directed to specific quadrants to enhance dispersion of material from the site. Hopper-dredged material, which tends to be more dispersive, is directed to areas where it will not be buried in place by disposal of more consolidated clamshell-dredged material. Material dredged by clamshell is directed to different areas of the disposal site. In the event a portion of the Alcatraz site becomes shallow enough to pose a hazard to navigation, the USACE takes corrective action by dredging the shallowest part of the mound, sidecasting the dredged material at deeper portions of the site. In 1992, in light of persistent mounding, monthly targets were set by Public Notice 93-3 that set a more frequent bathymetric monitoring schedule for the site. In 1999, mounding problems led to the USACE's temporary prohibition of disposal at certain areas within the site.

Because of the dispersive nature of the in-Bay disposal sites, management measures are also designed to ensure that material dispersed from these areas will not cause adverse environmental impacts in the Bay. As described in Chapter 4, part of the regulatory process for dredging and in-Bay disposal projects is a determination of sediment suitability for the proposed disposal environment. This determination is made by the regulatory agencies and relies on results of physical, chemical, and biological analyses of the sediments proposed for dredging. All projects proposing to use the in-Bay disposal sites are reviewed via this process, and only sediments deemed to be suitable for unconfined aquatic disposal are disposed of at the in-Bay sites.

5.4.2 Monitoring of the in-Bay Disposal Sites

Currently, in-Bay disposal site monitoring entails tracking disposal volumes and bathymetric mapping to determine possible navigation hazards, and off-site monitoring to assess Bay-wide impacts associated with disposal. The USACE tracks the volume of dredged material that is placed at

the disposal sites, to ensure that disposal volume targets for each site are not exceeded. Bathymetric mapping occurs on a monthly basis at the Alcatraz disposal site (SF-11), on a quarterly basis at the San Pablo Bay (SF-10) and the Carquinez (SF-09) sites, and on an as-needed basis at the Suisun Bay Channel (SF-16) site.

Off-site monitoring of the impacts of in-Bay disposal occur through the San Francisco Bay Regional Monitoring Program for Trace Substances (RMP). This program is designed to evaluate trends in sediment and water quality for the Bay as a whole, with the intent of looking at aggregate impacts on the Bay, rather than the impacts of any individual activity. Data from the RMP provide our best estimate of ambient conditions in the Bay and can be used to evaluate whether disposal activities are having significant impacts at a regional scale. The program is funded through fees imposed on Bay Area dischargers. For users of the in-Bay disposal sites, a per cubic yard fee is collected for this program. This fee is in addition to any permitting fees imposed by the regulatory agencies. In lieu of paying the RMP fee, the USACE supports the program by providing in-kind services via the U. S. Geological Survey (USGS).

There are other sources of information on the condition and impacts of the in-Bay disposal sites, in addition to the efforts geared specifically to monitoring the in-Bay disposal sites. The protocol for testing sediments to determine suitability requires that sediments proposed for dredging be compared to sediments at the proposed disposal site. Most testing data submitted to the Dredged Material Management Office (DMMO) as part of the sediment suitability determination process include results of physical, chemical, and biological analyses of sediments at (or, in the case of the Alcatraz disposal site, near) the disposal site. These data provide information on conditions at the site and could be used to trigger changes in site management.

Other special studies can provide information on conditions at or impacts of the in-Bay disposal sites. For example USGS research staff used data collected for a broad-scale study on suspended sediments in San Francisco Bay to determine if dredging and disposal operations in San Pablo Bay caused a statistically significant change in water-column concentrations of suspended solids. Periodically the USACE has conducted tracking exercises to evaluate the relationship of the mound bathymetry to disposal rate and has funded at least one study of the behavior of clamshell and hopper dredged material over several months after disposal. The LTMS agencies also have directed studies on potential environmental impacts of dredging and disposal on the Bay (see LTMS Studies, Appendix B).

5.4.3 Costs of Current Monitoring and Management Efforts

The operator of the largest dredging projects in the Bay, the USACE, currently provides the largest portion of management and monitoring funding for the in-Bay disposal sites. In recent years, the USACE has spent approximately $150,000 per year on monitoring and reporting at the in-Bay disposal sites, and a $250,000 annual in-kind contribution to fund USGS studies that are included in the RMP. Monitoring costs for non-federal dredging projects is currently limited to participation in the RMP, with the dredging community fees contributing between $200,000 and $250,000 to the RMP annually.

5.4.4 SMMP Work Group

The LTMS agencies, in the LTMS EIS/EIR committed to developing formal SMMPs for each of the in-Bay disposal sites. Through the Management Plan workshops, a work group was formed to address this task. This work group consisted of agency staff and interested parties, including members of the environmental and dredging communities, and met between the fall of 1999 and spring of 2000. The work group reviewed information to identify the state of knowledge about potential environmental impacts of concern, and adopted a framework to develop SMMPs for the in-Bay disposal sites. The work group will re-convene in 2001.

The SMMPs are expected to include specific monitoring requirements, as well as other site use constraints (e.g., environmental windows restricting disposal, monthly and yearly volume limits, controls on turbidity). The SMMPs will specify when and what type of monitoring are required. The SMMPs may also identify, as appropriate, measures that will reduce adverse environmental impacts associated with dredged material disposal to acceptable levels within the disposal site and minimize the potential for adverse impacts beyond the boundaries of the site. The SMMPs may also include management measures for specific disposal practices or material types to maximize dispersion of the approved material. The SMMPs may also recommend enforcement mechanisms in the event that disposal operations do not conform to requirements.

5.4.5 Interim Procedures for Management and Monitoring of In-Bay Disposal Sites

The LTMS agencies will implement the following measure for management and monitoring during the development of formal SMMPs for the in-Bay disposal sites:

- *Until formal SMMPs are prepared for the in-Bay disposal sites, existing management and monitoring practices will continue. The SMMP Work Group will meet, and formal SMMPs for the in-Bay disposal sites will be developed and included in the* LTMS Management Plan *prepared at the end of the first three-year period. At that time, the progress of the SMMP Work Group on beneficial reuse sites also will be included in the Management Plan.*

5.5 SF-DODS MANAGEMENT AND MONITORING

5.5.1 SF-DODS Management

Management of SF-DODS is the responsibility of the Regional Administrator of U.S. Environmental Protection Agency (USEPA), in cooperation with the USACE South Pacific Division Engineer and the San Francisco District Engineer. Before disposal of any dredged material at the SF-DODS, USEPA and USACE must evaluate the proposed project according to the Ocean Dumping Criteria adopted pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA). USEPA or USACE will not allow ocean disposal of material if either agency determines that the Ocean Dumping Criteria are not met.

The SF-DODS SMMP is contained within the Final Site Designation Rule, but the SMMP Implementation Manual (USEPA 1998) is the primary vehicle for addressing new technology,

making changes resulting from site monitoring, and incorporating other improvements. The SMMP sets forth the conditions under which SF-DODS may be used, including the disposal target area, acceptable sea state for transit to the site, scow loading requirements, and monitoring and reporting requirements. Monitoring activities conducted pursuant to the requirements of the SF-DODS SMMP have shown that the SF-DODS is in compliance with the general and specific site designation criteria and is performing as predicted in the site designation EIS.

5.5.2 SF-DODS Monitoring

The SF-DODS SMMP contains general guidelines for monitoring; specific measures are found in the SMMP Implementation Manual. The SMMP Implementation Manual is reviewed periodically and updated as necessary. Data are collected in accordance with a three-tiered monitoring program, which consists of three types of monitoring for each tier: physical, chemical and biological. Site monitoring is required only during years when disposal occurs. Costs are borne by the dredging project proponents but may be shared in the event that more than one project uses SF-DODS in a single year. USEPA provides management oversight and is responsible for periodic confirmatory monitoring.

Monitoring at SF-DODS

- Material testing for suitability determination is a key component of site monitoring
- Suitability testing is tiered
- Confirmation sampling of the disposal environs is required
- Cost of monitoring is borne by the project

5.5.2.1 Tiered Monitoring Activities

Tier 1 monitoring includes physical surveys to determine the areal extent and thickness of the dredged material and to determine if any dredged material has been deposited outside the SF-DODS boundary. Chemical monitoring activities consist of collecting, processing and preserving samples of seafloor sediments so that the samples can be analyzed in the appropriate tier. Samples are collected in the dredged material "footprint,"[2] outside the footprint and outside the disposal site boundary. Samples from within the footprint are analyzed for contaminants of concern, while samples from outside the footprint and outside the SF-DODS are archived for possible evaluation in Tier 2. Biological monitoring activities in Tier 1 include regional surveys of seabirds, marine mammals and mid-water-column fish populations. Surveys include annual regional and periodic (random) shipboard surveys of birds and marine mammals. Tier 1 benthic monitoring consists of collection and preservation of samples of benthic communities for possible analysis in Tier 2. The results of annual (if appropriate) monitoring for Tier 1 (or Tier 2 or 3, as discussed below) are compiled in reports that are available for public review.

Tier 2 physical monitoring consists of oceanographic studies intended to validate and/or improve the models used to predict dispersion in the water column and deposition of dredged material on the seafloor at SF-DODS. Chemical monitoring in this tier consists of analyses of the samples collected in Tier 1 from outside the dredged material footprint. Tier 2 pelagic biology monitoring includes

2 The Tier 1 physical monitoring delineates the dredged material footprint.

supplemental surveys similar to those described in Tier 1. Benthic monitoring in Tier 2 involves a comparison of the benthic community within the dredged material footprint to communities outside the footprint. An approximate time-series (ordinal) and community analysis are performed using data collected, during the current and previous years, to determine whether adverse changes in benthic populations outside the disposal site may endanger the marine environment.

Tier 3 physical monitoring consists of sophisticated analyses of dredged material dispersion and deposition on the sea floor. Activities may include additional, intensified studies with further sampling stations, greater frequencies, or more advanced testing methodologies and equipment. Chemical monitoring in Tier 3 includes analysis of tissue samples of field collected benthic and epifaunal organisms to evaluate the potential that material disposed of at SF-DODS results in unacceptable levels of bioaccumulation in the marine environment. Biological monitoring in Tier 3 involves advanced studies of seabirds, marine mammals and mid-water-column fish to evaluate how these populations might be affected by disposal site use. Studies may include evaluation of sublethal, chronic changes, such as lesions and decreased fecundity. Benthic surveys in Tier 3 include advanced studies of seafloor communities to evaluate how these populations might be affected by site use.

5.5.2.2 Selection of Monitoring Tier

Tier 1 physical monitoring is adequate when the results of Tier 1 surveys establish that no significant amount of dredged material has been deposited or transported outside the disposal site boundaries. Tier 2 or Tier 3 physical monitoring is required when Tier 1 data are insufficient to conclude that a significant amount of dredged material is not deposited outside of SF-DODS. For the purposes of the SF-DODS SMMP, a "significant amount of dredged material" is defined as a thickness of 5 centimeters, although a lesser amount of accumulation may be considered significant if disposal and/or deposition of material outside the SF-DODS boundary is shown to endanger marine resources.

Chemical monitoring is limited to Tier 1 analyses when Tier 1 physical monitoring indicates that a significant amount of dredged material has not been deposited or transported out of the disposal site, and Tier 1 chemical monitoring establishes that dredged material deposited at the SF-DODS does not contain levels of chemical contaminants substantially elevated above the range of levels found in regional sediments. Tier 2 chemical monitoring must be undertaken if the results of Tier 1 monitoring indicate that a significant amount of dredged material has been disposed of or transported outside of the SF-DODS. If Tier 2 analyses are insufficient to establish that dredged material deposited at the disposal site do not contain levels of chemical contaminants that are significantly elevated above the range of chemical contaminants determined to be suitable for ocean disposal, Tier 3 chemical monitoring is required.

Tier 2 or 3 pelagic community monitoring is necessary if results from previous tiers are insufficient to establish that disposal at SF-DODS does not endanger the pelagic communities of concern. Tier 2 benthic monitoring is required if physical monitoring indicates that a significant amount of dredged material has been deposited or transported outside of the disposal site. Tier 3 benthic surveys must be undertaken when Tier 2 chemical analyses establish that significant bioaccumulation occurs in organisms sampled from the SF-DODS.

5.5.2.3 Periodic Confirmatory Monitoring

Confirmatory monitoring is undertaken on an as-needed basis and at least once every three years, at least initially. This monitoring includes bioassay testing of sediments from within the dredged material footprint consistent with the ocean testing manual (the Green Book) to confirm that only suitable dredged sediment is being disposed of at SF-DODS. In addition, near-surface arrays of appropriate organisms are deployed in and around the disposal site to confirm whether substantial bioaccumulation occurs in the water column as a result of multiple disposal events.

5.5.3 Management and Monitoring Costs

Monitoring of SF-DODS is required only when it has been used for disposal of dredged material. Site users are responsible for funding the monitoring. In general, costs have ranged from approximately $750,000 to $1,000,000 per year.

5.6 BENEFICIAL REUSE SITE MANAGEMENT AND MONITORING

Management and monitoring of beneficial reuse sites will be developed on a case-by-case basis and will be site specific. It is probable that this will continue until a knowledge base is developed that will allow general guidance to be written. The SMMP work group, described in Section 5.4.4, above, will discuss developing such general guidance once development of SMMPs for the in-Bay disposal sites is completed.

Monitoring at Beneficial Reuse Sites

- Management and monitoring for beneficial reuse sites will be established through the permitting process
- Guidance will be based on lessons learned from past activities

The management and monitoring plans that will be required for the Montezuma and Hamilton wetland restoration projects are expected to provide background information and practical experience that can be used to produce guidance for future projects. These plans will build on the experience gained from previous wetland restoration projects in San Francisco Bay, including Sonoma Baylands. Lessons learned from the beneficial reuse projects at Winter and Sherman Islands will also be considered in developing monitoring and management plans for beneficial reuse projects. These plans will also incorporate the appropriate information from the permits issued by SFBRWQCB, the Central Valley Regional Water Quality Control Board, and the USACE for wetland creation and restoration projects that have not used dredged material.

CHAPTER 6

6.0 MANAGEMENT OF THE IN-BAY DISPOSAL GOAL

6.1 INTRODUCTION

This chapter presents the strategy for managing in-Bay disposal to achieve both short- and long-term objectives of the LTMS, how progress toward achieving these objectives will be measured, and any actions to be taken in the event these objectives are not met.

6.2 IMPLEMENTATION MEASURES

The LTMS agencies will implement several measures to facilitate management of the in-Bay disposal goal. These measures are shown as bulleted, italicized text.

6.3 MANAGEMENT OBJECTIVES

The alternative selected by the LTMS agencies in the LTMS EIS/EIR as the preferred alternative and the federal Record of Decision (ROD) provide for low disposal volumes at in-Bay sites. The adopted strategy includes a reduction in the placement of dredged material at in-Bay sites to 1.0 million cubic yards (mcy) per year. However, the LTMS is a long-term approach and will need to be phased in over a transition period.

The initial action of the LTMS, reducing allowable in-Bay disposal to 2.8 mcy per year, began with the signing of the Federal Record of Decision (ROD) for the LTMS in July 1999. This amount is halfway between the maximum annual disposal volume and the average annual disposal volumes in the Bay for the years 1991 through 1999. (Appendix H presents the data used in determining this volume.) A contingency volume of 250,000 cubic yards (cy) per year has been added to this figure of 2.8 mcy per year to cover unforeseen events. This volume will decrease by approximately 387,500 cy every three years.

The transition period will involve decreasing the amount of dredged material disposed in-Bay every three years over a 12-year period, from 2.8 mcy toward the LTMS goal of 1.0 mcy (Figure 6.1). The 12-year period was chosen to reduce economic dislocation to dredgers by allowing time for new beneficial reuse and upland disposal sites to come on-line, new equipment and practices to be implemented, and funding mechanisms and arrangements to be established. The first three-year period will begin with the adoption of the *San Francisco Bay Plan* (Bay Plan) and *Water Quality Control Plan* (Basin Plan) amendments necessary to implement the Management Plan.

6.3.1 Two-Phased Implementation

Implementation of the long-term management strategy will occur in two phases. Phase I is a voluntary effort by all parties to reach and maintain the long-term disposal goals. As long as the

overall yearly transition goals are met through voluntary efforts, dredging projects will not be required to comply with project-specific in-Bay disposal allocations. During Phase I, the Dredged Material Management Office (DMMO) will record actual disposal volumes as well as keep track of what individual disposal allocations would be if implemented under Phase II. Dredging projects will still be evaluated using existing Bay Plan and Basin Plan policies regarding disposal of dredged material and an analysis of whether in-Bay disposal is the least environmentally damaging practicable alternative pursuant to the Clean Water Act (CWA). However, this feasibility analysis will be more programmatic in nature than the detailed alternative analyses required as part of Phase II. If the LTMS disposal goals cannot be achieved through voluntary efforts, an allocation scheme will be implemented as Phase II.

6.4 MEASURING PROGRESS IN MEETING OBJECTIVES

To determine if the in-Bay disposal volumes are tracking the transition, it will be necessary to maintain accurate records of in-Bay disposal volumes. These records will be maintained by the DMMO, which will also maintain and publish a chart—beginning with data from 1991—showing the transition and long-term in-Bay disposal goals and actual volumes of material disposed in the Bay. The official volume record will be the in situ volume calculated as the difference between pre- and post-dredge bathymetric surveys usually required in permits. Until the in situ volumes are received, the bin volumes reported by dredgers will be used in volume calculations and reporting. By the end of March of each year, in conjunction with its annual meeting, the DMMO will publish (in its annual report) the volume of material disposed in the Bay during the preceding year by project and by total volume. This report will be used in the decision-making process to determine if any change should be recommended between Phases I and II.

