APPENDIX A
PROGRAM DATA ASSESSMENT MEETING MATERIALS PACKAGE

Additional information prepared after the public meeting has been added to this appendix.

SAN FRANCISCO BAY LONG-TERM MANAGEMENT STRATEGY PROGRAM 12-YEAR REVIEW

BACKGROUND INFORMATION FOR MARCH 29, 2012, MEETING

Prepared by

San Francisco Bay Conservation and Development Commission

San Francisco Bay Regional Water Quality Control Board

U.S. Army Corps of Engineers

U.S. Environmental Protection Agency

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1 INTRODUCTION

Development of the San Francisco Bay Long-Term Management Strategy (LTMS) program for dredged material began in 1990 to address issues regarding the mounding of dredged material at the Alcatraz disposal site (SF-11) and potential impacts from dredging and dredged material disposal on water quality, wildlife, and uses of the San Francisco Bay. The agencies involved in the creation of the LTMS included the San Francisco Bay Conservation and Development Commission (BCDC), State Water Resources Control Board (SWRCB), San Francisco Bay Regional Water Quality Control Board (Water Board), the U.S. Army Corps of Engineers (USACE) San Francisco District, U.S. Environmental Protection Agency (USEPA), and State Lands Commission (SLC). The goals adopted in the LTMS program include:

- Maintaining navigation channels in an economically and environmentally sound manner
- Managing dredged material disposal and placement in an environmentally sound manner
- Maximizing the beneficial reuse of dredged material
- Establishing a cooperative permitting process for dredging and dredged material disposal and placement applications

Following several years of studies and substantial public coordination, the LTMS agencies issued 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 (EIS/EIR) in 1998. The EIS/EIR evaluated alternative long-term dredged material management strategies for dredged material placement in the Bay, the ocean, and at beneficial reuse sites. The environmentally preferred alternative, and the one selected for implementation, was designed to maximize beneficial reuse and minimize in-Bay disposal, with placement at the new San Francisco Deep Ocean Disposal Site (SF-DODS) as a "safety valve" so that in-Bay disposal could steadily be reduced even while additional reuse site capacity was being developed.

Specific guidance for implementing the strategy selected in the LTMS EIS/EIR was presented in the LTMS Management Plan (Management Plan), issued by the LTMS agencies in 2001. The Management Plan established a 12-year transition period for achieving reduced in-Bay disposal volumes. The transition period, with voluntary compliance as long as in-Bay goals were met and allocations triggered only if goals were missed, provided time for reuse site planning and provided public assurance that in-Bay disposal would in fact decrease. It also formalized the Dredged Material Management Office (DMMO); provided detailed guidance for permitting projects involving dredging and dredged material placement in the Bay;

completing suitability determinations; managing and monitoring placement sites (including in-Bay, ocean, and beneficial reuse sites); managing the in-Bay placement goals; implementing environmental work windows; aligning beneficial reuse with regional habitat goals; and conducting reviews of the Management Plan itself. Certain aspects of the Management Plan became state and federal policy and regulation, such as the transition targets and in-Bay disposal volumes.

The Management Plan called for periodic review and/or modification to ensure that the program remains achievable and current in light of changing conditions over time. Specifically, the LTMS agencies were directed to complete basic reviews of the program, every three years, with input from interested parties. More comprehensive reviews were to occur every six years. A "Six Year Review Report" was issued in May 2006.

Since the beginning of 2013 will mark the end of the 12-year Transition Period, the LTMS agencies are beginning the 12-year review process now. It is anticipated that this process will involve the agencies collecting and disseminating basic data about the Program's performance to date, and holding a series of meetings with stakeholders (each focused on a different key topic or topics) culminating with a summary report. This process and report will form a basis for discussing whether changes to the program may be desirable in the future.

The first meeting will be held on March 29, 2012. During that meeting, the LTMS agencies and interested parties will review the policies and implementation of the LTMS program over the past 12 years in order to create a common understanding on which more detailed discussions will be built. In preparation for the meeting, this document provides information on the progress of the LTMS' agencies implementation of the Management Plan through consideration of the quantitative and qualitative success criteria included in Chapter 8 of the Management Plan. This document also provides summaries of current key LTMS program components that were not specifically envisioned at the time that the Management Plan was prepared.

2 PROGRAM REVIEW BASED ON THE MANAGEMENT PLAN EVALUATION MEASURES

Tables 1 and 2 provide preliminary assessments of the LTMS program using the quantitative and qualitative evaluation measures established in the Management Plan, respectively.