6.5 MANAGEMENT ACTIONS

If the disposal volumes show that the goal (transition or long term, as appropriate) is not being met as described below, then the LTMS agencies will take actions to consider implementing Phase II of the plan, where specific volumes will be allocated to each dredging project, limiting their in-Bay disposal volume.

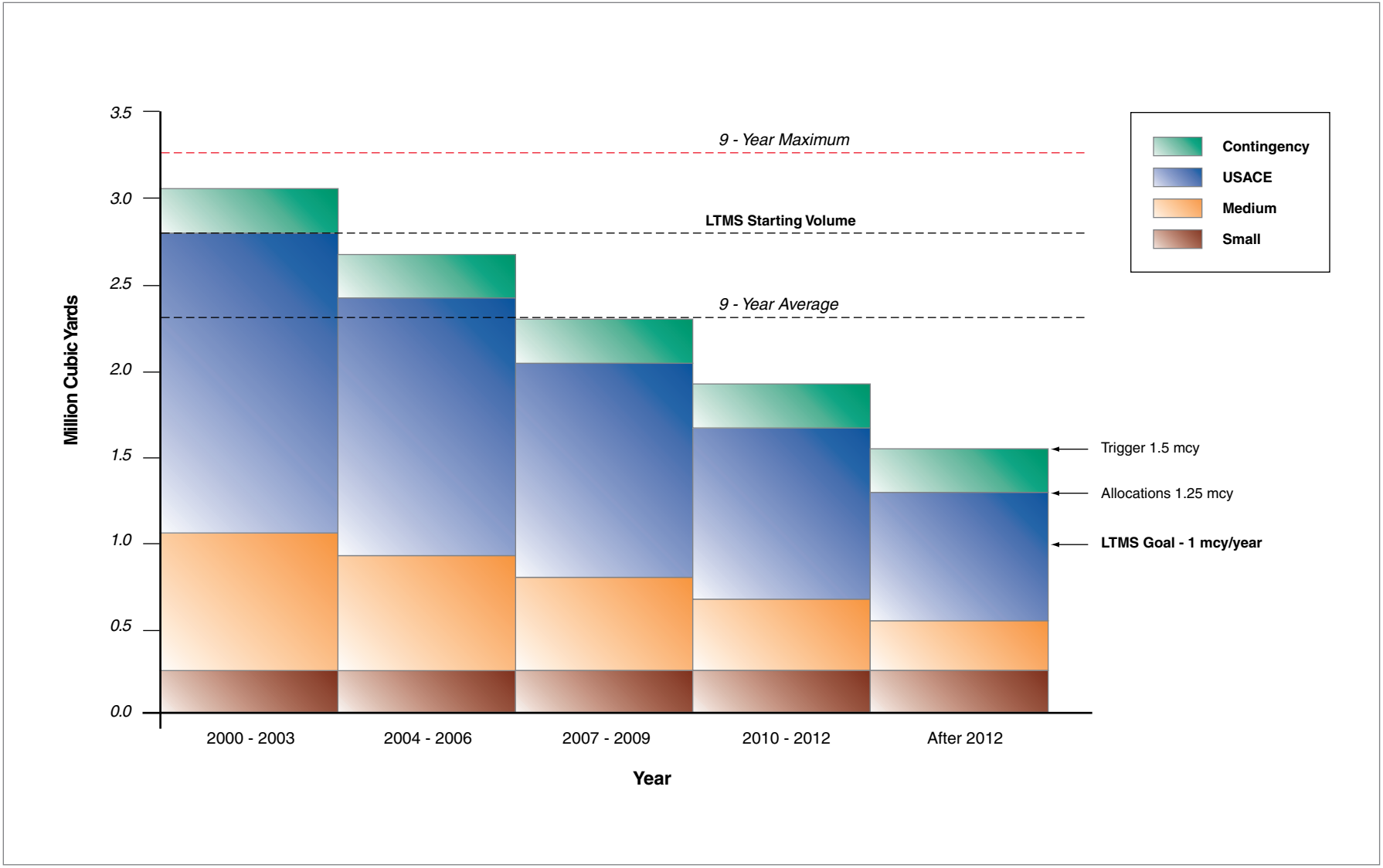
6.5.1 Trigger Mechanism

Two possible mechanisms would trigger Phase II. First, the LTMS Management Committee (Management Committee) may, based on the yearly review of disposal volumes and evaluation framework discussed below, recommend that the BCDC and SFBRWQCB vote to implement allocations. Second, at the triennial LTMS review, if the average in-Bay disposal volume from the prior three years exceeds the in-Bay targets plus the 250,000-cy contingency, the LTMS agencies will initiate consideration of allocations. Using a three-year average should provide adequate time for the interested parties to implement measures to bring in-Bay disposal volumes below the LTMS trigger volumes prior to implementing Phase II. Discussions would begin at an annual workshop immediately after the first year of any exceedance.

Figure 6.1

SOURCE: Final LTMS EIS/EIR, 1998.

In-Bay Transition Allocations



6.5.2 Evaluation Framework

In evaluating whether to implement Phase II allocations, the LTMS agencies will not rely solely on a comparison of in-Bay disposal volumes to target volumes. The agencies will also take into account other factors, such as the status of cooperative efforts to implement beneficial reuse options, exigencies that hamper use of alternative sites, and other relevant factors. The review process described below will follow a consistent framework regardless of the level of review described in sections 6.5.3.1 through 6.5.3.3. Each of the review processes will consider the following factors:

- Magnitude of any exceedance
- Frequency of any exceedance
- Trends or projections for the future (including the Management Plan success criteria listed in Chapter 8)
- Demonstrated efforts by all parties to support beneficial reuse, establishment of upland sites, and funding and use of such sites

Other regional planning factors (Section 6.6) to be used by the agencies to measure efforts to meet the in-Bay disposal goal include:

- Coordination of dredging projects to minimize environmental impacts
- Inter-project coordination to reduce year-to-year variability in in-Bay disposal volumes
- Development of upland sites
- Delta reuse
- Political support for funding of LTMS[1]
- Rehandling facility development
- Combination of projects for reduced mobilization cost and increased efficiency
- Compliance with dredging "best management practices" to minimize the need for dredging (Appendix I)
- Shared cost of disposal and reuse site monitoring

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1 Nothing in this document is intended to influence congressional representatives to favor or oppose any legislation. It is the policy of the Chief of Engineers that all Corps of Engineers personnel fully adhere to the spirit and intent of 18 U.S.C. 1913, which prohibits such advocacy. The purpose of presenting this information is to inform the public of how the USACE carries out its mandate to maintain federal navigation channels.

6.5.3 Yearly Review Process

Every year, the LTMS agencies will review the progress toward the in-Bay disposal goals, investigate any exceedances of the trigger, and recommend changes as necessary. This analysis will be conducted as part of the DMMO annual review and publishing of dredging and disposal data. The review consists of three levels and includes the DMMO, the Program Managers, and the Management Committee, and will be open and documented. This process is the same regardless of which phase it is in or whether a recommendation is being made to change phases. Chapter 8 further discusses LTMS program reviews.

6.5.3.1 Level I Review

The Level I review will be accomplished by the DMMO and considers the following factors and produces a report documenting the results of the review:

- Disposal volumes to each disposal environment for the year, prior year's disposal volumes and relation to the in-Bay site limits and applicable disposal goals
- Projections of the following year's disposal volumes in relation to the in-Bay site limits and application disposal goals
- Magnitude of exceedance of any trigger(s) or annual target
- A statistical analysis of both the frequency and magnitude of any trigger(s) or annual target (Appendix J)
- An investigation of any causes of trigger or annual target being exceeded
- An evaluation of the LTMS success criteria (see LTMS Management Plan Success Criteria, Chapter 8)
- A workshop to obtain input from interested parties if a recommendation to go into or out of Phase II (allocation) is under consideration

6.5.3.2 Level II Review

If the DMMO concludes further actions need to be taken based upon the programmatic review, then the Level II review will be conducted by the Program Managers to evaluate the causes of any trigger exceedances or other issues identified by the DMMO and provide written recommendations to the LTMS Management Committee.

6.5.3.3 Level III Review

The Level III review will be performed by the Management Committee to validate the written report submitted by the Program Managers. A workshop will be held to obtain input from interested parties regarding identifiable issues and potential actions to be taken. Based upon the input from interested parties and any other factors it deems appropriate, the Management Committee will prepare its recommendations for any actions needed to resolve the identified issues, and forward the report with

any modifications to the BCDC and the SFBRWQCB. If the Management Committee recommends that the Phase II allocations be made, the BCDC and SFBRWQCB will consider whether to implement allocations within 60 days. The BCDC and SFBRWQCB will conduct a public hearing on why mandatory allocations should not be made, and the allocation program will be instituted, unless the BCDC and SFBRWQCB vote against implementing allocations. The vote on whether or not to go into allocations would be based on a majority of those present and voting.

6.5.4 Triennial Review Exceedance

As part of the three-year review, if the DMMO determines that the annual average disposal volume at the in-Bay sites over the preceding three years exceeds the trigger volume for that period, then the same process as described above for the annual review will be followed. However, the BCDC and SFBRWQCB will vote on whether or not to implement allocations regardless of the Management Committee's recommendation.

6.5.5 Phase Transition

If an exceedance is documented at a triennial review or if the Management Committee recommends that allocations should be implemented, then the review process described above will begin. The process begins with the DMMO review and culminates in a public hearing, with final decisions on implementing Phase II made by the BCDC and the SFBRWQCB.

The DMMO will initially evaluate the existing information in light of factors above. The DMMO will pass all information on to the Program Managers, along with a recommendation. The Program Managers will consider the information in light of the factors and will make a recommendation to the Management Committee. The Management Committee will make a final recommendation to BCDC and the SFBRWQCB. If, in any year, the Management Committee recommends implementation of Phase II or if the target at a three-year review is exceeded, then the allocations will be implemented unless both the BCDC and the SFBRWQCB vote against allocations.

6.5.6 Allocations

The annual starting volume for in-Bay disposal, including the contingency volume of 250,000 cy, is 3.05 mcy. The existing volume limits at the federally designated dredged material disposal sites are not scheduled to change (see Section 1.2.2.1, Chapter 1). Although the cumulative disposal volume allowed at these sites is greater than the total in-Bay limit of 3.05 mcy, this approach is intended to allow flexibility in management of the individual disposal sites and dredging activities.

Individual allocations will be based on the three-year allocations that would be in place had the LTMS agencies initiated an allocation system upon adoption of state policies. Allocations will be given to medium dredgers and the USACE. Small dredgers, which cumulatively generate 250,000 cy per year, will not be given allocations. The starting volume reflects actual disposal activity while taking into account the historical variability of in-Bay disposal volumes and the level of uncertainty inherent in such predictions, and will decrease by approximately 387,500 cy once every three years until allowable annual in-Bay disposal volumes do not exceed 1.5 mcy in January 1, 2013 (Figure 6.1).

The overarching goals of the LTMS are to reduce in-Bay disposal to 1.0 mcy per year and to increase the beneficial use of dredged material and use of the federal deep ocean disposal site. Achievement of this goal, however, takes into account: (1) the variability in dredging needs; (2) the time necessary for new beneficial reuse sites to come on-line, new equipment and practices to be implemented, and funding mechanisms and arrangements to be established; and (3) the potential economic impacts to dredgers and ways to reduce such impacts. Therefore, in-Bay disposal will ultimately be reduced from the initial volume of approximately 2.8 mcy (plus the contingency volume) per year to 1.5 mcy per year (rather than the LTMS goal of 1 mcy per year) over a 12-year period.

An allocation does not confer a right to dispose of dredged material in the Bay. Project proponents must still satisfy CWA requirements and Bay Plan feasibility requirements, and comply with any environmental window limitations, site capacity volume limitations, and permit conditions exactly as required in Phase I. If an alternative other than in-Bay disposal is practicable and feasible, in-Bay disposal will not be allowed.

Once a project has used its total in-Bay disposal volume allocation, unless the project would qualify for a portion of the contingency volume, no dredged material from the project could be disposed in the Bay until a new allocation is received. The basic options available to a project would be not to dredge until a future allocation is received or to use alternative disposal options.

Unused portions of annual volume allocations may be banked from year to year. If Phase II is invoked, dredging projects would receive an allocation based on what their allocations would have been had the mandatory allocations begun at the inception of the transition. Trading of allocations, or portions of them, will be considered by the LTMS agencies as a potential management tool prior to implementation of Phase II and only after opportunity for public comment. It should be noted that the USACE could not participate in trading.

6.5.6.1 Contingency

A contingency allocation of 250,000 cy per year of in-Bay disposal would be available for unforeseen dredging situations. This contingency allocation would not affect individual volume allocations, but would be in addition to the overall in-Bay disposal volume target. This allocation volume will not be given out automatically. Rather, dredgers would apply to the DMMO and document their need and applicability for contingency volumes, subject to review and approval by the Management Committee. Unforeseen dredging needs involve situations where unanticipated shoaling occurs substantially beyond normal shoaling patterns and would be determined after condition surveys.

6.5.6.2 Emergencies

Emergency dredging would be based on agency definitions for emergency permit situations. BCDC's definition of an emergency is found in CCR Title 14, Section 10120, and is defined as "…a situation that poses an immediate danger to life, health, property, or essential public service and that demands action by the commission more quickly than the Commission's normal permit procedures would allow. A situation that poses an immediate danger to life, health, property, or essential public services may include, for example, an accident, sabotage, vandalism, fire, flood, earthquake, or soil or geologic movements."

The USACE regulations for permits in 33 CFR 325.2(e)(4) defines emergency as "…a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures."

The USACE regulations for Operation and Maintenance of Army Corps of Engineers Civil Works Projects involving the discharge of dredged or fill materials into waters of the U.S. or ocean waters in 33 CFR 335.7 state, "Emergency means a situation which would result in an unacceptable hazard to life or navigation, a significant loss of property, or an immediate and unforeseen significant economic hardship if corrective action is not taken within a time period less than the normal time needed under standard procedures."

6.5.6.3 Requests for Increased Allocations

Project proponents who propose in-Bay disposal for either new dredging projects that have not previously been assigned allocations or existing projects needing increased allocations will be required to prepare a detailed project-specific analysis regarding alternatives to in-Bay disposal pursuant to the CWA and BCDC's policies for review by the DMMO. Granting of a new allocation may be made only if the DMMO review of the alternatives analysis shows in-Bay disposal to be the only practicable and feasible alternative. This analysis will also take into account applicant and regional efforts to implement alternatives to in-Bay disposal, the necessity for the project, and other relevant factors. The volume allocated would be the minimum yearly average volume needed to maintain the facility. However, this in-Bay disposal allocation would be reduced, similar to other Bay projects, as if the project had been part of the allocation plan when the transition period started. The DMMO would determine, subject to Management Committee review, whether the new allocation should be made and whether it should be a one-time or ongoing allocation.

6.5.7 Alternatives Considered

The transition approach described in the preceding sections was developed by the LTMS agency staff in coordination with the interested parties. Facilitated workshops were held over the course of 18 months as the approach was formulated and refined. Consequently, the selected approach balances many interests. The LTMS agencies considered a range of alternatives to implement the transition, from strict in-Bay limits that decrease over time on a first-come, first-served basis, to relying solely on voluntary efforts to implement the LTMS goals. Other aspects were discussed, including various methods to trigger transition from Phase I to Phase II, and how to treat contingency volumes and emergency dredging under the transition. Appendix Q includes four position papers that were issued by the LTMS agencies over the course of this process. These documents help to explain the present transition process and the alternative approaches considered.

6.6 REGIONAL PLANNING

Many examples of regional approaches to long-term planning can be found in the Bay Area and throughout the United States. Many localities have elevated planning for public services and facilities to the regional level, due to their recognition that planning for these and other activities is not purely local in nature and requires a regional approach. Today many single-purpose regional agencies and

special districts provide planning for water supply, transportation and waste management. Regional planning requires strong leadership to define the issues, to develop consensus on dealing with them, to build support for a program, and to marshal the resources needed for implementation.

BCDC and the SFBRWQCB are Bay Area regional planning agencies which have developed plans to address specific resource and/or development issues. As described in this document, approximately a decade ago those agencies along with the USACE and U.S. Environmental Protection Agency (USEPA) joined together with navigation interests, fishing groups, environmental organizations, and other members of the public to establish a long-term regional planning program for dredged material. This Management Plan is the result of that regional planning effort. Nationally, there are several programs which address dredged material management through regional planning approaches. These include the National Dredging Policy, the National Estuary Program, the recent report to Congress by the Department of Transportation, and the USACE Engineering Regulation.[2,3,4,5]

Regional planning requires close coordination and planning at all governmental levels and with all aspects of the private sector. The most successful regional planning efforts are those which have the ability to develop regional plans and the regulatory authority to implement their plans. Although the LTMS agencies have existing regulatory authority to implement most of the measures presented in this Management Plan, full implementation will likely require additional actions on the part of these agencies in coordination with the interested parties. Full implementation will require planning activities beyond preparation of the Management Plan. This section discusses several specific advantages of continued development of regional planning activities and the consideration of areas not currently addressed in the Management Plan.

6.6.1 Definition of Regional Planning

Regional planning involves cooperative efforts by dredgers, agencies and other interested parties to promote and implement the LTMS goals. These efforts include cooperatively using beneficial reuse sites; coordinating in-Bay disposal projects to prevent spikes in total disposal volumes and minimizing variability to reduce the chances of triggering Phase II allocations; and coordinating monitoring and management of disposal sites to reduce redundancy and costs.

6.6.2 Need for and Advantages of Regional Planning

Based on average annual volumes for medium and small dredgers and anticipated near-future USACE maintenance volumes, it appears as though in-Bay disposal will be well below the in-Bay disposal goals at the beginning of the transition. However, over time it will become increasingly difficult to meet these goals in the event long-range regional planning efforts are not taken, for instance, to obtain

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2 The Dredging Process in the United States: An Action Plan for Improvement, December 1994 http://www.epa.gov/OWOW/oceans/ndt/report.html) or Appendix D of LTMS PLTMS EIS/EIR, Volume II.

3 Available at http://www.epa.gov/nep/nep.html.

4 An Assessment of the U.S. Marine Transportation System, A Report to Congress, September 1999 (http://www.dot.gov/mts) .

5 ER 1105-2-100, Planning Guidance Notebook, Appendix E18, April 22, 2000.

necessary USACE funding to implement disposal and reuse alternatives (see Appendix L), and bring multi-user beneficial reuse projects on-line.

Dredging is extremely expensive and time-consuming. Mobilization and demobilization costs often range from 33 to 67 percent of the cost of a dredging episode. Moreover, SF-DODS monitoring costs range from $750,000 to over $1,000,000 a year and are largely independent of the volume of material. Faced with such costs, dredging sponsors generally delay dredging until absolutely necessary. Improved regional planning would allow ports, harbors, marinas, federal and state agencies, and environmental groups to coordinate dredging projects, in an effort to streamline tasks such as mobilization or monitoring. This will create greater economic efficiencies, while maintaining safe navigation and associated commerce vital to the Bay Area's economy. In addition, establishment of a Regional Planning Group will help ensure that dredged material management plans incorporate environmental considerations in the identification of short-term and long-term disposal alternatives, consider methods to reduce dredging, and maximize the beneficial use of dredged materials. Better coordination of dredging projects and cooperation among dredging project proponents increase the likelihood that alternative disposal sites (e.g., outside of the Bay) will be used in economies of scale enabling smaller dredging projects to consider disposal or reuse sites not practicable for individual projects.

Both BCDC and the SFBRWQCB have adopted regional plans for the Bay. Chapter 10 of this document presents the relevant elements of these plans that have been changed to allow the BCDC and SFBRWQCB to implement the long-term dredging and disposal strategy developed through the LTMS. For effective and appropriate implementation of this strategy, and to ensure maximum overall benefits to the region, it is critical that the implementation also be considered in light of other regional planning activities. A regional planning initiative would ensure that this coordination would occur, and would strive to achieve and maintain consistency with the Bay Plan, the Basin Plan and other plans such as the Baylands Ecosystem Habitat Goals report recently issued by the San Francisco Bay Area Wetlands Ecosystem Goals Project. One initial role of a regional planning initiative would be to identify other regional plans and planning activities and establish coordination mechanisms.

Effective regional planning efforts strive to preserve local authority over land use matters of purely local concern. Regional planning in most cases is more likely to empower local governments by giving them a greater voice in determining the future of their regions and protecting them from unregulated impacts from outside their communities.

The LTMS agencies implement the following measure:

- *To achieve long-term dredging, disposal, and reuse goals for the Bay Area, the LTMS agencies will create a regional planning initiative to coordinate dredging projects and foster greater economic efficiencies, ensure consideration of environmental issues and mechanisms to minimize potential impacts, maximize beneficial use of dredged material, and facilitate project consistency with other regional planning efforts and affected local communities.*

6.7 ELIMINATING UNNECESSARY DREDGING

The need for individual projects and the necessary depths for projects vary on a case-by-case basis. During the scoping period for the LTMS EIS/EIR it was concluded that the assessment of individual dredging projects was beyond the scope of that document. This Management Plan presents several measures ensuring that dredging occurs only as necessary and in a manner that minimizes environmental risk and expenditure of public funds.[6]

6.7.1 Dredging by USACE

USACE policy states "Dredging shall be accomplished in an efficient, cost-effective, and environmentally acceptable manner …"[7] and indicates the USACE is committed to conducting dredging and managing dredged material in an environmentally sound manner. The USACE in its initial evaluation of the benefits and costs of each project determines the need for ship channels and other navigation features. This assessment is periodically reviewed and updated to reflect changing conditions over time. The USACE's dredging projects need to be economically justified through a formal benefit–cost analysis and will not be dredged until the benefit cost ratio is greater than one. If the costs to construct or maintain a particular project exceed the expected benefits, the project is not economically justified.

The USACE, San Francisco District has also taken actions to reduce maintenance dredging requirements over the past 12 years. These actions include reducing over-depth dredging, realigning channels, and prioritizing dredging projects. Reducing over-depth dredging was implemented in the late 1980s. Before this time, the USACE typically paid for over-depth dredging up to two feet below project depths. Recently, no payment has been made for dredging below project depths and the amount of allowed over-depth dredging has been reduced. When necessary, the USACE realigns channels based on channel conditions and sedimentation rates. Realignment is limited by navigation considerations and channel authorization limits. No formal alignment evaluation procedure exists. In 1996, the USACE realigned the Napa River Channel to take advantage of deeper, natural portions to minimize the need (and cost) of dredging. By realigning the channel, the USACE avoided the need to dredge 200,000 cy for each dredging cycle. Prioritizing dredging projects is a program applied to all USACE Maintenance navigation projects. Maintenance dredging needs for each project are categorized according to usage and costs. Greater usage and lower cost (relative to cargo tonnage) categories are assigned higher priorities. Available funds for maintenance dredging are committed to higher priority categories first.

In the LTMS report *Reducing Dredging Requirements* (LTMS 1992), the feasibility of reducing the maintenance dredging requirements for five federal navigation channels (the Petaluma River, Pinole Shoal, Redwood City Harbor, San Rafael Creek, and Suisun Bay Channel) in the San Francisco Bay

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6 The majority of the federal military facilities around the Bay shoreline have been closed in recent years. These facilities include the former Mare Island Naval Shipyard, Naval Air Station Alameda, the Naval Supply Center Alameda and Concord Navel Weapons Station. As these areas are developed for civilian uses, some dredging may still be needed, but significant reductions to in-Bay dredging have already resulted from these base closures.

7 USACE ER 1130-2-520, Navigation and Dredging Operations and Maintenance Policies, Chapter 8, 29 November 1996.

region was identified. Twenty-seven alternatives to reduce maintenance dredging requirements were identified for these projects. Of these, 12 were considered favorable, i.e., they had benefit-cost ratios of greater than one and involved modest reductions to the required maintenance dredging volumes (10 percent to 20 percent). Some of the alternatives included changing dimensions of channel and flattening side slopes.

To ensure that USACE dredging occurs which is necessary and which minimizes environmental risk and expenditure of public funds, the LTMS agencies implement the following measure (as previously stated in the EIS/EIR for the LTMS):

- *As previously indicated in the EIS/EIR for the LTMS, in 2001, the USACE will initiate preparation of dredged material management plans for the federal maintenance dredging projects in San Francisco Bay, and perform NEPA reviews as required, including supplementing the* Composite Environmental Impact Statement for Maintenance Dredging. *These reviews will include consideration of potential project design changes to reduce the dredging volumes necessary to meet navigational needs, such as modifications to channel widths and depths.*

6.7.2 Dredging by Ports

For ports, determining the need for dredging will continue to be based not only on site-specific aspects but also on the particular port's competitive position compared to other ports in the region and, particularly for intermodal cargo, to other ports up and down the coast that compete for intermodal trade.[8] The existence of deeper channels and berthing areas is only one factor affecting the distribution of intermodal trade. This competition also varies due to factors such as rail connections and routes, origin and destination of intermodal cargo, and alliances between rail and shipping carriers. This complex and dynamic analysis was beyond the scope of the LTMS EIS/EIR, as is true for this Management Plan.

Ports have no control over the increasing drafts of cargo ships. However, failure to provide sufficient channel depths will usually result in a loss of port calls and the revenue that would accrue to the regional economy. Instead of a project-by-project assessment of dredging needs, an analysis of historic dredging volumes and of potential factors that might affect the historic volumes was presented in the LTMS EIS/EIR. From this analysis, a planning estimate of the expected volume of dredged material over the next 50 years was derived. Furthermore, the LTMS EIS/EIR evaluated how best to distribute the expected volume of dredged material between the three disposal environments; to prepare for a worst-case scenario, the high range of the planning estimate—up 296 mcy over a 50-year period—was used.

Similar to the manner in which the USACE evaluates the costs and benefits of each new project, in order to determine the need for specific ship channels and other navigation features, the needs of the

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8 Intermodal transportation means the convenient, rapid efficient, and safe transfer of people or goods from one mode to another during a single journey to provide the highest quality and most comprehensive transportation service for its cost (San Francisco Bay Conservation and Development Commission and the Metropolitan Transportation Commission, April 18, 1997 as amended September 18, 1997, San Francisco Bay Area Seaport Plan).

region's ports are assessed periodically and updated to reflect changing conditions over time. Each of the major ports, within the region, engages in a periodic review of past, present, and future port operations, as a part of the planning process for the *Seaport Plan* (BCDC and MTC 1997). During such reviews, the ports may consider the feasibility of structural and other measures that could reduce dredging requirements. Only dredging that is necessary should occur. The following implementation measure will serve to ensure this and minimize environmental risks and expenditure of public funds:

- *As previously stated in the EIS/EIR for the LTMS, "BCDC, in consultation with other LTMS agencies, will continue to work with area ports within the framework of its joint seaport planning process within the Metropolitan Transportation Commission to identify potential means to reduce the need for dredging while meeting the navigational needs of each port facility." Further, within the framework of its seaport planning process, BCDC will consider the need for dredging — in addition to minimizing fill.*

6.7.3 Regulatory Requirements

As a part of the existing authorization process, the LTMS agencies—individually or through the DMMO—require the project proponent to provide certain information regarding proposed dredging projects in order to determine whether such proposals are necessary and whether they involve dredging the minimum volume necessary. This information includes discussion regarding the need and purpose of the proposed project, pre-dredging hydrographic surveys of the proposed dredging footprint and existing depths or elevations, and total volumes proposed for dredging.

The permitting LTMS agencies will issue permits or authorizations containing certain requirements, which will be used to ensure that projects dredge the minimum volume necessary (i.e., approved volumes), including post-dredging hydrographic surveys and volume reports. Following project authorization and completion, such data can be used to determine if dredging in excess of the approved volume or outside the approved footprint occurred; if so, the permitting LTMS agencies can pursue such activities as violations potentially subject to appropriate fines and penalties. To ensure that projects dredge the minimum volume necessary, the LTMS agencies implement the following measure:

- *As a part of the permitting process, the LTMS agencies will require that permit applications include data demonstrating whether proposals involve dredging the minimum volume necessary, and include measures in permits that ensure projects are carried out in compliance with the authorized terms.*

6.7.4 Policy Requirements

Several of BCDC's Bay Plan policies ensure that projects involve dredging the minimum volume necessary. For example, Bay Plan Dredging Policy 2 states in part that: "Dredging should be authorized when the Commission can find: (a) the applicant has demonstrated that the dredging is needed to serve a water-oriented use or other important public purpose…[and] (d) the siting and design of the project will result in the minimum dredging volume necessary for the project…".

BCDC has other Bay Plan policies in place that are aimed toward reducing or eliminating unnecessary dredging. For example, the Bay Plan policies regarding recreation state, in part, that when considering the location and approval of new recreational marinas, the BCDC considers "unsuitable sites" to be those "…that tend to fill up rapidly with sediment.…" Further, with regard to such proposals, the recreation policies state that "frequent dredging [at such marinas] should be avoided" (BCDC 1969, as amended). Further, recent changes to several Bay Plan policies and Bay Plan maps have been made to reduce unnecessary dredging throughout the Bay. These revisions as well as the full text of the Bay Plan Dredging policy can be found in Chapter 10 of this Management Plan.

6.8 REDUCING DREDGING NEEDS

Dredging is necessary because suspended sediments settle out in navigation channels, port berthing areas, and marinas. Some of these suspended sediments are introduced by erosional processes in streams and rivers tributary to the Bay. However, the Bay is relatively shallow and supports extensive areas of mudflats. Large volumes of sediments are reworked in the Bay each year by wind and tides. Maintenance dredging would be needed even if new sediment sources were removed. Recent research indicates that there may be a reduction in sediments loading to the Bay that could result in erosion to its marshes and mudflats. Understanding these processes and their interaction with the Bay dredging and disposal projects requires a watershed approach. While it is a national dredging principle to encourage dredged material managers to become more involved in watershed planning, the emphasis has been to reduce harbor sediment contamination. Therefore, the LTMS agencies implement the following measure:

- *As part of a regional planning initiative, the LTMS agencies will establish a work group to explore coordination with watershed planning efforts to improve the understanding and management of sediment dynamics in the Bay related to natural and human processes (including dredging and disposal, water diversions, and shoreline armoring), and to establish links with the Natural Resources Conservation Service.*

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CHAPTER 7

7.0 IMPLEMENTATION OF BENEFICIAL REUSE AND DISPOSAL PROJECTS

7.1 INTRODUCTION

Beneficial reuse involves using dredged material for a variety of purposes, such as habitat restoration, rather than disposing of it as a waste. Because beneficial reuse projects result in benefits beyond those associated solely with dredging, diverse stakeholders have supported beneficial reuse opportunities through project implementation, assistance, and funding. The broad consensus among Bay Area stakeholders for beneficial reuse is a cornerstone in implementing the long-term strategy for dredging in the region. Because of the strong commitment among the dredging and environmental communities to support and implement beneficial reuse, the LTMS agencies have decided not to implement allocations limiting in-Bay disposal, but instead rely on the voluntary efforts of the various constituencies to achieve the LTMS goals. Only if these voluntary efforts are not successful will the LTMS agencies implement allocations.

Successful implementation of the LTMS is dependent on the availability of beneficial reuse sites for dredged material. The LTMS technical studies concluded that the following reuse options could feasibly provide significant capacity for material from Bay Area projects: (1) wetland habitat restoration in diked baylands; (2) facilities along the shoreline to rehandle, dry and process dredged material for use as landfill cover or other construction purposes (including confined disposal facilities); and (3) levee rehabilitation. Another reuse option involves using dredged material at tidal areas to create habitat. Reuse opportunities exist around the Bay but are still limited (see Figure 7.1).

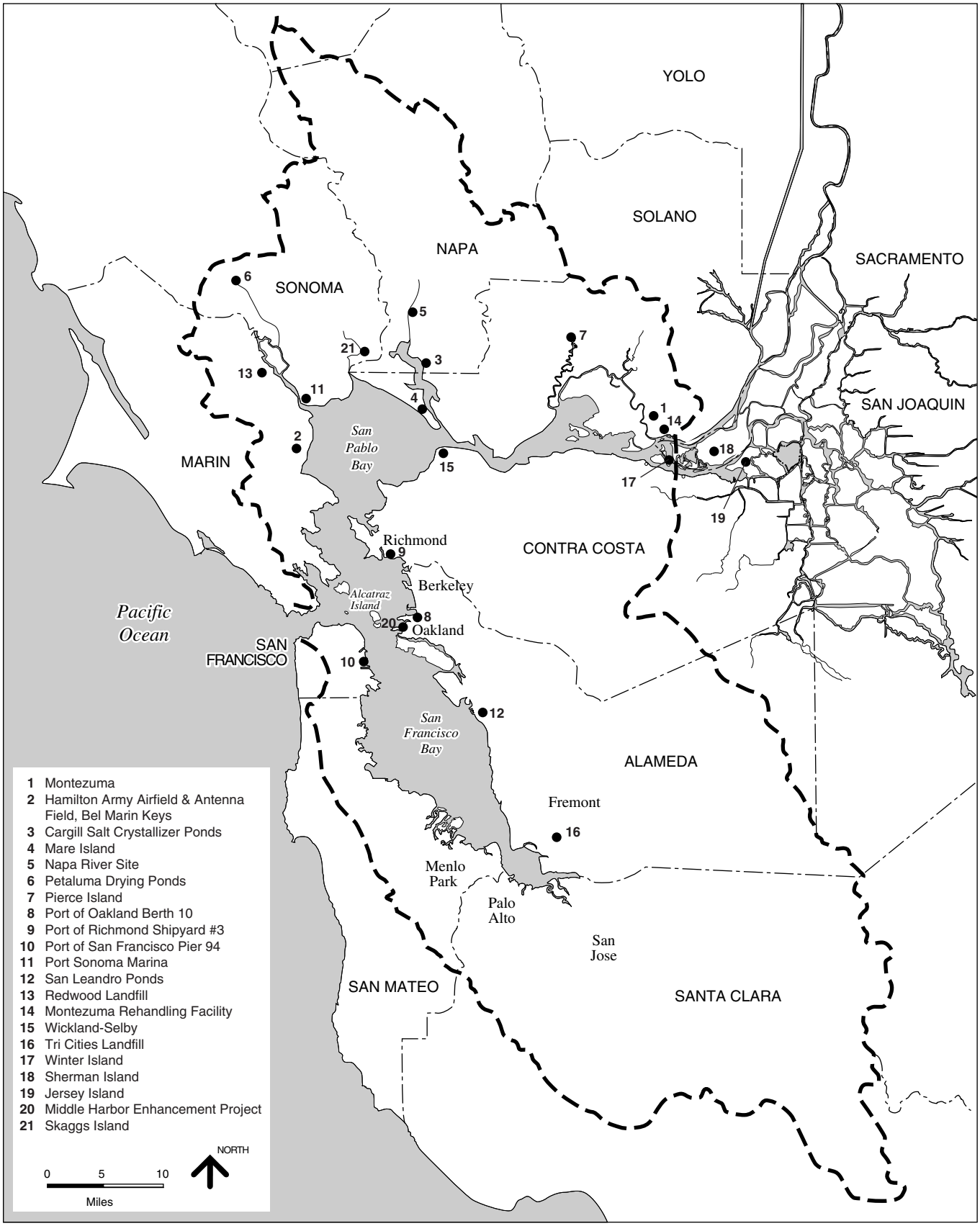
The LTMS studies determined that reuse projects are typically more expensive and difficult to implement than open-water disposal. However, large multi-user projects can achieve economies of scale and lower costs. Several large reuse sites are in the process of being implemented: the Hamilton Wetlands Project in Marin County and the Montezuma Wetlands in Solano County. The authorization of the Hamilton Wetlands Project in the federal Water Resources Development Act of 1999 provides not only for the cost of site construction, but also for the additional costs to bring dredged material to the site from federal channels, which will help overcome the cost-differential between open-water disposal and reuse. The Montezuma project proposes to accept and bury underneath the site, material that is deemed unsuitable for aquatic disposal. In combination, these two projects alone should provide for implementation of the long-term reuse goals, at least over the next decade.