Table 1

LTMS Program Performance Using Quantitative Evaluation Measures

Evaluation Measure		Performance
1	Ten percent increase in funding for upland disposal annually	Governmental funding for upland disposal projects has not increased by 10 percent annually.
2	No lawsuits	No lawsuits have been filed regarding the LTMS program.
3	Acreage of Bay habitat restored using dredged material	Approximately 2,090 acres of Bay and wetland habitat have been restored using dredged material.
4	Increased number of approved alternatives to in-Bay disposal	There is an increase in the number of approved alternatives to in-Bay disposal. Figure 1 shows the beneficial reuse sites that the Management Plan anticipated would be used in the future, Figure 2 shows the draft Dredged Material Management Plan's (DMMP's) predictions for beneficial reuse in the future, and Figure 3 shows the beneficial reuse sites that have actually been used over the past 12 years.
5	Available in-Bay disposal capacity	Because of beneficial reuse and SF-DODS, sufficient in-Bay disposal capacity has consistently been available to meet the Bay's dredging needs. The Management Plan established a 12-year Transition Period (see Figure 4) that reduces in-Bay disposal by 387,500 cy every three years, until the final limit of 1.25 million cubic yards (mcy) annually is reached. As is shown in Figure 5 and the response to Measure 7, surplus capacity has remained each year at in-Bay placement sites even as in-Bay disposal limits have decreased. On occasion, the DMMO has redirected dredging projects to other in-Bay sites to maintain capacity at individual sites.
6	Document long-term trends and variability in dredging volumes	Dredging volumes in the San Francisco Bay since 1956 are shown in Figure 6. The Dredged Material Management Office (DMMO) prepares annual reports that track the annual trends and variability of dredging volumes. These reports are available at: http://www.spn.usace.army.mil/conops/annualreports.html. Figures 7, 8, and 9 provide a summary of the annual dredging volumes in the San Francisco Bay between 2000 and 2010.
7	Meet or beat transition glide path	As shown in Figures 4 and 5, the Transition Period's "glide path" for reducing in-Bay disposal has consistently been met, with volume to spare.
8	Depth of Alcatraz disposal site	The depth of the Alcatraz site has been consistently maintained between -35 and -60 feet mean lower low water (MLLW). As such, it is not a navigation hazard.
9	Footprint of Alcatraz and other sites	The footprint of the Alcatraz site, and the other in-Bay sites, has not changed. The mound has been actively managed by the DMMO to ensure that it has not increased in size.
10	Acreage of habitat created for threatened and endangered species	Approximately 2,090 acres of habitat for threatened and endangered species have been created. See the response to Measure 3.

Evaluation Measure		Performance
11	Number of sites for reuse of material that is not suitable for unconfined aquatic disposal to be reused	While four sites (Montezuma, Port of Oakland's Berth 10, Port of San Francisco Pier 92/94, and Richmond Levin Terminal) have accepted material that is not suitable for unconfined aquatic disposal, only one (Montezuma) is specifically for reuse.
12	Adequate funding for LTMS	From 2007 through 2010, the LTMS program has received sufficient funding to support the operations of the LTMS program and the DMMO, and to fund several studies on potential impacts from dredging on listed species. However, since 2010, there has been a marked and severe cut in LTMS funding from the federal government.
13	Increased number of rehandling facilities	The number of rehandling facilities has not increased. However, the Port of Oakland's Berth 10 and the Port of San Francisco's Pier 94 have accepted unsuitable material from other projects on occasion.
14	Reduced cost for upland disposal	This measure has been variable year to year and project-by-project and more detailed information is provided in Figures 10 through 13.
15	Maintain navigability and project depths	In almost all cases, the federal navigation channels have been maintained to full project depth. In some cases, certain areas have not been maintained to full project depth at each episode. These situations are primarily driven by federal funding shortfalls, not by restrictions imposed by the LTMS program.
16	Reduced impact of dredged material on native species	By completing dredging and dredged material placement within specified environmental work windows, the impacts of these activities on native aquatic and terrestrial species has been reduced.
17	Reduced navigational incidents or accidents (i.e., groundings)	Navigational incidents associated with groundings have been few. See the response to Measure 15.

Table 2

LTMS Program Performance Using Qualitative Evaluation Measures Criteria

Evaluation Measure		Performance
1	Do we have upland sites?	Yes, see Figure 3.
2	Is regional planning under way?	The LTMS agencies have been involved with the Subtidal Goals Project, the Programmatic Essential Fish Habitat (EFH) consultation with National Marine Fisheries Service (NMFS), programmatic Endangered Species Act (ESA) consultation with NMFS and U.S. Fish and Wildlife Service (USFWS), Regional Sediment Management (RSM), and the USACE DMMP planning, among other efforts.
3	Healthier Bay	The LTMS program has contributed to a healthier Bay by confirming the suitability of dredged material disposed in the Bay, reducing in-Bay disposal volumes (and thereby turbidity), facilitating beneficial reuse of dredged material for restoring Bay habitat, and reducing impacts to native aquatic and terrestrial species by adopting environmental work windows.
4	Predictability of testing (Regional Implementation Manual approved/adopted)	The DMMO has established clear and predictable testing requirements and procedures. When new information or new policies develop that affect these requirements and procedures (i.e., through the LTMS Programmatic EFH Consultation), the LTMS agencies have worked closely with the interested parties to ensure that the new information is conveyed timely and effectively. See Section 3.2.1
5	Documented participation of all stakeholders	Through ongoing work group and Management Committee meetings, interested parties are able to regularly participate in the LTMS program. However, representation from the resource agencies, fishers, and environmental groups has been relatively limited since adoption of the Management Plan.
6	Local governments aware of LTMS process and taking action in reviewing dredging and disposal projects in support of LTMS (CEQA)	Local governments do not commonly take action in reviewing dredging and dredged material placements in support of the LTMS. However, the LTMS agencies are reaching out to local governments through the RSM process.
7	Sustained regional economic contribution from maritime community	The LTMS program has not received sustained economic contributions directly from the maritime community; however, regional maritime-focused business groups have historically collaborated to ensure that federal funding for the LTMS program has been provided on an annual basis. In addition, most dredgers contribute to the Regional Monitoring Program (RMP), data from which is used directly by the LTMS program. See the response to Measure 11.
8	Process for dredging is "predictable"	As with the testing requirements and procedures, the DMMO has improved the permitting process for projects involving dredging and dredged material placement. Section 3.1.1 provides more information on the DMMO permitting process. The DMMO uses tools such as a consolidated permit application and regular bi-weekly meetings to ensure that the multi-agency permitting process is consistent and that any questions are communicated to all agencies involved.

Evaluation Measure		Performance
9	Reduce uncertainty as to adverse effects of disposal or reuse of dredged material	The LTMS has conducted studies to determine the potential effects of dredged material placement, both in water (i.e., turbidity studies) and in wetlands (i.e., methylmercury studies). These studies, as well as additional studies conducted by other entities, have reduced uncertainty associated with the potential effects of dredged material placement; however, ongoing research will continue to provide a better understanding of both direct and indirect effects of these activities on water quality and aquatic and terrestrial species.
10	Consensus on nomenclature for suitability of dredged material	There is now interagency consensus on the nomenclature used regarding the suitability of dredged material.
11	In-Bay monitoring efforts of LTMS and RMP linked	The RMP and the LTMS coordinate efforts in several ways including special studies, data availability, Total Maximum Daily Load (TMDL) limits, and bioaccumulation trigger calculations for EFH.

3 PROGRAM REVIEW BASED ON THE LTMS GOALS

While the goals of the program remain consistent with those in the Management Plan, evaluation of the program as it operates today using only the established measures does not allow for a thorough evaluation of certain key program aspects. As such, this section provides a brief assessment of key aspects of the LTMS program undertaken to accomplish the program's goals but not specifically envisioned in the development of the Management Plan's evaluation measures.

3.1 Establish a Cooperative Permitting Process

3.1.1 Permit Coordination/Dredged Material Management Office

Origin

Prior to the LTMS program, applicants had to separately submit and coordinate permit applications to between 3 and 5 authorizing agencies. When applicants made changes to the project or conditions were added by an individual agency, the result was separate authorizations for slightly different projects. These inconsistencies often required permit modifications to bring the permits in line with one another, causing additional delays and expense. Agencies also issued permits for different durations and with different expiration dates, and in some cases, permits expired before all other permits were granted.

Impacts Addressed

Impacts addressed include: complicated coordination between agencies and applicants; inconsistent project descriptions and permit conditions; and delays in permit issuance and thereby dredging.

Benefits

The creation of the DMMO included a consolidated application for dredging projects to be submitted to LTMS agencies; regular public meetings offer applicants the opportunity to discuss their project with all LTMS agencies; improved permit processing time and consistency; and improved certainty in the permitting process.

Detriments

No joint permit is issued by responsible agencies.

Additional LTMS Efforts

Ten-year permits are available from BCDC, USACE and the State Lands Commission. The San Francisco Bay Water Board can issue a 5-year water quality certification. In addition, the LTMS agencies developed a programmatic alternative disposal site analysis for small

projects, and allow larger projects or those with multiple facilities to prepare an integrated alternative disposal site analysis that increases flexibility in meeting the LTMS goals.

3.1.2 Programmatic Environmental Work Windows

Origin

After completion of the LTMS EIS/EIR, USACE and USEPA with the support of the San Francisco Bay Water Board and BCDC requested programmatic consultations for all maintenance dredging projects covered by the LTMS program (including the federal channels, Bay Area ports, refineries and other berthing facilities, marinas, and homeowners with individual docks). The consultations resulted in biological opinions (BO) from NMFS and USFWS, with concurrence from California Department of Fish and Game (DFG). Together, the BOs resulted in environmental work windows that avoided dredging and dredged sediment disposal at locations and times where listed species and species of special concern could be present.

Threatened or Endangered Species: Chinook and Coho salmon, steelhead trout, delta smelt, least tern, clapper rail, salt marsh harvest mouse (not addressed: longfin smelt and green sturgeon)

Species of Special Concern: Pacific herring and Dungeness crab

Impacts Addressed

Environmental work windows minimize impacts to listed species and species of special concern by reducing dredging and disposal activities when species are present. The potential impacts from dredging and disposal on listed and species of special concern include: increased turbidity, burial, entrainment, habitat destruction, loss of forage area, and avoidance. While the same potential impacts may occur for green sturgeon and longfin smelt, work windows are not practical as these species are present in the Bay all year.

Status

The USFWS BO was updated in 2004 to ease restrictions in the South Bay due to loss of the least tern colony at Redwood City and include a work window for the deep water berths located between the Carquinez Strait and Suisun Bay. The LTMS agencies requested an amendment to the NMFS BO in 2006 to include the recently listed green sturgeon and consider the new information provided through tracking listed salmonids. NMFS has not yet completed the amendment.

DFG listed longfin smelt in 2009. No work windows exist for longfin smelt as they are present in the Bay year round. DFG requires an incidental take permit for take of listed species; however, mechanical dredging is generally considered to not take longfin smelt. As NMFS and USFWS complete new or amended BOs, DFG can review the amendments and determine whether concurrence is appropriate or a separate take authorization, including mitigation, is necessary.

Benefits

Benefits include: planning advantage in knowing when dredging can occur; reduced paper work for the applicant and agencies through programmatic BOs; time savings in permitting process; and improved protection for endangered and threatened species.

Detriments

Detriments include: limited time for dredging to occur; difficulty for construction companies to have full-time year-round work; competition for equipment; time extensions are often needed to complete projects; and additional costs are likely due to compressed timeframes to complete work.

Additional LTMS Efforts

LTMS agencies and stakeholders met several times per year between 2002 and 2010 to help projects more successfully dredge within the work windows. This education and planning effort continues. Additional efforts were made to examine technological advances or operational changes that might reduce impacts sufficiently to programmatically extend the work windows in some areas. This effort produced a set of best management practices (BMPs) for medium to large dredging contractors, but largely did not identify improvements that would ease dredging and disposal restrictions.

The most extensive effort in both time and funding was spent on increasing scientific knowledge regarding either species' presence and behavior or impacts from dredging. An LTMS Environmental Work Window Science Framework was developed that identified agency concerns and potential studies that may be able to address those concerns. The LTMS program went on to undertake a number of studies (listed below), including both literature reviews and laboratory and field studies. For example, a study of the effects of increased turbidity on herring eggs and larvae confirmed that impacts do occur, primarily to egg adhesion and development. The salmon tracking studies identified residence times and migration pathways out of the Bay. The science work group also hosted a number of symposia to facilitate collaborative communication among stakeholders and scientists.