Chapter 3 identified the steps involved with obtaining authorization to take dredged material to beneficial reuse sites. Chapter 7 focuses on the steps or issues (planning, engineering, environmental

Figure 7.1

SOURCE: Final LTMS EIS/EIR, 1998

Existing and Potential Beneficial Reuse and Upland Disposal Sites



Beneficial Reuse and Disposal Options

- Wetland habitat restoration
- Rehandling facilities and end-uses (e.g., landfill cover)
- Levee rehabilitation
- In-Bay habitat creation

and regulatory) involved with the implementation of reuse projects.[1] Chapter 7 identifies potential reuse sites, constraints involved with implementation, and potential solutions. This chapter also reiterates information contained in the LTMS EIS/EIR that discussed in general terms potential impacts associated with the various reuse options; this information is provided to inform potential project sponsors of the types of issues to consider and address during project planning and implementation. Chapter 7 also includes measures to facilitate implementation of beneficial reuse projects.

7.2 LTMS IMPLEMENTATION MEASURES

The LTMS agencies will implement several measures to achieve the goals of the LTMS as they relate to the implementation of beneficial reuse and disposal projects. These measures are shown as bulleted, italicized text.

7.3 BENEFICIAL REUSE AND DISPOSAL OPTIONS

7.3.1 Wetland Restoration

Wetland restoration projects involve placing dredged material at diked baylands, which have subsided below elevations suitable for the establishment of tidal wetland habitat. Dredged material can be used to raise existing elevations to allow wetland vegetation to establish, thereby accelerating the restoration process at these sites. As indicated in the text box, these sites are identified using BCDC's diked historic baylands definition and thus include: "all areas that: (1) were historically part of San Francisco Bay, including the Bay's marshlands as of 1850; (2) are hydrologically no longer part of San Francisco

Diked Historic Baylands v. "True" Upland Sites

In earlier phases of the LTMS, sites located outside the Bay where dredged material could be used beneficially (e.g., for habitat creation, construction fill, or levee restoration) were referred to as Upland/Wetland/Reuse or "UWR." This earlier definition, however, made it difficult to differentiate between "true" uplands (e.g., landfills) and diked baylands (i.e., seasonal wetlands and other important habitats).

To better define, categorize, and manage existing habitat type and function, sites proposed for beneficial reuse that are located in diked historic baylands (e.g., wetland restoration projects) and not in "true" upland areas are defined as "all areas that: (1) were historically part of San Francisco Bay, including the Bay's marshlands as of 1850; (2) are hydrologically no longer part of San Francisco Bay or its marshlands, as a result of diking; (3) are not "salt ponds" or "managed wetlands"; (4) have not been filled; and (5) are not urbanized." (BCDC 1982).

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1 More specific engineering guidance and additional information regarding the issues and elements to consider in designing and implementing beneficial reuse projects can be obtained from the following LTMS documents: (1) LTMS. 1994a. *Engineering Conceptual Descriptions of Reuse Options.* Prepared by Gahagan & Bryant Associates, Inc. with ENTRIX, Inc.; (2) LTMS. 1995b *Reuse/Upland Site Analysis and Documentation, Feasibility Analyses of Four Sites (Volume II), Final.* Prepared by Gahagan & Bryant Associates, Inc. with ENTRIX, Inc. 102 pp. with appendices. (3) LTMS. 1995a. *Reuse/Upland Site Analysis and Documentation. Reuse/Upland Site Ranking, Analysis and Documentation (Volume I), Final Report.* Prepared by Gahagan & Bryant Associates, Inc. with ENTRIX, Inc. 410 pp. with appendices.

Bay or its marshlands, as a result of diking; (3) are not "salt ponds" or "managed wetlands"; (4) have not been filled; and (5) are not urbanized." Consequently, these areas will include those that are "currently or historically subject to tidal action." Dredged material can also be used to create elevated areas at restoration sites that will be above or inundated only during maximum high tides or above the reach of the tides; these tidal and seasonal wetlands would provide additional habitat diversity in areas where tidal wetland habitat was restored, reestablishing a more natural shoreline that can respond to sea level rise and other natural processes. At habitat restoration sites, dredged material can also be used to construct on-site berms, separate tidal and seasonal wetlands within a site, develop drainage control at areas not influenced by tidal action, and fill low areas where undesirable salt pans form (i.e., at duck clubs within managed wetland areas) (LTMS 1998).

To date, dredged material has been used to restore tidal wetlands at Muzzi Marsh (Marin County), Faber Tract (Santa Clara County), and Salt Pond No. 3 (Alameda County).[2] More recently, tidal wetlands were restored using dredged material at the Sonoma Baylands site (Sonoma County).[3] In the Delta region, dredged material has been used to restore wetlands at Donlin Island and Venice Cut (Sacramento County). Appendix M identifies potential and existing wetland restoration projects.

The Hamilton Wetlands project will restore approximately 2,600 acres of diked baylands (including the Bel Marin Keys parcel). A joint project of the California Coastal Conservancy, BCDC, and the USACE, the project will be constructed as a multi-user project with the principal goal of restoring a mix of wetlands habitat. A conceptual plan has been prepared by the state, a feasibility study has been completed by the USACE, and the environmental review is completed. Hamilton was authorized as a federal project in the 1999 Water Resources Development Act at a total cost of $55 million. In addition to site preparation costs, the authorization will pay for the differential between open water disposal and reuse at Hamilton for federal projects. This funding removes a major impediment to beneficial reuse. The project is presently in final design and use of dredged material is projected to begin in 2002.

The Montezuma Wetlands Project will restore 2,000 acres of wetlands using approximately 17 million cubic yards (mcy) of dredged material. Unlike the Hamilton site, Montezuma is proposed as a private site that will charge a tipping fee for disposal and will accept material that is not suitable for unconfined aquatic disposal.

The LTMS agencies implement the following measures to facilitate wetland reuse projects:

- *With the California Coastal Conservancy, BCDC and USACE will implement the Hamilton Wetlands Restoration project. Further, the LTMS agencies will continue to participate in the Hamilton Restoration Group.*

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2 For more detailed analysis of these sites, see LTMS 1994c, A Review of the Physical and Biological Performance of Tidal Marshes Constructed with Dredged Material in San Francisco Bay, California, Draft Report. Prepared by Gahagan & Bryant Associates, Inc. with Bechtel Corporation, ENTRIX, Inc., and Philip Williams & Associates. 194 pp. with appendices.

3 The Sonoma Baylands project used a new design concept where dredged material was placed below the ultimate marsh plain allowing for natural on-site sedimentation during restoration. This design aspect was developed to reduce the potential of over-filling the restoration site.

- *The LTMS agencies will continue to work to resolve issues and process applications for implementation of the Montezuma Wetlands Project.*

7.3.2 Rehandling Facilities and Potential End Uses

Prior to Reuse at Landfills

Project proponents should:

(1) Contact landfill operators regarding site-specific Waste Acceptance Criteria

(2) Determine whether on-site drying facilities are available or investigate off-site rehandling options

Rehandling facilities are typically located adjacent to the Bay where dredged material is transported, dried or processed (i.e., contaminant or salinity content diluted or removed), excavated, and, in most cases, eventually taken to an off-site location for use as landfill cover or construction material. Fine-grained materials (silts and clays)—the predominant material dredged from the Bay—and coarse-grained materials (cobbles, gravels, and sands), as well as material unsuitable for unconfined aquatic disposal (NUAD) could be taken to rehandling facilities. In the Bay Area, rehandling facilities have been constructed as either temporary (e.g., Port of Oakland's Berth 10 facility) or permanent (e.g., Port Sonoma marina), and are typically comprised of single or multiple cells where material is placed and dried. These existing facilities have been used to process relatively small volumes of material or material from specific dredging projects. Appendix M identifies existing and potential rehandling facilities (existing facilities are identified on Figure 7.1).

The clays and fine silts that comprise most dredged material from the Bay are often suitable for use as cover, capping, or lining material at landfills. The use of dredged material at landfills has high potential because landfills: (1) need a large amount of material for daily cover and final capping; (2) typically have limited natural resource values; (3) are designed to contain contaminants and manage runoff; and (4) do not usually have adequate on-site sources of cover or capping material. Appendix R provides more information about taking material to landfills. Most landfills cannot accept material until it has first been dried to acceptable moisture levels. Furthermore, most landfills do not have on-site drying facilities. Therefore, prior to delivery to and acceptance at a landfill, dredged material will need to be dried at an off-site rehandling facility. At this time, however, such facilities are limited in number and capacity in the Bay Area, and more are needed in order to facilitate reuse of dredged material at landfills.

7.3.3 Levee Rehabilitation

The reclaimed islands and other low-lying areas of the Sacramento and San Joaquin River Delta region are surrounded by a 1,100-mile levee system that protects infrastructure (e.g., public highways, utility lines, private and public land uses, recreational areas), environmentally sensitive habitat, and the Delta's freshwater supply (i.e., by preventing salinity intrusion). Initially, the Delta levees were built with peat material taken from adjacent channels and sloughs. More recently, the levees have been constructed with materials containing a higher percentage of mineral soils from adjacent channels. The high organic matter of these materials together with an overall disparity in levee construction standards throughout the Delta have resulted in levee decomposition, subsidence and

instability.[4] In 1988, the Delta Flood Protection Act was passed (Senate Bill 34) which directed the DWR to develop and implement flood protection projects at eight western Delta islands.[5] In 1994, the Federal Emergency Management Agency determined that 39 reclamation districts in the Primary Flood Control Zone of the Delta did not fully comply with the state's Flood Hazard Mitigation Plan, which outlines levee rehabilitation standards.

Material dredged from the Bay could be used to increase levee crests, toes, and landward slopes bringing existing levees up to modern design standards. The LTMS estimates indicate that approximately 26 mcy of dredged material could be used in the Delta over the next 50 years.[6] Use of material dredged from the Bay in the Delta has been complicated by the potential for introduction of saline material into a freshwater environment. In addition, project coordination can be difficult given that those generating and regulating material from the Bay and those regulating and planning Delta reuse projects are not necessarily the same parties and do not usually have overlapping jurisdictions. Appendix S provides additional information regarding Delta regulatory and planning agencies.

Although existing regulatory and environmental concerns limit the use of Bay dredged material in the Delta, levees at Sherman, Twitchell, Jersey, and Winter Islands have been repaired with material from the Bay. These projects involved transporting material to the islands by barge and off-loading it either by clamshell or hydraulic pump.[7] Typically, clamshell equipment involves positioning a barge 100 feet off the off-loading crane and in 200 feet of levee placement. Hydraulic off-loading usually involves placing the material into a temporary settling pond and stockpiling it until needed. Material placement could occur separately from or concurrent with off-loading. Dried material could also be transported to the levee repair site by truck or rail, if necessary. Appendix M identifies existing and potential levee restoration projects (existing projects are identified on Figure 7.1).

The LTMS agencies implement the following measure to facilitate Delta reuse projects:

- *To facilitate implementation of Delta levee projects using material from the Bay, to ensure protection of Delta water quality, and to prevent unacceptable or contaminant-related effects, the LTMS agencies will work with the Central Valley Regional Water Quality Control Board, the California Department of Water Resources, local*

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4 Delta levees are characterized as either federal project levees or non-project levees. The federal project levees were constructed in relation to either a navigation or flood control project and are maintained by the State of California to federal standards. Non-project levees are classified as either private or direct-agreement levees. Private levees were privately constructed and are owner maintained; neither the state nor the federal government maintain jurisdiction over these levees. Direct-agreement levees are either private levees or under the jurisdiction of a local authority, such as a reclamation district, that are maintained by and through an agreement with the federal government, typically the USACE.

5 Sherman, Twitchell, Bradford, Webb, Bethel, and Jersey Islands, and the Hotchkiss and Holland tracts.

6 Although the use of dredged material for levee maintenance and stabilization has been found to be highly feasible in the Delta region, such uses of dredged material are also possible in other portions of the Planning Area. Access constraints, however, appear to be the limiting factor for such uses outside the Delta region. Therefore it is assumed that much of the dredged material used for levee maintenance and stabilization in the lower reaches of the Estuary will come from rehandling facilities rather than directly from dredging projects.

7 Optimum channel depth for waterside access is a minimum of 15 feet MLLW.

governments, and local reclamation districts. Further, the USACE will pursue a Water Resource Development Act Section 204 study to reuse Bay dredged material in the Delta. The LTMS agencies will develop a strategy to improve coordination with the CALFED program, and, as a first step, the LTMS Management Committee will send a letter to the CALFED Policy/Management Committee co-chairs urging CALFED to examine the potential for reuse of Bay dredged material in the Delta.

7.3.4 In-Bay Habitat Creation

Dredged material can also be used to change the substrate or depth of sites within the Bay. Although this alternative was not considered as part of the LTMS technical studies, the Port of Oakland proposed and studied the potential to raise the elevation of a former dredged area in the Oakland Middle Harbor to an elevation suitable for the formation of eelgrass. Deeper areas of the Bay that have low light penetration do not support the high level of primary production of shallower areas. Eelgrass, in particular, only grows in shallow areas of the Bay having suitable environmental conditions. Carefully designed and constructed projects could provide habitat benefits of higher productivity or growth of eelgrass. However, similar to reuse in diked baylands these projects will impact existing habitat and site conditions. Because much of the Bay is already fairly shallow and because there are only limited areas potentially suitable for eelgrass projects in the Bay, such projects likely will be limited in number.

7.4 BENEFICIAL REUSE AND DISPOSAL PROJECT PLANNING AND IMPLEMENTATION ISSUES

The use of dredged material to restore wetlands, provide cover and construction material to landfills and other facilities, rehabilitate levees, and create sub-tidal habitat will result in important benefits to the region as well as help to accomplish the LTMS goals. It is possible, however, that such projects will have the potential to impact certain sites (such as conversion of existing wildlife habitat). Therefore, individual projects will require site specific analysis and design, and separate environmental and regulatory review pursuant to the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). Although each project will be unique, there are some general issues regarding potential projects that project proponents will likely need to consider during the planning and implementation phases, as discussed below.

7.4.1 Site Selection and Evaluation

A variety of beneficial reuse and disposal sites currently exist in the region. However, most are not equipped to accept material from multi-users and instead have generally been used for material from a single previously-designated source. Potential beneficial reuse sites that could be developed as regional facilities and thus be equipped to take material from a variety of sources have been identified through the LTMS and other efforts (e.g., the Dredged Material Reuse Project). Because of the costs and time involved, most dredgers seeking a beneficial reuse or disposal option will likely not design or implement a new site, but instead will use one of the existing or potential options (Appendix M).

In the event, however, a project proponent wishes to conduct a preliminary evaluation of potential sites, a site ranking system developed through the LTMS could be used by project proponents or sponsors.[8] Further, in developing site-specific assessments of potential beneficial reuse projects using dredged material, project proponents should consider and analyze certain elements common to projects identified in the individual tables contained in Appendix N.[9]

To facilitate selection and implementation of beneficial reuse or disposal options, the LTMS agencies implement the following measures:[10]

- *The LTMS agencies will work closely with the dredging and environmental communities to implement and fund beneficial reuse projects.*

- *To facilitate preliminary investigation and selection of beneficial reuse and upland disposal sites, the LTMS agencies will work with project proponents during the project planning stage to assess potential sites.*

- *The LTMS agencies will provide status reports regarding potential and existing beneficial reuse and disposal options through LTMS Program Management quarterly public workshops.*

- *The LTMS agencies will create one new staff position with responsibility for facilitating selection and implementation of beneficial reuse and upland disposal options, including serving as the point of contact for such projects, attending relevant meetings, and pursuing funding and legislative opportunities for project implementation*.

7.4.2 Wetland Restoration Physical Design and Biological Goals

The ultimate goal of wetland restoration is to support Bay plant and animal species and migratory animals, birds and fish in a stable, functioning ecosystem. During the design phase of reuse projects, clearly defined biological goals should first be determined by the project proponent for use in developing physical design features (e.g., salinity regimes, topographic gradients, slough system

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8 For more information about the LTMS site ranking system, project proponents should refer to: (1) LTMS. 1995b Reuse/Upland Site Analysis and Documentation, Feasibility Analyses of Four Sites (Volume II), Final. Prepared by Gahagan & Bryant Associates, Inc. with ENTRIX, Inc. 102 pp. with appendices. (2) LTMS. 1995a. Reuse/Upland Site Analysis and Documentation. Reuse/Upland Site Ranking, Analysis and Documentation (Volume I), Final Report. Prepared by Gahagan & Bryant Associates, Inc. with ENTRIX, Inc. 410 pp. with appendices. It should be noted that the LTMS site ranking system database cannot be used for selecting potential in-bay habitat creation sites since this reuse option was not considered during the earlier stages of the LTMS when the database was created.

9 It should be noted that these same issues would be considered and analyzed by the lead agency(cies) during the environmental review (per CEQA and/or NEPA) and permitting stages.

10 In addition to measures proposed by the LTMS agencies, to date the LTMS stakeholders have committed to take the following steps in order to facilitate selection and implementation of Delta reuse sites: (1) Bay Planning Coalition will pursue legislator (Pat Johnston) support for Delta reuse; (2) DWR will coordinate and hold a summit meeting with the various stakeholders to develop a partnership on Delta reuse funding; and (3) Save San Francisco Bay Association will prepare a briefing for CALFED regarding Delta reuse of Bay material.

development) needed to achieve these goals. The goals will improve the success of projects in providing target habitat values and help identify when and how changes in project design or other remediation measures are needed to improve the restoration project. Additionally, the success of restoration projects depends in part on a better understanding of how to develop such projects. This will come in part from improved technical data regarding certain aspects of restoration. Currently, the U.S. Geological Survey (USGS) is conducting a study, *Meteorological and Flow Variability at Wetland Sites in the San Francisco Bay Ecosystem*, which will provide data regarding suspended sediment transport associated with wetland restoration efforts in the Estuary.[11]

To facilitate successful wetland restoration at sites using dredged material, the LTMS agencies implement the following measures:

- *The LTMS permitting agencies will work with project proponents during the design phase of habitat restoration projects using dredged material to ensure the development of biological goals and physical design features (including fill elevations and material placement guidelines, and appropriate physical and chemical characteristics of dredged material) to achieve these goals. Additionally, the LTMS permitting agencies will require, as legally appropriate, that proposed restoration projects include biological goals, physical design features, and monitoring and remediation measures.*

- *The LTMS agencies will foster, sponsor, or undertake, as resources allow, technical analyses of issues concerning habitat restoration using dredged material, and make scientific data available to improve the design and management of restoration sites.*

7.4.3 Habitat Conversion or Loss and Regional Habitat Goals

Although restoration projects would be geared primarily toward habitat enhancement, implementation of certain beneficial reuse and disposal projects could result in the conversion or loss of existing habitat, and the loss of important habitat functions for local and migratory shorebirds and waterfowl (including supplemental foraging habitat during high tides for small shorebirds, nesting habitat for resident species, and winter storm refugia). In the case of dredged material reuse at landfills and at existing rehandling facilities, habitat conversion or loss is a minor issue in light of the already disturbed nature of these sites and resultant limited habitat value.[12] Habitat conversion or loss takes on greater significance in the case where diked baylands are used for habitat restoration, the

11 The study focuses on developing a quantitative model of suspended sediment concentrations brought about by wind, wave, and current forces present at various San Francisco Bay wetlands. One of the study locations is the outboard marsh along the eastern edge of the former Hamilton Army Airfield. Instrument packages include meteorological measurements consisting of wind shear, wind direction, barometric pressure, and air temperature; and sediment flux measurements consisting of current and suspended sediment, as well as water temperature, salinity, and current direction and strength. The other study areas include two sites associated with the San Francisco Bay National Wildlife Refuge in South San Francisco Bay and outboard of the Sonoma Baylands Wetland Restoration Project (LTMS 1998).

12 However, it should be noted that several existing rehandling facilities (e.g., the City of Petaluma's and the City of San Leandro's ponds) serve an important habitat function during the periods in which the ponds are not actively used for rehandling and are managed solely for wildlife use.

construction or expansion of a new rehandling facility, or levee construction.[13] Projects proposed in the Bay are of particular concern given the high value of most existing Bay habitats and the historic loss of Bay habitat.

Beneficial reuse sites could directly impact protected and listed species existing on-site (Appendix F lists potential existing protected and listed species). In addition, beneficial reuse and disposal projects could impact adjacent off-site habitat (e.g., existing tidal marsh that would be scoured upon breaching of outboard perimeter levees), and produce localized and short-term impacts resulting in interference with and stress in wildlife behavior or habitat abandonment.

To avoid potential loss of important habitat types such as seasonal wetlands, the LTMS agencies implement the following measures:

- *To ensure an ideal mix of wetland patterns and types and to minimize impacts of local habitat conversion, the LTMS agencies will work to maximize the consistency of projects with applicable regional habitat goals (e.g., USFWS's Endangered Species Recovery Plans, the San Francisco Bay Area Wetlands Ecosystem Goals Project, and the San Francisco Bay Joint Venture). As stated in the LTMS EIS/EIR: "the LTMS agencies will encourage and authorize as legally appropriate, restoration efforts using dredged material that are designed to be consistent, to the maximum extent practicable, with specific habitat goals established by regional planning efforts—with the understanding that such projects are dynamic, changing processes—for managing the region's natural resources." To ensure restoration of the full range of Bay habitats, the LTMS agencies will require dredged material restoration proposals to include, as appropriate, an assessment of project consistency with regional habitat goal projects.*

- *As stated in the LTMS EIS/EIR, for restoration projects using dredged material in areas not covered by regional habitat goals, "the LTMS agencies will also encourage and authorize as legally appropriate, such projects which would clearly result in an overall net gain in habitat quality and would minimize loss of existing habitat functions. Whenever feasible, such projects will provide, as part of the project design, for a no net loss in the habitat functions existing on the project site or, where necessary, provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements."*

- *The LTMS agencies recognize that temporal losses in existing habitat may occur at sites and will work with project proponents to minimize such losses. During the planning stage, project proponents should clearly define, evaluate, and, if feasible, incorporate existing habitat types at a potential reuse site. Proposed projects could be sited in areas that minimize loss of existing wetland habitat, where possible. Further,*

13 Other possible impacts on wildlife—as well as human—receptors associated with beneficial reuse and disposal operations include noise associated with tugboats, scows, pump-out barges, trucks and trains used to transport dredged material, transfer station pumps, and construction and operation equipment, traffic that would be associated with transporting material to and from (if taken to an end-use location) sites, and air quality.

restoration projects could be designed to include restoration of seasonal and other important habitat types.

- *Where possible, proposed rehandling facilities should be located in areas that minimize loss of existing habitat or alternatively on sites located outside of the diked historic baylands with limited habitat value.*

- *During the planning stage, rehandling project proponents should, if feasible, incorporate habitat values at proposed facilities by including individual ponds that could be managed solely for habitat use or by managing the facility for habitat use during periods when dredged material is not processed. Where necessary, project proponents should provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements.*

- *Project proponents should develop long-term management plans for beneficial reuse and upland disposal sites, and appropriate mechanisms to ensure permanent protection of restored habitat values. In projects where significant existing habitat is proposed to be impacted, project proponents could be required to develop project-specific mitigation goals, conduct monitoring, and, if necessary, remediate. The LTMS agencies will fully and appropriately apply existing laws, regulations, and policies to ensure that adverse impacts associated with project implementation will be minimized and, as necessary, mitigated.*

7.4.4 Contaminant and Salinity Exposure and Mobility

The beneficial reuse of dredged material could potentially result in the release of contaminants or salt to on-site surface waters, groundwater, and off-site receiving waters (from any surface or drainage water). Additionally, dredged material could undergo a change in pH due to oxidation of material following placement, and acidification of material may solubilize metals that would otherwise be stable and bound to the sediment in its previous anoxic aquatic environment.[14] Further, these constituents (including dust) could be released during initial placement and from earth-moving activities (during site preparation, construction, and maintenance) as well as along transportation routes to or from the reuse site.[15]

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14 The way that sediment oxidation affects heavy metal release is not completely understood. Recent research conducted by the USACE at the Waterways Experiment Station on John F. Baldwin Ship Channel sediments indicated that concentrations of heavy metals contained in material subjected to experimentally controlled upland placement and simulated rainfall had statistically reduced metals in runoff samples after drying and oxidation compared to material maintained under anoxic conditions. Additionally, most of the metals within the material that were allowed to oxidize remained bound to particulate matter and were therefore considered insoluble. Such studies do not fully address this potential impact and further research is needed (Lee, et al. 1993).

15 Additionally, the placement of dredged material in a fresh water setting in the Delta also poses concerns regarding bromide ions. Bromide is a constituent of total dissolved solids (TDS) and is found in higher concentrations in sea water than fresh water. Bromide is a concern in regard to municipal water supplies. When water containing bromide is chlorinated for use as drinking water, trihalomethane (THM) compounds are created. Regulated under federal drinking water standards, the increased THM levels may result in water that exceeds state or federal drinking water standards for THM content.

In accordance with state and federal regulatory requirements, landfills have been constructed with drain/leachate systems to collect contaminants. Rehandling facilities would also be designed to process dredged material while ensuring the isolation of material and the collection and containment of contaminants (including salinity). Further, any water discharged from these sites would be required to meet state and federal standards set by law. As such, contaminant mobility at these sites would likely be a nominal issue.

The Jersey Island levee restoration project (1995-1996) did not reveal any significant water quality impacts which ensured in part that water discharged from the site met the established CVRWQCB water quality standards. In addition, the CVRWQCB issued Waste Discharge Requirements for the site, which included a site monitoring plan designed to address questions regarding potential salinity and other contaminant release and migration associated with the use of dredged material. Nevertheless, the potential salinity impacts from Bay dredged material on the freshwater Delta environment will continue to be an issue of concern.

Another potential concern for the beneficial reuse of dredged material in creating wetlands is that of mercury methylation. Wetland environments have the potential to enhance the methylation of inorganic mercury associated with sediments. Mercury methylation converts inorganic forms of mercury, which are relatively unavailable to organisms, to methyl-mercury, a form which more readily bioaccumulates in organisms and can lead to chronic toxicity and mortality in high trophic-level organisms. This issue is being studied on a regional basis (e.g., by CALFED) and should be addressed during the planning process for the development of major new wetland projects.

All sediments will be required to be adequately characterized for the proposed placement or disposal site, using appropriate physical, chemical, and biological testing methods. Further, sediment quality evaluations will include consideration of potential effects related to the specific pathways of concern identified for the proposed placement site. Lastly, authorizations from the LTMS agencies will include appropriate design or operational features necessary to control all contaminant pathways of concern at a given site, and be adequate to manage the worst-case material considered for placement at a site. Moreover, all material and any discharged water will meet the waste discharge and monitoring requirements of the appropriate SFBRWQCB prior to any drainage water release from the site.

To avoid or reduce the release of these constituents from sites and the potential impacts on habitats and sensitive receptors, the LTMS agencies implement the following measure:

- *The LTMS agencies will work to address potential salinity impacts in the Delta associated with using Bay dredged material for levee restoration. The LTMS agencies will pursue funding and research opportunities to help understand how Bay material affects the freshwater environment. Data collected and other "lessons learned" from initial projects will be analyzed by the LTMS agencies, in coordination with appropriate Delta entities, to determine the feasibility of other projects and to improve project design (including salinity control measures) and management.*

CHAPTER 8

8.0 MANAGEMENT PLAN REVIEW AND REVISIONS

8.1 INTRODUCTION

The purpose of this chapter is to describe the process for reviewing and revising the LTMS Management Plan (Management Plan).

8.2 IMPLEMENTATION MEASURE

To ensure that the Management Plan is reviewed and, if necessary, revised, the LTMS agencies will fulfill the implementation measure, which is shown as bulleted, italicized text in Section 8.5.

8.3 MANAGEMENT PLAN DEVELOPMENT

The LTMS agencies recognize that public input is integral to the success of the program. Consequently, the agencies conducted a series of workshops on issues associated with implementation of the long-term strategy for dredging and disposal and development of the Management Plan. Public comments following the initial workshops resulted in revisions to the workshop process, including development of ground rules for discussion and increased opportunity for public input on workshop topics. A neutral facilitator was brought into the process to assist the group dialogue. The remaining Management Plan workshops focused on issues of concern identified by the interested public [1], rather than the LTMS agencies. The workshops provided the LTMS agencies with useful and necessary input from the public in evaluating potential management plan options and in developing implementation strategies.

8.4 MANAGEMENT PLAN PROGRAMMATIC REVIEW

The Management Plan will be subject to periodic review and modification to ensure that the document, and the implementation process, progress in step with a changing environment. During the first three years of implementation, the agencies will conduct annual reviews of progress. This annual review will ensure that implementation of the LTMS proceeds in a fashion acceptable to the LTMS agencies and the public, especially during this crucial first stage. After the initial three years, reviews every three years are expected to result in relatively minor "course changes" or modifications to the implementation strategy and are unlikely to require legislative changes. More comprehensive six-year reviews are likely to encompass Bay or Basin Plan amendments.

Each review of the Management Plan will be conducted by two lead agencies. For example, the San Francisco Bay Conservation and Development Commission (BCDC) and the U.S. Army Corps of Engineers

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[1] Interested parties include project proponents, the environmental community, consultants and others. The LTMS agencies believe that workshop participants represent the full range of individuals and groups with an interest in dredging and dredged material disposal in the San Francisco Bay Area.

(USACE) will be lead agencies for the first review. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and U.S. Environmental Protection Agency (USEPA) will perform the duties of lead agencies the following year, and so on. The agencies will solicit public input during each review stage.

Through the Management Plan workshop process, with the help of the interested parties, a list of criteria—divided into quantitative and qualitative categories—was developed by which the success of the Management Plan will be measured. These criteria are listed below:

8.4.1 Quantitative

- Ten percent increase in funding for upland disposal annually
- No lawsuits
- Acreage of Bay habitat restored using dredged material
- Increased number of approved alternatives to in-Bay disposal
- Available in-bay disposal capacity
- Document long-term trends and variability in dredging volumes
- Meet or beat transition glide path
- Depth of Alcatraz disposal site
- Footprint of Alcatraz and other sites
- Acreage of habitat created for threatened and endangered species
- Number of sites for material that is not suitable for unconfined aquatic disposal to be reused
- Adequate funding for LTMS
- Increased number of rehandling facilities
- Reduced cost for upland disposal
- Maintain navigability and project depths
- Reduced impact of dredged material on native species
- Reduced navigational incidents or accidents, i.e., groundings

8.4.2 Qualitative

- Do we have upland sites?
- Is regional planning under way?
- Healthier Bay
- Predictability of testing (Regional Implementation Manual approved/adopted)
- Documented participation of all stakeholders
- Local governments aware of LTMS process and taking action in reviewing dredging and disposal projects in support of LTMS (CEQA)
- Sustained regional economic contribution from maritime community
- Process for dredging is "predictable"
- Reduce uncertainty as to adverse effects of disposal or reuse of dredged material
- Consensus on nomenclature for suitability of dredged material
- In-Bay monitoring efforts of LTMS and RMP linked

8.5 MANAGEMENT PLAN REVIEW PROCESS

The LTMS agencies envision the following process for periodic reviews and revisions of the Management Plan:

- LTMS agencies collect and analyze data regarding implementation progress, including review of success criteria (ongoing).
- LTMS agencies conduct quarterly public workshops (Chapter 2).
- LTMS agencies announce initiation of review and revision process and request input from stakeholders through the USACE Public Notice process.
- LTMS agencies perform evaluation, based on identified success criteria (see Section 8.4) and prepare presentation for public (report).
- Issuance of LTMS progress report.
- Public workshop presenting LTMS agencies' evaluation and solicitation of public input.
- Public review and comments.
- Revisions, as necessary, to address public comments.

- LTMS agencies' public hearing.
- BCDC/SFBRWQCB vote (if necessary for Bay or Basin Plan amendments).
- Implement revisions.

To ensure review and, if necessary, revision of this Management Plan, the LTMS agencies implement the following measure:

- *During the initial three-year period of implementation, the LTMS agencies will produce an annual progress report of the program. Subsequently, the LTMS agencies will conduct three-year reviews. A more comprehensive review resulting in policy changes, if necessary, will be conducted every six years.*

CHAPTER 9

9.0 RESOURCE AND FUNDING NEEDS

9.1 INTRODUCTION

Implementation of the long-term strategy for dredging and disposal as described in this Management Plan will likely require resources in addition to those currently expended by the LTMS agencies. These additional resources, however, have not yet been quantified. During the public workshops for the development of the Management Plan, the LTMS agencies initiated the Funding Work Group to assess and identify the resources necessary to implement the long-term strategy.[1] This work group met only once, but will reconvene to identify the resources needed to carry out the tasks prescribed in this Management Plan and assess potential funding sources.