The LTMS program was well funded by Congress for approximately four years, largely due to stakeholders' efforts to secure funding. However, in 2011 and 2012, funding has been nearly eliminated; therefore, the study program has been put on hold.

Completed Studies and Literature Reviews

1. Framework for Assessing Dredging Effects
2. Spatial Characterization of Suspended Sediment Plumes at Oakland Outer Harbor
3. Assessment of Resuspension by Vessel Traffic at Redwood City Harbor
4. Characterization of Plumes Associated with Knockdowns at Richmond Long Wharf
5. Bibliography of Herring Literature
6. Herring Literature Review
7. State of Knowledge of Dredging Impacts on Herring
8. Herring Study I - Impacts on Larvae
9. Herring Study II - Impacts on Juveniles
10. Least Tern Literature Review
11. Tools for Assessing Fish Behavior Literature Review
12. Effects of Water Quality Impacts Literature Review

Draft Studies and Literature Reviews

13. Juvenile Salmonid Outmigration: Interim Draft Report 2008 – 2009
14. Juvenile Salmonid Outmigration & Green Sturgeon: Distribution Draft Annual Report 2009
15. Juvenile Salmonid Outmigration & Green Sturgeon: Distribution Draft Annual Report 2010
16. Juvenile Salmonid Outmigration & Green Sturgeon: Distribution Draft Annual Report 2011
17. Framework Update
18. Effects of Resuspended Sediments Literature Review
19. Fish Behavior During Dredging - Literature Review
20. Longfin Smelt Literature Review
21. Fish Behavior During Dredging

Completed literature reviews and studies and some drafts can be found on the LTMS website at: http://www.spn.usace.army.mil/ltms/ltms_studies_symposia.html.

3.1.3 Essential Fish Habitat

Origin

The 1996 Magnuson Stevens Fishery Conservation and Management Act was signed into law to protect the habitat on which NMFS' managed species depend. EFH includes those waters and substrates necessary for spawning, breeding, feeding, or growth. All of San Francisco Bay is essential fish habitat for the three NMFS managed fisheries: pelagic; groundfish; and salmonids. The LTMS EIS/EIR was completed prior to EFH issues being addressed by NMFS and therefore, each project required individual consultation upon permitting. NMFS and the LTMS agencies began a programmatic consultation process to address EFH in 2009.

Status

In June 2011, programmatic EFH conservation measures for projects managed under the LTMS program were agreed to by USACE, USEPA and NMFS. The agreement provided further protection for eelgrass; additional testing requirements for specific chemical analytes; and required further study of impacts of dredging on benthic invertebrates and subaquatic vegetation. Since implementing the EFH agreement, a technical modification has been made that limits the need for additional mercury testing.

Impacts Addressed

Impacts addressed include: indirect effects from turbidity and direct removal on eelgrass, disposal of contaminants – specifically mercury, polycyclic aromatic hydrocarbons, PCBs, DDTs, chlordane, dieldrin, dioxins/furans; residual (post-dredging) contamination; subtidal habitat disturbance; loss of forage; invasive species; and submerged aquatic vegetation.

Benefits

The programmatic EFH recommendations cover all maintenance dredging projects managed under the LTMS program, resulting in: less permit processing time for the USACE, NMFS and permittees; establishment of BMPs which reduce frequency of disturbance; certainty in minimization and mitigation measures for projects with proximity to eelgrass; and better reporting.

Detriments

Additional testing requirements (including residuals and bioaccumulation testing) may increase cost and time for some projects, and inclusion of silt curtains and/or light monitoring for projects adjacent to eelgrass beds increases costs.

3.2 Manage Dredged Material Disposal in an Environmentally Sound Manner

3.2.1 Testing/Suitability

Origin

Prior to the LTMS program, there was considerable public distrust that the Bay was being appropriately protected from the aquatic disposal of contaminated sediments. During the development of the Management Plan, the USEPA and USACE issued national sediment testing guidance in the form of the 1998 National Inland Testing Manual (ITM) for inland waters, including coastal estuaries. The LTMS agencies used this national guidance to replace the antiquated sediment testing program by increasing chemical and biological testing, including development of a disposal reference site and creation of the Alcatraz disposal site reference database.

Under the Management Plan

Once the Management Plan was adopted, the DMMO developed and provided public notices and guidance (Implementation of the ITM for the Bay Region, Tier One Exclusions from Testing and Sampling and Analysis Plan preparation, and beneficial reuse guidance). This new program was in compliance with the ITM, improved testing quality and predictability, and created environmental protection credibility. Further, an Ocean Testing Manual for SF-DODS and Bay Area database was established. Overall, the program reduced sampling and testing requirements and increased environmental protectiveness.

Post-Management Plan Testing Advances

Work through the DMMO has further improved environmental protection and helped to reduce testing costs. Greater environmental protection has been achieved by reviewing test results for in-Bay, ocean disposal, and beneficial reuse of sediment in a systematic way; establishing that the program is a net "remover" of contaminated sediments through upland disposal; integrating the TMDL in the testing program; requiring bioaccumulation testing where appropriate; and developing a post-oil spill rapid assessment method. The program has reduced costs overall by increasing the use of Tier I waivers where appropriate over multi-year testing schedules; increasing predictability in the testing program; and utilizing the RMP expertise in developing appropriate comparators and reducing delays to dredging projects overall by having a succinct and efficient program. Further, the DMMO agencies have participated in other efforts regarding dredged sediment and have clarified that new TMDLs impose no "allocation" for dredging, since the LTMS is a net remover of contaminants (exemption would likely not exist in absence of LTMS program) and that California sediment quality objectives do not directly apply to dredged material discharges.