9.2 IMPLEMENTATION MEASURE

To assess the resource needs of the program and facilitate program implementation, the LTMS agencies implement the following measure:

- *The LTMS agencies will participate in the Funding Work Group, which will further assess the program's ongoing resource needs and potential funding sources. The work group's findings will be used to more accurately determine what is needed to achieve the goals of the LTMS program.*

9.3 RESOURCE AND FUNDING NEEDS

In order to identify the resources required to implement the LTMS, the Funding Work Group will reconvene under the aegis of the LTMS agencies. The critical tasks of this work group will be to:

- assess the resources necessary for implementing the long-term dredging and disposal strategy as described in this Management Plan;
- quantify currently available resources;
- determine whether existing resources are sufficient for implementation;
- determine the degree of shortfall in funding or other resources, if any, for implementation;
- prioritize agency responsibilities for implementation and direct currently available resources toward fulfilling the highest-priority responsibilities; and
- explore ways to develop additional resources, if necessary.

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1 The Funding Work Group also was tasked with assessing and developing mechanisms for implementation of beneficial reuse projects.

Preliminary resource needs are identified in Table 9-1. These resource needs are derived from the implementation measures found in the individual chapters of this Management Plan. A complete list of all implementation measures appears in Appendix K.

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
Chapter 2 (LTMS MP)				
LTMS Goals	LTMS Executive Committee adopt revised LTMS goals	2001	LTMS Exec. Comm. [1]	within existing funding levels
LTMS Revised Structure	LTMS Management Committee: meet annually, if necessary, with stakeholders; meet, as necessary, on other LTMS issues	on-going	LTMS Management Committee [2]	w/in existing funding levels
	LTMS Management Committee integrate Coastal Conservancy, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG) re: reuse issues	After finalization of Management Plan (MP)	Coastal Conservancy, USFWS, and CDFG	w/in existing funding levels for LTMS agencies [3]
	LTMS Management Committee integrate State Lands Commission (SLC) re: necessary dredging and disposal issues	After finalization of MP	SLC	w/in existing funding levels for LTMS agencies [4]
	Executive Committee: meet annually with stakeholders; meet, as necessary, on other LTMS issues	on-going	Exec. Comm.	w/in existing funding levels
	LTMS Program Managers and agency staff: carry out day-to-day management of LTMS program; hold quarterly workshops; meet, as necessary, with interested parties; manage working groups	on-going	LTMS Program Managers and agency staff [2]	likely beyond existing funding levels
Formalize DMMO	BCDC and SLC change regulations (to include DMMO application)	**(All)** After finalization of MP [5]	BCDC and SLC	BCDC: w/in existing funding levels [4]
	Revise DMMO General Operating Procedures		DMMO member agencies [6]	w/in existing funding levels
	Sign MOU by DMMO member agencies		DMMO member agencies	w/in existing funding levels

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs (continued)

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
Data Management System	Participate on Data Management Team and create and manage data management system	After finalization of MP	LTMS agencies	beyond existing funding levels
Chapter 3				
DMMO Operation	Day-to-day regulatory and misc. duties; bi-monthly meetings; track day-to-day and annual disposal volumes, and annual report	On-going	DMMO member agencies	w/in existing funding levels
Consistent Environmental Review of Projects	Prepare guidance document on impacts of dredging, disposal, and reuse relevant to regulatory processes, and distribute to lead agencies	After finalization of MP	LTMS agencies	beyond existing funding levels
Project Proponent Coordination with agencies, interested parties and DMMO	Encourage project proponents to involve interested parties and DMMO during project planning	on-going	LTMS agencies	w/in existing funding levels
Biological Windows	Review projects for consistency per biological windows	on-going	LTMS agencies	w/in existing funding levels
Determine Disposal Location before Sediment Testing	Encourage proponents to submit alternatives analysis pursuant to Clean Water Act and BCDC bay fill policies before sediment testing	After finalization of MP	DMMO	w/in existing funding levels
Standard Permit Conditions	Coordinate permit conditions	on-going	LTMS agencies	w/in existing funding levels
Chapter 4				
Sediment Quality Guidelines	Oversight of Sediment Quality Guidelines Work Group, publish work group results, hold workshop	on-going through year 2002	LTMS agencies	w/in existing funding levels
New Reference Sites	Upon finalization of USEPA's proposed rule on reference sites, LTMS agencies recommend testing for in-Bay projects use sites from SFBRWQCB's document	Upon finalization of USEPA's proposed rule	LTMS agencies	w/in existing funding levels

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs (continued)

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
Revise SFBRWQCB's Beneficial Reuse SQGs	Finalize SFBRWQCB's guidelines	on-going	SFBRWQCB	w/in existing funding levels
Develop Upland Testing Protocols	Develop testing protocols to better evaluate the suitability of Bay Area dredged sediments for various beneficial reuse options.	After finalization of MP (longer term goal)	LTMS agencies	beyond existing funding levels
Prepare RIM	Prepare, hold related workshops, revise as needed	After finalization of MP/ long-term goal	LTMS agencies	beyond existing funding levels
Chapter 5				
Site Management and Monitoring Plans (SMMPs)	Implement existing informal SMMPs for in-Bay sites	on-going	USACE	w/in existing funding levels
	Implement existing SMMP for SF-DODS	on-going	USACE, USEPA, and permittees	Additional funding likely needed
	Oversight of Management and Monitoring Work Group	on-going through end of 2002	LTMS agencies	w/in existing funding levels
	Develop formal SMMPs for in-Bay disposal sites and hold public workshops	end of 2002	LTMS agencies	beyond existing funding levels
	Develop general guidance for reuse sites	After SMMPs finalized	LTMS agencies	beyond existing funding levels
Chapter 6				
Management of in-Bay disposal goal	Adopt Bay Plan Amendments and Regulations	2001	BCDC	w/in existing funding levels
	Adopt Basin Plan Amendments	2001	SFBRWQCB	w/in existing funding levels
	Create and manage Regional Planning Group	After finalization of MP	LTMS agencies	beyond existing funding levels
Eliminate Unnecessary Dredging	Initiate Dredged Material Management Plans for channels, and NEPA reviews as needed for maintenance dredging	2001	USACE	w/in existing funding levels

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs (continued)

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
	On-going work in Seaport Planning process	on-going	BCDC	w/in existing funding levels
	Within context of Seaport and MTC planning, consider need for dredging in addition to minimizing fill	After finalization of MP	BCDC	w/in existing funding levels
	Require permit applicants to submit data to determine whether proposals involve minimum dredging necessary, and include measures in permits ensuring projects carried out consistent with authorized terms	After finalization of MP	LTMS agencies	w/in existing funding levels
	Establish watershed work group	After finalization of MP	LTMS agencies	beyond existing funding levels
Chapter 7				
Project Planning and Site Selection	Implement and fund beneficial reuse projects	on-going	LTMS agencies and interested parties	w/in existing funding levels
	Participate in Hamilton Restoration Group	on-going	LTMS agencies	w/in existing funding levels
	Provide guidance on selection and use of reuse projects	on-going	LTMS agencies	w/in existing funding levels
	Work with Montezuma project sponsor to facilitate implementation	on-going	LTMS agencies	w/in existing funding levels
	Work with specific entities for Delta projects	on-going	LTMS agencies	w/in existing funding levels
	Pursue Sec. 204 study on reuse of dredged material in Delta	After finalization of MP	USACE	w/in existing funding levels
	Develop a strategy to improve coordination with CALFED	After finalization of MP	LTMS agencies	w/in existing funding levels
	Send letter to CALFED to facilitate reuse in Delta	After finalization of MP	LTMS Management Committee	w/in existing funding levels
	Work with project proponents to assess and select sites	on-going	LTMS agencies	w/in existing funding levels
	Provide status reports on reuse sites at quarterly public workshops	After finalization of MP	LTMS agencies	w/in existing funding levels

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs (continued)

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
Dedicated staff position [7]	Create one reuse staff position	After finalization of MP	LTMS agencies	beyond existing funding levels
Restoration project design	Work with project proponents in design phase to ensure development of biological goals and physical design features, and require projects include goals and design features, and include permit conditions stipulating design, operation features, and monitoring and remediation.	After finalization of MP	LTMS agencies	w/in existing funding levels
Research Needs and Opportunities	Foster/sponsor technical analyses re: wetland restoration w/ dredged material	on-going	LTMS agencies	beyond existing funding levels
	Pursue funding, research, and analysis of salinity control measures (for Delta projects)	After finalization of MP	LTMS agencies	beyond existing funding levels
Minimize Habitat Conversion and Loss	Encourage and authorize project consistency with applicable regional habitat goals	**(All)** After finalization of MP	**(All)** LTMS agencies and project sponsors	**(All)** w/in existing funding levels
	Encourage projects resulting in net habitat gain and no net loss of habitat functions			
	Work with proponents to minimize temporal habitat losses			
	Locate rehandling facilities outside of diked historic baylands			
	Incorporate wetland habitat values/provide compensatory mitigation in rehandling projects			
Long-Term Site Management Plans	Project proponents to develop site management plans, and necessary mitigation.	After finalization of MP	LTMS agencies and project proponents	w/in existing funding levels
Chapter 8				
Management Plan Review and Revision	Produce annual progress report during first 3-year period	2001-2003	**(All)** LTMS agencies	**(All)** beyond existing funding levels
	Conduct 3-year review of program success	2004		

Table 9.1 Specific LTMS Implementation Measures and Potential Funding Needs (continued)

Implementation Measure	*Description*	*Timeline*	*Lead*	*Potential Funding Needs*
	Comprehensive 6-year review and Bay and Basin Plan amendments	2007		
Chapter 9				
Funding	Sponsor Funding Work Group, assess the resource needs and mechanisms and funding sources to meet them.	on-going	LTMS agencies	w/in existing funding levels

Notes:

1 USACE, USEPA, BCDC, SFBRWQCB, SWQCB

2 USACE, USEPA, BCDC, SFBRWQCB

3 Funding needs undetermined for non-LTMS agencies.

4 SLC funding needs undetermined.

5 This note indicates specific date yet to be determined.

6 USACE, USEPA, BCDC, SFBRWQCB, SLC

7 This would be a single new staff position at one of the LTMS agencies.

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CHAPTER 10

10.0 AMENDMENTS TO *SAN FRANCISCO BAY PLAN*, BCDC'S IMPLEMENTING REGULATIONS, AND THE *WATER QUALITY CONTROL PLAN*

10.1 INTRODUCTION

This chapter presents the amendments to the *San Francisco Bay Plan* (Bay Plan) for the San Francisco Bay Conservation and Development Commission (BCDC), changes to BCDC's implementing regulations, and the amendments to the *Water Quality Control Plan* (Basin Plan) for the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). These plans provide the policy framework for the planning and regulatory activities of these two agencies. The amendments support implementation of the LTMS goals, including maximizing the reuse of dredged material as a resource and reduction of in-Bay disposal of dredged material. These amendments support a voluntary allocation program for in-Bay disposal volumes, with mandatory allocation implemented only if voluntary efforts are not successful, based on a gradual reduction of in-Bay disposal.

The Bay Plan amendments have undergone a formal public review process, approval by BCDC, and legal review by the California Office of Administrative Law (OAL). The Bay Plan policies were approved by the federal Office of Coastal Zone Management prior to becoming a part of BCDC's federally approved Coastal Management Program. The Basin Plan amendments have been reviewed by the public and approved by the SFBRWQCB, but have not yet been approved by the State Water Resources Control Board nor reviewed by OAL. Additionally, the scientific aspects of the policy for the Basin Plan required an external peer review.

The amendments are generally similar in intent, although the format and form is unique to each plan. The amendments to the Bay Plan are accompanied by changes to the BCDC's implementing regulations, which have been reviewed by OAL[1]. Changes to the Basin Plan are contained in several chapters in the Basin Plan including Chapter 4, Implementation, and Chapter 5, Plans and Policies. The focus of these changes is different because the two agencies have different, but complementary, mandates. The amendments to the Bay Plan are focused on the process for regulating dredging and disposal activities within BCDC's jurisdiction. The amendments to the Basin Plan are focused on regulating the known and potential impacts to water quality and beneficial uses of those waters by disposal activities.

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1 The implementing regulations are part of Title 14 of the California Code of Regulations, Division 5, Chapter 7.

10.2 SAN FRANCISCO BAY PLAN AMENDMENTS

DREDGING FINDINGS

Finding (a): Much of the Bay bottom is shallow averaging 20 feet in depth and the bottom is covered with accumulated silt, sand, and clay. An estimated eight million cubic yards of sediment is carried into the Bay annually from tributaries, most of it settling to the Bay bottom. In addition, over 100 million cubic yards of sediment is recirculated in Bay waters each year, some of which lodges in harbors and navigable channels from which it must be dredged at considerable cost.

Finding (b): Dredging consists of excavating or extracting materials from the Bay. Dredging is often necessary to provide and maintain safe navigation channels and harbors for port facilities, water-related industries, and recreational boating, and for flood control channels. Dredging of unstable Bay muds may also be needed to accommodate Bay fill projects. Dredging projects remove existing bottom habitat and can disrupt surrounding areas through turbidity and other impacts.

Finding (c): Some waste disposal practices have deposited pollutants into the Bay, some of which have contaminated Bay sediments. These pollutants are not distributed evenly in the Bay and some areas are highly contaminated. Dredging and subsequent disposal of contaminated sediments in the Bay may adversely affect Bay organisms.

Finding (d): In the past, material dredged from the Bay was disposed throughout the Bay. In more recent times, most disposal has occurred at one of four Bay disposal sites designated by the U.S. Army Corps of Engineers, the SFBRWQCB, and the Commission where the material can disperse and cause as few environmental impacts as possible. These sites are: (1) off Alcatraz Island; (2) in San Pablo Bay; (3) in the Carquinez Strait; and (4) in the Suisun Bay Channel. At the site nearest the ocean, next to Alcatraz Island, less than half of the disposed material is carried out to sea by the tides.

Finding (e): Capacity at the disposal site near Alcatraz Island is limited because a large mound of dredged material has formed which, unless disposal is properly managed, may adversely affect water circulation and Bay aquatic life, pose a hazard to maritime navigation, and completely fill the site. The impact of dredged material disposal on Bay natural resources, which are also impacted by a variety of sources, remains controversial.

Finding (f): In 1994, the U.S. Environmental Protection Agency designated the "Deep Ocean Disposal Site," which is fifty miles outside of the Golden Gate. The EPA manages the site and has set a yearly capacity of 4.8 million cubic yards of dredged material.

Finding (g): Most dredged material can be reused rather than treated as a waste. The material can be used to bolster levees and dikes, to create and restore marshes and wetlands, to cover and seal sanitary landfills, and as fill in construction projects.

Finding (h): In the past, only small amounts of dredged material have been disposed at upland and diked baylands around the Bay. Fortunately, more reuse options are becoming available for dredged material disposal. These sites include Hamilton Wetlands Project in Marin County with a

capacity of over 10 million cubic yards and the Montezuma Wetlands Project in Solano County with a capacity of 17 million cubic yards. Inclusion of the adjacent Bel Marin Keys parcel would likely more than double the capacity of the Hamilton project. Dredged material could be used at these sites to restore thousands of acres of wetlands. However, as identified in the Commission's Diked Historic Baylands Study and the San Francisco Bay Area Wetlands Ecosystem Goals Project diked baylands often contain seasonal wetlands, provide the primary opportunity for enhancement of seasonal wetlands or restoration of tidal wetlands, and can provide other important habitat functions that need to be taken into account as part of dredged material reuse projects to avoid losing critical natural habitat.

Finding (i): Shoreline facilities are needed to dry and prepare dredged material for some upland uses. These sites are particularly important for material with levels of contaminants that cannot be disposed in the Bay, but can be used as capping, lining, and cover in solid waste landfills.

Finding (j): A variety of habitat types within the Bay sustain a multitude of plant, fish, and wildlife species. Many factors determine the habitat functions and values of a given area of the Bay, including water depth and clarity, type of substrate (rock, coarse sand, or fine-grained sand), type of vegetation, and salinity.

Finding (k): Each of the fish and wildlife species found in the Bay has particular habitat needs to forage, rest, take refuge, and reproduce. Although the San Francisco Bay Area Wetlands Ecosystem Goals Project comprehensively studied the baylands and made recommendations for the extent and location of wetlands and related habitats, no such study has been performed of the need for or appropriate mix of habitat types in the waters of the Bay.

Finding (l): Eelgrass beds are considered to be a valuable shallow water habitat, providing feeding, escape, or breeding habitat for many species of invertebrates, fishes, and some waterfowl. Eelgrass grows in relatively few locations in the Bay and requires special conditions to flourish. Cultivating eelgrass is difficult and efforts to grow eelgrass in San Francisco Bay have not succeeded.

Finding (m): Under its existing law and policies the Commission has approved minor amounts of Bay fill to create, restore or enhance habitat in the Bay. The selective deposition of dredged materials in the Bay to extensively modify Bay habitats might enhance the habitat value for some Bay species. However, such projects could also result in significant adverse impacts to Bay water circulation and quality and to Bay habitats and organisms that depend on the Bay. Insufficient information exists about the potential benefits and adverse impacts on which to base Baywide policies governing disposal in the Bay of dredged material that would result in large-scale modification of Bay habitats, either through an individual project or cumulatively with other projects.

Finding (n): Baywide studies would help determine the need for, appropriate locations for, and potential effects of in-Bay disposal for eelgrass or other shallow water habitat enhancement or restoration. The Commission's update of the Bay Plan Marshes and Mudflats and Fish and Wildlife policies will, to the extent scientific information exists, characterize the location, nature and types of Bay subtidal habitat, will characterize their value and functions, and will characterize

the threats to the habitats. A pilot project could help to determine the feasibility of eelgrass or other shallow water habitat enhancement or restoration in the Bay.

Finding (o): The San Francisco Bay Regional Water Quality Control Board and the U.S. Environmental Protection Agency are responsible for determining appropriate dredged material pollutant testing and discharge standards and for assuring that dredging and disposal of dredged materials are consistent with the maintenance of Bay water quality. The U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers have joint federal responsibility for regulating ocean, Bay, and wetland disposal.

Finding (p): The California Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service are responsible for management and protection of Bay organisms, particularly threatened and endangered species.

Finding (q): The Long-Term Management Strategy (LTMS) program, initiated by the U.S. Army Corps of Engineers in 1991 in partnership with the Commission, the San Francisco Bay Regional Water Quality Control Board, the State Water Resources Control Board, and the U.S. Environmental Protection Agency, with the involvement of dredgers, fishermen, environmentalists and other interested parties, has comprehensively studied Bay dredging issues and prepared a long-range Bay dredging and dredged material disposal management plan and implementation program. The LTMS provides the basis for uniform federal and state dredged material disposal policies and regulations.

Finding (r): The LTMS has set goals to reduce in-Bay disposal over the next decade to one million cubic yards or less per year and to maximize use of dredged material as a resource.

Finding (s): Using dredged material as a resource is usually more expensive than existing disposal practices. Large reuse sites can attain economies of scale and increase feasibility of dredged material reuse. Concerted efforts are needed to plan, fund, and implement reuse of dredged material. The ongoing efforts by government agencies, dredgers, environmentalists, and others have made great progress and should achieve the LTMS goals. However, if these efforts are not successful, in-Bay disposal may have to be restricted through regulatory controls.

Finding (t): The U.S. Army Corps of Engineers is the largest Bay dredger and has the greatest ability to implement alternative disposal options. Annually, small dredgers account for less than one quarter of a million cubic yards of material and have the least ability to implement alternatives to in-Bay disposal.

Finding (u): As part of the LTMS, a Dredged Material Management Office (DMMO) has been established to consolidate the processing of dredging permit applications by the staff of the LTMS agencies and the State Lands Commission. The DMMO provides a single application form and unified processing of applications for dredging permits.

Finding (v): Underground fresh water supplies are an important supplement to surface water now brought into the Bay Area by aqueduct from mountain reservoirs. Deep dredging of Bay mud, or excavation for tunnels or bridge piers, could strip the "cover" from the top of a fresh water reservoir under the Bay, allowing the salt water to contaminate the fresh water, or allowing the

fresh water (if artesian) to escape in large quantities and thus cause land to sink. However, the precise location of groundwater reservoirs under the Bay is not yet well known.

Finding (w): More information on Bay sediment dynamics is needed to: (1) better determine the impacts of dredging and dredged material disposal projects and (2) identify long-term trends in Bay sedimentation that relate to dredging needs and potential impacts to Bay resources, such as wetland and mudflats.

DREDGING POLICIES

Policy 1: 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 a maximum of one million cubic yards per year. The LTMS agencies should implement a system of disposal allotments to individual dredgers to achieve this goal only if voluntary efforts are not effective in reaching the LTMS goal. In making its decision regarding disposal allocations, the Commission should confer with the LTMS agencies and consider the need for the dredging and the dredging projects, environmental impacts, regional economic impacts, efforts by the dredging community to implement and fund alternatives to in-Bay disposal, and other relevant factors. Small dredgers should be exempted from allotments, but all dredgers should comply with policies 2 through 12.

Policy 2: Dredging should be authorized when the Commission can find: (a) the applicant has demonstrated that the dredging is needed to serve a water-oriented use or other important public purpose; (b) the materials to be dredged meet the water quality requirements of the San Francisco Bay Regional Water Quality Control Board; (c) important fisheries and Bay natural resources would be protected through seasonal restrictions established by the California Department of Fish and Game, the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, or through other appropriate measures; (d) the siting and design of the project will result in the minimum dredging volume necessary for the project; and (e) the materials would be disposed of in accordance with Policy 3.

Policy 3: Dredged materials should, if feasible, be reused or disposed outside the Commission's Bay and certain waterway jurisdictions. Except when reused in an approved fill project, dredged material should not be disposed in the Commission's Bay and certain waterway jurisdiction unless disposal outside these areas is infeasible and the Commission finds: (a) the volume to be disposed is consistent with applicable dredger disposal allocations and disposal site limits adopted by the Commission by regulation; (b) disposal would be at a site designated by the Commission; (c) the quality of the material disposed of is consistent with the advice of the San Francisco Bay Regional Water Quality Control Board and the inter-agency DMMO; and (d) the period of disposal is consistent with the advice of the California Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Policy 4: If an applicant proposes to dispose dredged material in tidal areas of the Bay and certain waterways that exceeds either disposal site limits or any disposal allocation that the Commission has adopted by regulation, the applicant must demonstrate that the potential for adverse environmental impact is insignificant and that non-tidal and ocean disposal is infeasible because there are no alternative sites available or likely to be available in a reasonable period, or

because the cost of disposal at alternate sites is prohibitive. In making its decision whether to authorize such in-Bay disposal, the Commission should confer with the LTMS agencies and consider the factors listed in Policy 1.

Policy 5: To ensure adequate capacity for necessary Bay dredging projects and to protect Bay natural resources, acceptable non-tidal disposal sites should be secured and the Deep Ocean Disposal Site should be maintained. Further, dredging projects should maximize use of dredged material as a resource consistent with protecting and enhancing Bay natural resources, such as creating, enhancing, or restoring tidal and managed wetlands, creating and maintaining levees and dikes, providing cover and sealing material for sanitary landfills, and filling at approved construction sites.

Policy 6: Dredged materials disposed in the Bay and certain waterways should be carefully managed to ensure that the specific location, volumes, physical nature of the material, and timing of disposal do not create navigational hazards, adversely affect Bay sedimentation, currents or natural resources, or foreclose the use of the site for projects critical to the economy of the Bay Area.

Policy 7: All proposed channels, berths, turning basins, and other dredging projects should be carefully designed so as not to undermine the stability of any adjacent dikes, fills or fish and wildlife habitats.

Policy 8: The Commission should encourage increased efforts by soil conservation districts and public works agencies in the 50,000-square-mile Bay tributary area to continuously reduce soil erosion as much as possible.

Policy 9: To protect underground fresh water reservoirs (aquifers): (a) all proposals for dredging or construction work that could penetrate the mud "cover" should be reviewed by the San Francisco Bay Regional Water Quality Control Board and the State Department of Water Resources; and (b) dredging or construction work should not be permitted that might reasonably be expected to damage an underground water reservoir. Applicants for permission to dredge should provide additional data on groundwater conditions in the area of construction to the extent necessary and reasonable in relation to the proposed project.

Policy 10: Interested agencies and parties are encouraged to explore and find funding solutions for the additional costs incurred by transporting dredged materials to nontidal and ocean disposal sites, either by general funds contributed by ports and other relevant parties, dredging applicants or otherwise.

Policy 11:

(a) A project that uses dredged material to create, restore, or enhance Bay natural resources should be approved only if:

(1) The Commission, based on detailed site-specific studies, appropriate to the size and potential impacts of the project, that include, but are not limited to, site morphology and physical conditions, biological considerations, the potential for

fostering invasive species, dredged material stability, and engineering aspects of the project, determines all of the following:

(i) the project would provide, in relationship to the project size, substantial net improvement in habitat for Bay species;

(ii) no feasible alternatives to the fill exist to achieve the project purpose with fewer adverse impacts to Bay resources;

(iii) the amount of dredged material to be used would be the minimum amount necessary to achieve the purpose of the project;

(iv) beneficial uses and water quality of the Bay would be protected; and

(v) there is a high probability that the project would be successful and not result in unmitigated environmental harm;

(2) The project includes an adequate monitoring and management plan and has been carefully planned, and the Commission has established measurable performance objectives and controls that would help ensure the success and permanence of the project, and an agency or organization with fish and wildlife management expertise has expressed to the Commission its intention to manage and operate the site for habitat enhancement or restoration purposes for the life of the project;

(3) The project is either a small pilot project or the success of similar projects has been demonstrated in similar settings;

(4) The project would use only clean material suitable for aquatic disposal and the Commission has solicited the advice of the San Francisco Bay Regional Water Quality Control Board, the Dredged Material Management Office and other appropriate agencies on the suitability of the dredged material;

(5) The project would not result in a net loss of bay surface area or volume. Any offsetting fill removal would be at or near as feasible to the habitat fill site;

(6) Dredged material would not be placed in areas with particularly high or rare existing natural resource values, such as eelgrass beds and tidal marsh and mudflats, unless the material would be needed to protect or enhance the habitat. The habitat project would not, by itself or cumulatively with other projects, significantly decrease the overall amount of any particular habitat within the Suisun, North, South, or Central Bays, excluding areas that have been recently dredged;

(7) After a reasonable period of monitoring, either:

(i) the project has not met its goals and measurable objectives, and attempts at remediation have proven unsuccessful, or

(ii) the dredged material is found to have substantial adverse impacts on the natural resources of the Bay,

(iii) then the dredged material would be removed, unless it is demonstrated by competent environmental studies that removing the material would have a greater adverse effect on the Bay than allowing it to remain, and the site would be returned to the conditions existing immediately preceding placement of the dredged material if; and

(8) The Commission has consulted with the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service to ensure that at least one of these agencies supports the proposed project.

(b) To ensure protection of Bay habitats, the Commission should not authorize dredged material disposal projects in the Bay and certain waterways for habitat creation, enhancement or restoration, with the exception of a single pilot project at a site designated by the Commission and used in a manner consistent with the regulation designating the site, until:

(1) The Bay Plan Marshes and Mudflats and Fish and Wildlife policies have been updated and any additional objective and scientific studies have been carried out to evaluate the advisability of disposal of dredged material in the Bay and certain waterways for habitat creation, enhancement and restoration. Those additional studies should address the following:

(i) The Baywide need for in-Bay habitat creation, enhancement and restoration, in the context of maintaining appropriate amounts of all habitat types within the Bay, especially for support and recovery of endangered species; and

(ii) The need to use dredged materials to improve Bay habitat, the appropriate characteristics of locations in the Bay for such projects, and the potential short-term and cumulative impacts of such projects; and

(2) The Commission has adopted additional Baywide policies governing disposal of dredged material in the Bay and certain waterways for the creation, enhancement and restoration of Bay habitat, which narratively establish the necessary biological, hydrological, physical and locational characteristics of candidate sites; and

(3) The pilot project authorized under this section, if undertaken, is completed successfully.

Policy 12: The Commission should continue to participate in the LTMS, the Dredged Material Management Office, and other initiatives conducting research on Bay sediment movement, the effects of dredging and disposal on Bay natural resources, alternatives to Bay aquatic disposal, and funding additional costs of transporting dredged materials to non-tidal and ocean disposal sites.

WATER RELATED FINDINGS

Finding (a): Certain industries, including some dredged material rehandling facilities, require a waterfront location on navigable, deep water to receive raw materials and distribute finished products by ship, thereby gaining a significant cost advantage. These industries are defined as water-related industries.

RECREATION POLICIES

Policies 8, 9, 10: Revise the former Bay Plan Recreation policy No. 9 and 10 to correct proposed policy numbers changed as a result of the deletion of former Bay Plan Recreation policy No. 8.

OTHER USES OF THE BAY AND SHORELINE POLICIES

Policy 3(a): Wherever waterfront areas are used for housing: (a) whenever feasible, high densities should be encouraged to provide the advantages of waterfront housing to larger numbers of people; and

Bay Plan Maps

San Francisco Bay Conservation and Development Commission hereby adopts Bay Plan Amendment 3-00 which amends the Bay Plan Maps 1 through 7.

Priority Use Areas at Mare Island

The Commission hereby adopts Bay Plan Amendment 3-00 which amends Resolution 16 (which sets the boundaries of priority use areas along the shoreline) to reflect the deletion of the three northernmost ponds at Mare Island as follows:

18. Mare Island (Industry)

    (A) Northwest Boundary: Northern edge of dredged material disposal pond No. 2N.

    (B) Southeast Boundary: Southern edge of pond No. 7.

10.3 BCDC IMPLEMENTING REGULATIONS

On May 17, 2001, BCDC adopted the following regulations regarding disposal of dredged material. The regulations have been reviewed by OAL. The new regulations are in Title 14 of the California Code of Regulations, Division 5, Chapter 7, Sections 10720, 10721, and 10726 through 10729.

Article 4. Dredging

10720. Commission Procedure For Determining If It Should Decline To Implement Individual In-Bay Dredged Material Allocations.

(a) The Commission shall commence a formal rulemaking process pursuant to the Administrative Procedures Act to determine whether or not to implement an individual in-Bay dredged material allocation program either (1) within 45 days of the Executive Director's determination at the triennial reviews starting in 2004 that the average annual volume of dredged material disposed of over the preceding three-year period at the Alcatraz Island, San Pablo Bay, Carquinez Strait, and Suisun Bay Channel in-Bay disposal sites designated by the Commission exceeds the target volume specified in Section 10721 or (2) within 45 days of receipt of a written request to make such a determination from the Long Term Management Strategy Management Committee.

(b) The Commission shall also hold a public hearing prior to voting on whether or not to implement an individual in-Bay dredged material allocation and shall otherwise follow the formal rulemaking process pursuant to the Administrative Procedures Act when it determines whether or not to implement such a program.

(c) If an analysis of the factors affecting the need for allocations, including (1) the status of alternatives to in-Bay disposal and cooperative efforts to implement them, (2) exigencies that hamper the use of alternative sites, and (3) other relevant factors and any needed environmental documentation has not been submitted by the LTMS Management Committee as part of the written request or if in-Bay disposal volumes exceed the target volumes, then such an analysis will be prepared by the Commission staff prior to the public hearing on the matter.

(b d) The Commission shall vote on whether or not to implement such a program within 60 days of the close of the public hearing.

(c e) The Commission shall implement a program of individual in-Bay dredged material disposal allocations unless a majority of those Commissioners present and voting vote not to implement the program.

(d f) The program will commence no later than six months after the Commission vote if the Commission vote results in a determination to implement an allocation program, provided that the Commission must also complete the formal rulemaking process and any allocation adopted by the Commission must be approved as a

regulation pursuant to the Administrative Procedures Act before the allocation can go into effect.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and *San Francisco Bay Plan*, Findings and Policies on Dredging, especially Finding s and Policy 1.

10721. Target Volumes.

(a) The target volume for the calendar years of 2001-2003 is an average of 3.05 million cubic yards per year.

(b) The target volume for the calendar years of 2004-2006 is an average of 2.66 million cubic yards per year.

(c) The target volume for the calendar years of 2007-2009 is an average of ~~2.27~~ 2.28 million cubic yards per year.

(d) The target volume for the calendar years of 2010-2012 is an average of ~~1.88~~ 1.89 million cubic yards per year.

(e) The target volume for the calendar years thereafter is an average of 1.50 million cubic yards per calendar year for each three-year period thereafter.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and San Francisco Bay Plan, Findings and Policies on Dredging, especially Finding s and Policy 1.

10726. Small Dredger Exception.

Small dredgers are exempt from the individual in-Bay dredged material disposal allocation process, but they must still fully comply with all other McAteer-Petris and San Francisco Bay Plan policies regarding dredging and the disposal of dredged material.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and *San Francisco Bay Plan*, Findings and Policies on Dredging, especially Finding t and Policy 1.

10727. Small Dredgers.

Small dredgers are defined to be project sponsors of dredging projects with a depth no deeper than –12 feet Mean Lower Low Water (not including over-depth dredging) and generating an average yearly volume as defined in Section 10723 of less than 50,000 cubic yards of material.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and *San Francisco Bay Plan*, Findings and Policies on Dredging, especially Finding t and Policy 1.

10728. Termination of Individual Dredged Material Disposal Allocations.

(a) Within 45 days of either (1) a written determination by the Executive Director that the average annual volume of dredged material disposed of over the preceding triennial review period at all in-Bay disposal sites designated by the Commission no longer exceeds the target volumes specified in Section 10721 or (2) the Long Term Management Strategy Management Committee recommends ending allocations, the Commission shall commence a formal rulemaking process pursuant to the Administrative Procedures Act to determine whether or not to end the imposition of individual dredged material disposal allocation. As part of that process, the Commission shall hold a public hearing.

(b) Within 60 days of the close of the public hearing, the Commission shall vote on whether or not to end the imposition of individual dredged material disposal allocations.

(c) The Commission shall end the imposition of individual dredged material disposal allocations unless the Commission determines by a majority of those Commission members present and voting not to end the imposition of individual dredged material disposal allocations.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and *San Francisco Bay Plan*, Findings and Policies on Dredging, especially Finding s and Policy 1.