Emerging Testing Issues

Ongoing research, new TMDLs, or new national sediment testing guidelines could lead to:

- More routine evaluation for additional contaminant classes such as pyrethroids, PBDEs, or dioxins/furans
- Different testing thresholds for contaminants routinely monitored today, such as PAHs and other bioaccumulative compounds
- Different bioassays (such as chronic toxicity) or different test species
- New sediment reference sites for the Bay

3.3 Maximize the Beneficial Reuse of Dredged Material

Dredged material has been beneficially reused in a number of ways around the Bay, including wetland creation and restoration, levee maintenance, construction fill, sand, and landfill daily cover. Figure 3 shows how approximately 19 million cy of dredged material from the Bay has been beneficially reused under the LTMS program. Table 3 shows the acreage of habitat restoration projects in the Bay that have been completed through beneficially reusing dredged material.

Table 3

Bay Habitat Restored through Beneficial Reuse of Dredged Material

Project	Acres of Habitat Restored	Acreage of Habitat Restored for Threatened and Endangered Species	Project Status
Port of Oakland, Middle Harbor Enhancement Area	180 acres of subtidal habitat including eelgrass beds	180 acres of restored habitat including 161 acres shallow water and eelgrass beds, 5 acres of salt marsh, and 0.5 acres of avian high tide refugia (green sturgeon, longfin smelt, salmonids, least tern)	Dredging/placement complete; regrading and eelgrass planting incomplete
Inner Bair Island, Area D	33 acres of tidal wetlands	33 acres of tidal wetlands (habitat for salt marsh harvest mouse and California clapper rail)	Incomplete; currently inactive
Hamilton Wetland Restoration Site	962.4 acres of tidal and seasonal wetlands, and transitional uplands	360 acres of tidal wetlands (habitat for California clapper rail and salt marsh harvest mouse, longfin smelt, salmonids)	Dredging/placement complete; levee breach scheduled for 2013
Montezuma Wetland Restoration Site Phase I	561 acres – Phase 1	A total of 1,820 acres planned for Phases 1-4: 332 acres low tidal marsh; 198 acres high tidal marsh; 32 acres intertidal channels; 28 acres seasonal wetlands; 6.6 acres intertidal ponds; 29 acres Clank Hollow; and 19 acres refugial and nesting island for birds for a total of 644.6 acres, plus 220 acres of upland transition and buffer zone habitat for least tern, snowy plover, longfin smelt, Delta smelt, green sturgeon and salmonids	Incomplete; accepted 3 mcy 2003 to 2006 and 600,000 cy in 2012
Sonoma Baylands	322 acres of tidal wetlands	322 acres tidal wetlands (habitat for California clapper rail, salt marsh harvest mouse, longfin smelt, salmonids)	Complete
Chevron Remediation Site at Castro Cove	18.5 acres of subtidal wetlands and 1.5 acres of salt marsh	18.5 acres of restored subtidal habitat (green sturgeon and steelhead); 1.5 acres of restored salt marsh (habitat for salt marsh harvest mouse, California black rail, California clapper rail)	Incomplete
Yosemite Slough	7 acres of tidal wetlands	California clapper rail, salt marsh harvest mouse, and longfin smelt	Dredging and placement in Phase I complete, Phase II will include an additional 5 acres of tidal wetland
Port of Richmond Shipyard 3	1 acre intertidal and shallow bayland	Least tern foraging; salmon, steelhead and longfin smelt habitat	Complete

Project	Acres of Habitat Restored	Acreage of Habitat Restored for Threatened and Endangered Species	Project Status
Stege Marsh	3 acres of salt marsh		Complete
Peyton Slough	14.6 acres of tidal wetland		Complete

3.4 Maintain Navigation Channels in an Economically and Environmentally Sound Manner

3.4.1 Volumes and Costs

Overview

This category of analysis is perhaps the most challenging to characterize and the LTMS agencies recognize that additional information would be helpful to fully understand the actual costs to the dredging and reuse community. Figures 10 through 13 provide information on the cost of dredging/placement of federal operations and maintenance (O&M) projects. Information in the figures was derived from USACE official contract documents, which identify volume dredged, unit prices, and total payments made to contractor. USACE dredge plant costs (hopper dredges Essayons and Yaquina) are derived from reports provided by the dredge plant and actual cost transfer records. All deepening costs have been removed from the data.

Figure Information

- Figure 10 shows costs for fuel, Davis-Bacon wage rates, and navigation construction index, on an annualized basis with year 2000 as the baseline.
- Figure 11 provides a graphical representation of yearly maintenance dredging costs per cy specific to each federal channel beginning in 2000; large drops do not indicate a sharp decrease in cost but are rather a function of the availability of funding for the particular project; and a key point to remember is that USACE has not had adequate funding to fully execute its program, particularly in the past three years.
- Figure 12 provides a graphical representation of yearly costs per cy by placement location for USACE maintenance dredging projects, beginning in 2000; if more than one project placed at the same site in a given year, all were combined to produce a single data point for that year; and actual costs represent available funding, not necessarily a decrease in the cost of doing the work.
- Figure 13 provides a comparison of costs for USACE maintenance dredging projects, between contract dredging and the USACE dredge plant, and all contract dredging placed at a specific site in the same year is combined into a single data point.

3.4.2 Implementation of Policy Improvements

Pre-Management Plan

- Without the LTMS and DMMO, there were uncoordinated regulatory requirements, longer timeframes, and higher expenses.

- The sediment testing program was antiquated and there was public distrust that the Bay was being protected.
- There were both public objections and few alternatives to in-Bay disposal of dredged sediment.
- The project approval process was unpredictable. For example, it took 20 years to approve the Port of Oakland -42 feet MLLW deepening project, as compared to 3 years to approve the Port of Oakland -50 feet MLLW deepening project.