10729. Re-implementation of Individual Allocations For the In-Bay Disposal of Dredged Material.

After terminating the imposition of individual dredged material disposal allocations, the Commission can reimpose individual dredged material disposal allocations only if the conditions specified in Sections 10720 and 10721 exist and the Commission determines to impose the allocations pursuant to Section 10720, including the commencement and completion of a formal rulemaking process pursuant to the Administrative Procedures Act.

NOTE: Authority cited: Section 66632(f), Government Code and Section 29201(e), Public Resources Code. Reference: Sections 66632(f) and 66652, Government Code; Section 29008, Public Resources Code; and *San Francisco Bay Plan*, Findings and Policies on Dredging, especially Finding s and Policy 1.

10.4 BASIN PLAN AMENDMENTS

The text of the Basin Plan amendments is presented verbatim below, including all tables as they appear in the source document.

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 towards increasingly larger 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 20th 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.

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 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. 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.

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 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 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.

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

Most dredging and dredge material disposal operations cause localized and ephemeral impacts with related biological consequences (Table 4-12).

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 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.

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.

DELTA ISLAND LEVEE REPAIR AND MAINTENANCE

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 Regional Water Quality Control Board, and the CalFed program may provide additional opportunities for reuse of dredge material in the future.

REGIONAL BOARD POLICIES ON DREDGING AND DREDGED SEDIMENT DISPOSAL

The overall policy for dredging and disposal of dredged sediment includes a reduction of in-bay disposal volumes and an increased emphasis on beneficial reuse of dredged material. The most likely beneficial reuse of dredged material is 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, to 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 one million cubic yards, or less, per year. The LTMS agencies will implement a system of disposal allocations for the designated disposal sites to individual dredgers to achieve the LTMS goal only if voluntary efforts are not effective in reaching this goal.

1. NEED FOR REGIONAL AND LOCAL MONITORING

The Regional Monitoring Program (RMP) provides information on the regional-scale effects of contaminants in the Bay. The Regional Board is evaluating whether additional, more localized monitoring to isolate the effects of the disposal of dredged material in the Bay is needed. In the interim, existing sediment evaluation procedures (see Policy 5, below) and monitoring and management efforts at the in-Bay disposal sites are protective of the beneficial uses of the Bay.

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).

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 (MPRSA).

Overall In-Bay Disposal

Total in-Bay dispersive 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 4-16:

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 there 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"[2] 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:

a. Any project proposing to place material at a disposal site for which the monthly or annual volume target, as defined in Table 4-15, has been exceeded; and

b. Any project that does not provide an adequate alternatives analysis showing that there are no practicable alternatives to in-Bay disposal.

Small project proponents may apply for an exemption to monthly or annual volume targets. 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. 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 adopted by the LTMS EIS/EIR, 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.

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

[2] 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.

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.

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 factors affecting the need for allocations in light of progress towards the long-term goal adopted by the LTMS EIS/EIR, including (1) the status of alternatives to in-Bay disposal and cooperative efforts to implement them, (2) exigencies that hamper the use of alternative sites, and (3) 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 public hearing, the Board votes to not rescind mandatory allocations. Both the institution and recision 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

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 has been adopted by the LTMS agencies as the framework for the evaluation of the suitability of dredged material for in-Bay disposal. It provides comprehensive guidance to dredging permit applicants on sampling and testing of sediment proposed for disposal in waters of the Unites 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 Regional Board's Executive Officer will require evaluation of sediments proposed for in-Bay disposal according to the ITM, 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 for upland disposal. Regional Board staff have developed a 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 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 material suitability criteria that will be defined in Board Orders.

The Regional Board is working in cooperation with other LTMS agencies to develop a regional implementation manual that will detail testing requirements for all three disposal environments.

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

a. Special reporting procedures for the hydraulic pumping of dredged material into transport scows prior to disposal (marina slip applications);

b. Evidence of compliance with the conditions described in 6, above;

c. Time limit on the overflow from hopper-type hydraulic dredges in order to obtain an economical load; or

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

9. 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. 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 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

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.

EVALUATION FRAMEWORK FOR DREDGED MATERIAL PROPOSED FOR IN-BAY DISPOSAL AND DREDGED MATERIAL MANAGEMENT OFFICE – RESOLUTION NO. 01-065

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 framework 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

MANAGEMENT COMMITTEE

- Corps of Engineers, San Francisco District, District Engineer
- 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

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

PROGRAM MANAGEMENT TEAM

- LTMS Agencies' program management staff

WORK GROUPS

- Varying levels of participation by the organizations listed above, plus other interested parties
  - Disposal site management and monitoring
  - Sediment quality guidelines
  - Funding

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

INDIVIDUAL DISPOSAL SITES

The following volume targets shall be utilized at each aquatic disposal site.

Alcatraz Island (SF-11)	October-April	0.4 million cubic yards per month
	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[a,b]

NOTES:

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

b. This value is equal to the target value of 2.8 million cubic yards plus a 0.25 mcy contingency volume.

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

YEAR	TARGET VOLUME
2001-2003	2.8 million cubic yards
2004-2006	2.41 million cubic yards
2007-2010	2.03 million cubic yards
2010-2013	1.64 million cubic yards
After 2013	1.25 million cubic yards

NOTES:

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

[3] 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

CHAPTER 11

11.0 REFERENCES

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CHAPTER 12

12.0 GLOSSARY

acute toxicity: Short-term toxicity to organism(s) that have been affected by the properties of a substance, such as contaminated sediment. The acute toxicity of a sediment is generally determined by quantifying the mortality of appropriately sensitive organisms that are put into contact with the sediment, under either field or laboratory conditions, for a specified period.

adsorb: The physical or chemical bonding of a gas or liquid (e.g., a contaminant) to a solid (e.g., soil); to adhere to the surface by electrostatic forces.

adsorption: The act of adsorbing (see adsorb).

Amphipods: Any of numerous small crustaceans of the order Amphipoda used in testing of sediments to determine suitability for in-water disposal.

anoxic: Absence of oxygen.

anthropogenic: Of, relating to, or influenced by the impact of man on nature or natural ecosystems.

Bathymetry: The measurement of depth of water.

bathypelagic zone: Ocean depths below 1,000 meters, characterized by complete darkness, low temperature, low oxygen, and great pressure.

benthos: The bottom of an aquatic environment.

bioaccumulation: The uptake of contaminants into an organism through any route, including respiration, ingestion, or direct contact with contaminated water or sediment.

bioassay: The use of living organisms to determine the effect of some substance, factor, or condition.

bioavailable: A contaminant existing in a form that can be taken up by living organisms.

biomagnification: Bioaccumulation up the food web, e.g., the route of accumulation is solely through food. Organisms at higher tropic levels will have higher body burdens than those at lower tropic levels.

breach: A gap or rift in a solid structure such as a levee; to make a hole or gap in.

cell: With respect to upland/wetland reuse of dredged material, such as rehandling facilities or wetland restoration, internally contained dredged material storage areas.

chronic toxicity: Biological tests that use sublethal effects such as abnormal development, growth, and reproduction, rather than solely lethality, as endpoints. These tests involve all, or at least an important, sensitive portion of an organism's life history. A sublethal endpoint may result either from short-term or long-term (chronic) exposures.

DDD: dichloro-diphenyldichloroethane (a breakdown product of DDT, components of technical DDT)

DDE: dichloro-diphenyldichloroethylene (a breakdown product of DDT, components of technical DDT)

DDT: dichloro-diphenyltrichloroethane (an insecticide)

designated waste: A non-hazardous waste containing compounds that, under ambient environmental conditions, could be released and cause degradation of waters of the state. These wastes can only be discharged at Class I or Class II waste management facilities.

ecosystem: The interacting system of a biological community and its non-living environmental surroundings.

epibenthic: In aquatic environments, animals living just above the sea or lake bottoms.

epifauna: In aquatic environments, animals living on top of sediments or other surfaces (cf infauna).

epipelagic zone: The upper area of the open ocean (the surface to 200 meters deep).

estuary: Regions of interaction between rivers and nearshore ocean waters where tidal action and river flow create a mixing of fresh and salt water. These areas may include bays, mouths of rivers, salt marshes, and lagoons.

Green Book: The Ocean Disposal Testing Manual (USEPA and USACE 1991)

hydraulic: Involving, moved, or operated by a fluid, especially water, under pressure.

inert waste: A waste that exhibits no chemically reactive properties.

infauna: In aquatic environments, animals living within sediments on the bottom.

isobath: Lines or contours representing equal depth.

LC50: Lethal concentration for 50 percent of test species.

maintenance dredging: Dredging recently deposited sediments in navigation channels.

"major dredgers": In this document, those dredgers that typically initiate dredging projects of 12 feet or more in depth (see "small dredgers").

mean higher high water: The average height of the higher of the daily high tides.

mean lower low water: The average height of the lower of the daily low tides.

mounding: The process of dredged material accumulating at a disposal site.

"mudlock": A situation in the Bay Area in the 1980s when several large, important proposed dredging projects threatened to tax the region's existing disposal options beyond capacity, and when repeated attempts to find other options failed due to various legal, environmental, and economic concerns.

new work construction: Dredging sediments in their natural condition.

NUAD material: Dredged material not suitable for unconfined aquatic disposal. There are three classes of NUAD material designating increasing levels of contamination.

oxygen minimum zone: The area in the ocean's mesopelagic zone where oxygen concentrations are the lowest in the entire water column.

PAHs: polynuclear aromatic hydrocarbons

PCBs: polychlorinated biphenyls

palustrine: A type of wetland that supports persistent vegetation and is inundated or saturated by waters of non-marine origin. Examples include marshes, swamps, bogs, etc.

pelagic: Living in the open ocean or seas rather than adjacent to land or inland waters.

pH: The measure of acidity or alkalinity of a solution, A pH of 7 is neutral, over 7 is alkaline, and a pH below 7 is acidic.

pycnocline: Rapid change in water density with changing depth.

salinity: The degree of salt in water.

sink: A depression or hole in which materials such as pollutants are concentrated.

"small dredgers": Relatively small dredging projects within channels, harbors, and marinas not exceeding a depth of 12 feet or a volume of 50,000 cy per year on average.

SUAD material: Dredged material that is considered suitable for unconfined aquatic disposal

sublethal: Not directly causing death; producing less obvious effects on behavior, biochemical and/or physiological function, or the histology of organisms.

subsidence: The process of sediment settling, usually at a lower level.

target volumes: Intermediate goals in the process of reducing the volume of in-Bay dredged material disposal.

tiered approach: A structured, hierarchical procedure for determining data needs relative to decisionmaking, which involves a series of tiers or levels of intensity of investigation. Typically, tiered testing involves decreasing uncertainty and increased available information with increasing tiers. This approach is intended to ensure the maintenance and protection of environmental quality, as well as the optimal use of resources.

toxicity test: A bioassay that measures an effect (e.g., acute toxicity, sublethal/chronic toxicity). Not a bioaccumulation test (see definition of bioassay).

trophic: Pertaining to nutrition or the nutritive process.

unsuitable sediment: Sediment that is inappropriate for a particular use.

water quality certification: A state certification that the proposed discharge of dredged material will comply with the applicable provisions of Sections 301, 303, 306, and 307 of the Clean Water Act.

water quality standard: A law or regulation that consists of the beneficial designated use or uses of a water body, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular water body, and an anti-degradation statement.

work category: In this document, there are three major categories of dredging work ("work categories"): maintenance dredging, new work dredging (i.e., deepening projects), and small dredging projects.

CHAPTER 13

13.0 ACRONYMS

Basin Plan	Water Quality Control Plan
Bay	San Francisco Bay
Bay Plan	San Francisco Bay Plan
BCDC	San Francisco Bay Conservation and Development Commission
BMK	Bel Marin Keys
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CALFED	CALFED Bay-Delta Program
CCMP	Comprehensive Conservation and Management Plan
CD	Consistency Determination
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
Coastal Conservancy	California Coastal Conservancy
COC	contaminant of concern
COTP	Captain of the Port
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
cy	cubic yards
CZMA	Coastal Zone Management Act
DDT	dichlorodiphenyl-trichlorithane
DMMO	Dredged Material Management Office

DMMP	Dredged Material Management Plan
DMRP	Dredged Material Reuse Project
DPC	Delta Protection Commission
DWR	California Department of Water Resources
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Executive Committee	Long-Term Management Strategy Executive Committee
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
Guidelines	Clean Water Act Section 404(b)(1) Guidelines
ITM	Inland Testing Manual
LPC	limiting permissible concentration
LTMS	Long-Term Management Strategy
LTMS EIS/EIR	Long-Term Management Strategy Final Environmental Impact Statement/ Environmental Impact Report
m	meter
Management Committee	Long-Term Management Strategy Management Committee
Management Plan	Long-Term Management Strategy Management Plan
mcy	million cubic yards
MLLW	mean lower low water
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

MPA	McAteer-Petris Act
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972
MSFCMA	Magnuson-Stephens Fishery Conservation and Management Act
MTC	Metropolitan Transportation Commission
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NUAD	unsuitable for unconfined aquatic disposal
OAL	Office of Administrative Law
OCRM	Ocean and Coastal Resources Management
PAHs	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
PGP	Programmatic General Permit
PN	Public Notice
PRC	Policy Review Committee
RIM	Regional Implementation Manual
RMP	Regional Monitoring Program
ROD	Record of Decision (NEPA)
SA	Secretary of the Army
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFEP	San Francisco Estuary Project
SF-DODS	San Francisco Deep Ocean Disposal Site
SLC	California State Lands Commission
SMMP	Site Management and Monitoring Plan

SMP	Site Management Plan
SMPA	Suisan Marsh Preservation Act
SQC	Sediment Quality Criteria
SQG	Sediment Quality Guidelines
SUAD	suitable for unconfined aquatic disposal
SWRCB	State Water Resources Control Board
TBP	theoretical bioaccumulation potential
TDS	total dissolved solids
THM	trihalomethane
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VTCS	Vessel Traffic Control Service
WCB	Wildlife Conservation Board
WDR	Waste Discharge Requirement
WET	Waste Extraction Test
WQC	Water Quality Criteria/Certification
WRDA	Water Resources Development Act

CHAPTER 14

14.0 LIST OF PREPARERS

14.1 PRINCIPAL AND CONTRIBUTING AUTHORS

LTMS Management Plan

Glynnis Collins
San Francisco Bay Regional Water Quality Control Board

Kathy Dadey
U.S. Environmental Protection Agency, Region 9

Jim Delorey
U.S. Army Corps of Engineers, San Francisco District

David Dwinell
U.S. Army Corps of Engineers, San Francisco District

Ron Gervason
San Francisco Bay Regional Water Quality Control Board

Jack Gregg (formerly of)
San Francisco Bay Regional Water Quality Control Board

Steve Goldbeck
San Francisco Bay Conservation and Development Commission

Kevin Knight
U.S. Army Corps of Engineers, San Francisco District

Jaime Michaels
San Francisco Bay Conservation and Development Commission

Scott Nicholson
U.S. Army Corps of Engineers, San Francisco District

Tamara Terry
U.S. Army Corps of Engineers, San Francisco District

14.2 PRODUCTION

Project Assistance

Brenda Goeden
San Francisco Bay Conservation and Development Commission

Brian Ross
U.S. Environmental Protection Agency, Region 9

Cinamon Vann
San Francisco Bay Conservation and Development Commission

Editorial Assistance and Production

Science Applications International Corporation
Environmental Programs Division

Graphics

Yuki Kawaguchi

Document Production

Rebecca Bacon (formerly of)
San Francisco Bay Conservation and Development Commission

Lisa Bautista

Graciela Gomez
San Francisco Bay Conservation and Development Commission

Kelly Westenbarger
San Francisco Bay Conservation and Development Commission

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CHAPTER 15

15.0 MEASUREMENTS, ABBREVIATIONS, AND CONVERSIONS

15.1 LIST OF MEASUREMENTS

cm	centimeters
cm/sec	centimeters per second
cy	cubic yards
^{o}C	degrees Celsius
^{o}F	degrees Fahrenheit
ft	feet
km^2	square kilometers
m	meters
m^2	square meters
mcy	million cubic yards
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ng/L	nanograms per liter
ppb	parts per billion
ppm	parts per million
µg/L	micrograms per liter
µM/L	micromoles per liter

15.2 UNIT CONVERSIONS

Multiply	***By***	***To Obtain***
milligrams per liter	1	parts per million (fluid)
milligrams per kilogram	1	parts per million (soils, sediments)
micrograms per liter	1	parts per billion (fluid)
nanograms per liter	1	parts per trillion (fluid)
feet	0.3048	Meters
miles (nautical)	1.853	Kilometers
miles (statute)	1.609	Kilometers
inches	2.540	Centimeters
cubic yards	0.7646	cubic meters
miles per hour	44.70	Centimeters per second
square feet	0.09290	Square meters
square miles (nautical)	3.434	square kilometers
µM/L	molecular weight	Micrograms per liter

15.3 MULTIPLES AND SUBMULTIPLES

Prefix	***Symbol***	***Equivalent***	***Factor***
nano-	n	billionth part	x 10^{-9}
micro-	µ	millionth part	x 10^{-6}
milli-	m	thousandth part	x 10^{-3}
centi-	c	hundredth part	x 10^{-2}
kilo-	k	thousandfold	x 10^{3}