Policy Advances

As the LTMS agencies have gained experience working with the dredging community and beneficial reuse sites, additional policy advancements have been made, including (others are mentioned in the text above):

- Multi-year permitting with environmental review intact
- Multi-year sediment testing schedules
- Authorization of in-place knock-downs in permits (monitoring required for projects above 5,000 cy)
- Permitting of advance maintenance dredging where need is demonstrated

Emerging Policy Issues

- Equipment: entrainment of longfin and delta smelt by hydraulic dredges
- Water quality: dredging scow water overflow
- Recent ESA listings: green sturgeon and longfin smelt
- Contracting improvements for beneficial reuse: 2011 Value Engineering Study (some are already in implementation)
- Long-term planning: sea level rise; reduced Bay sediment supply; Subtidal Habitat Goals integration/coordination; and identification of new beneficial reuse approaches

4 NEXT STEPS

This document was prepared as background information for the March 29, 2012, meeting with the LTMS agencies and interested parties that focuses solely on the LTMS Management Plan 12-year review process. As stated in Section 1, it is anticipated that the 12-year review process will involve a series of meetings with LTMS agencies and interested parties, and a summary report that documents the LTMS' performance and information gathered throughout the year-long process. Depending on the input received at this meeting, modifications to the currently-envisioned process for carrying out the review may be made. When the 12-year review process is complete, the LTMS agencies will consider whether there may be a need to revise elements of the Management Plan.

Figure 1

Management Plan-Projected Beneficial Reuse and Upland Disposal Capacity

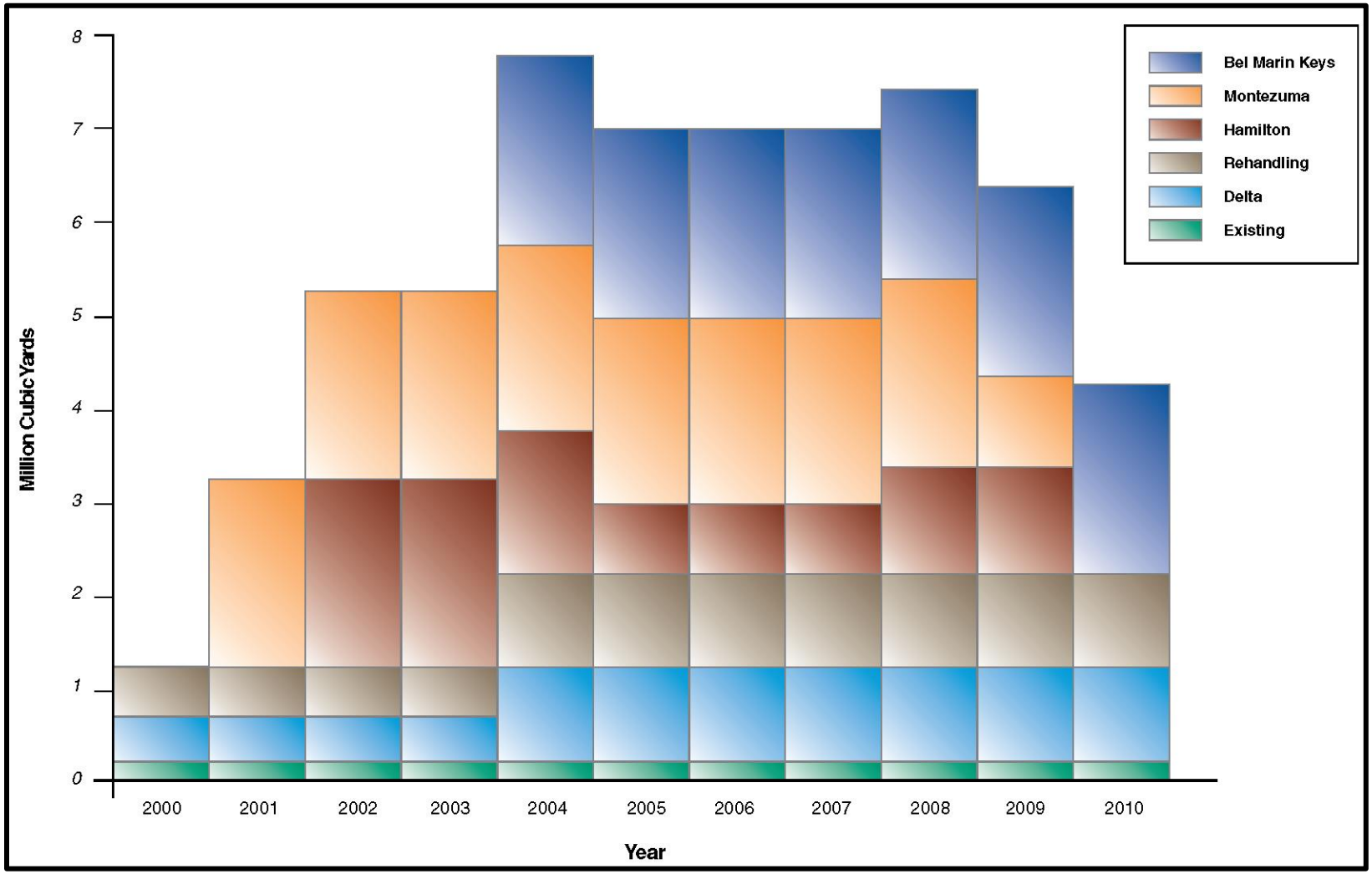
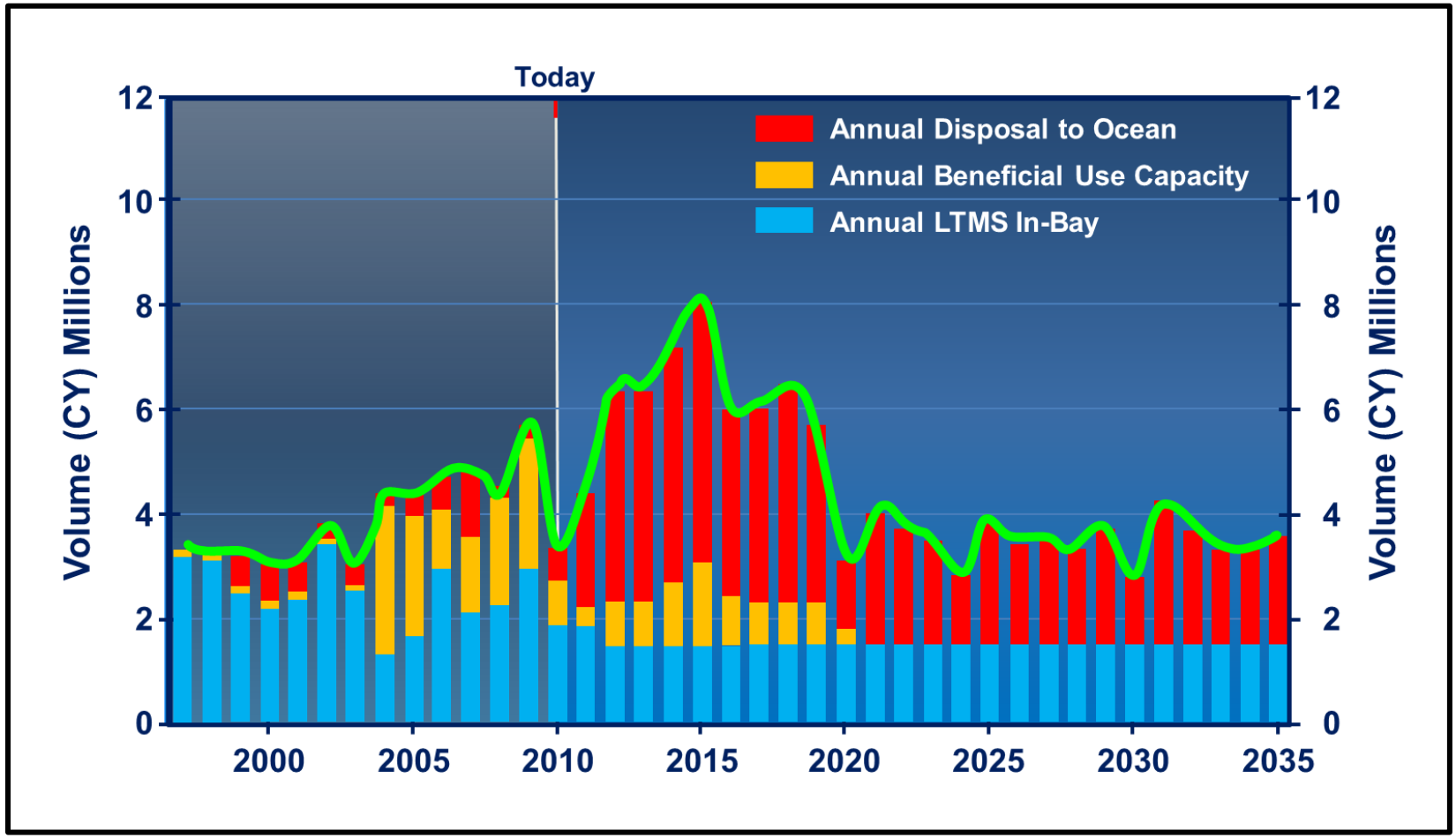


Figure 2

2010 Draft DMMP-Projected Ocean, Beneficial Reuse, and In-Bay Disposal Capacities*



* Including different assumptions about new-work projects, reuse sites, etc.

Figure 3

Actual Beneficial Reuse by Category – 2000 to 2010

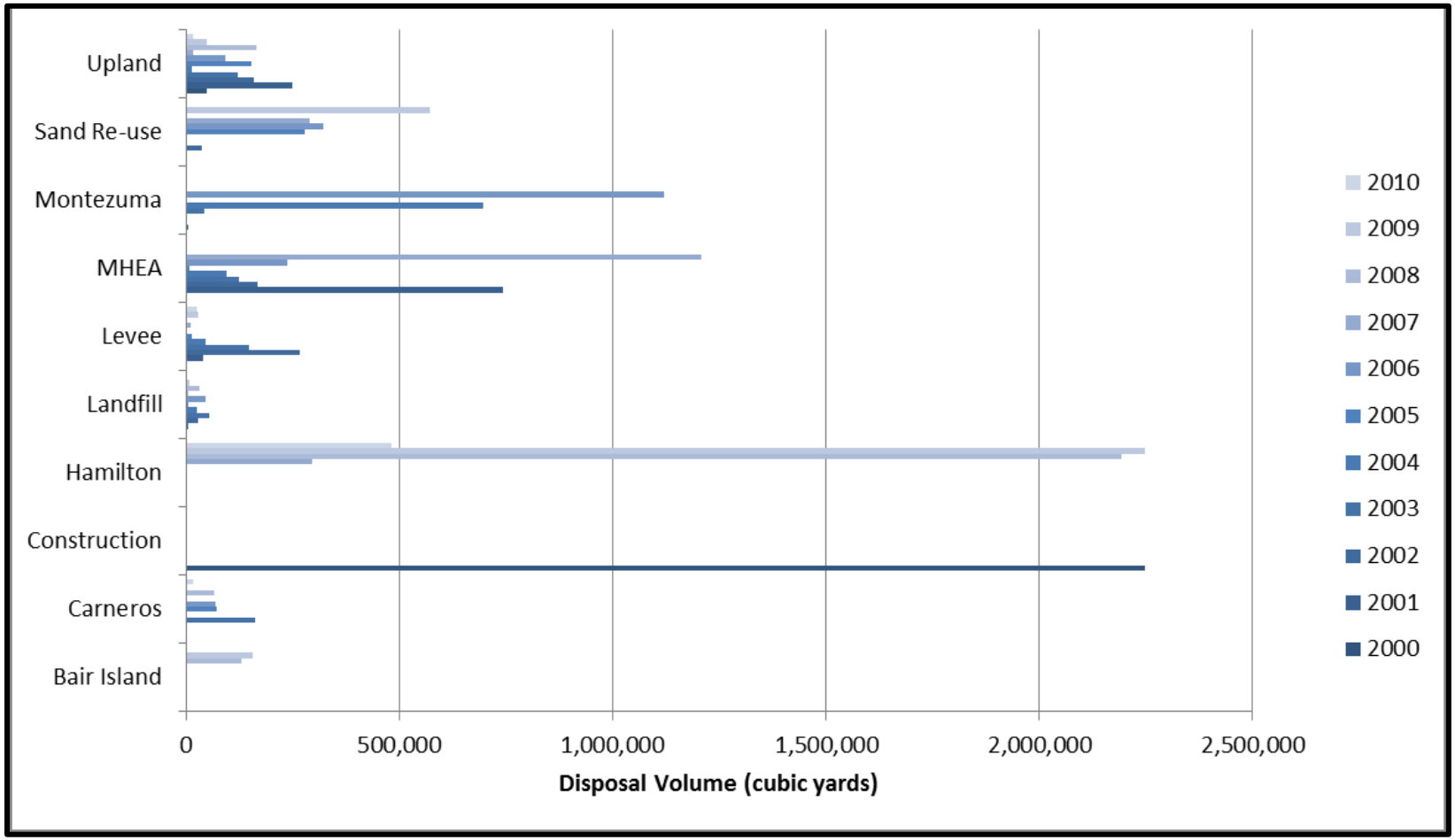


Figure 4

Transition Glide Path

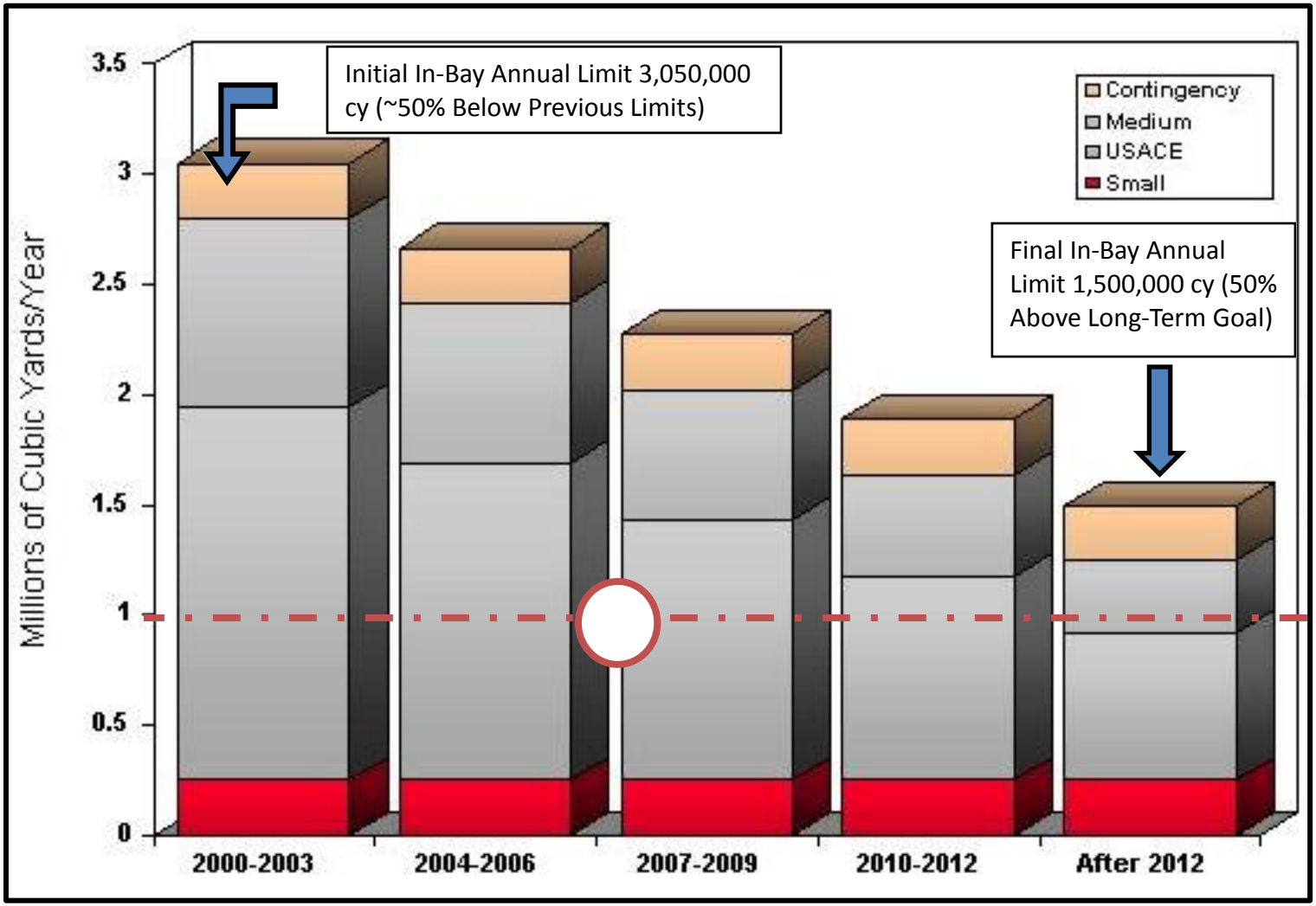
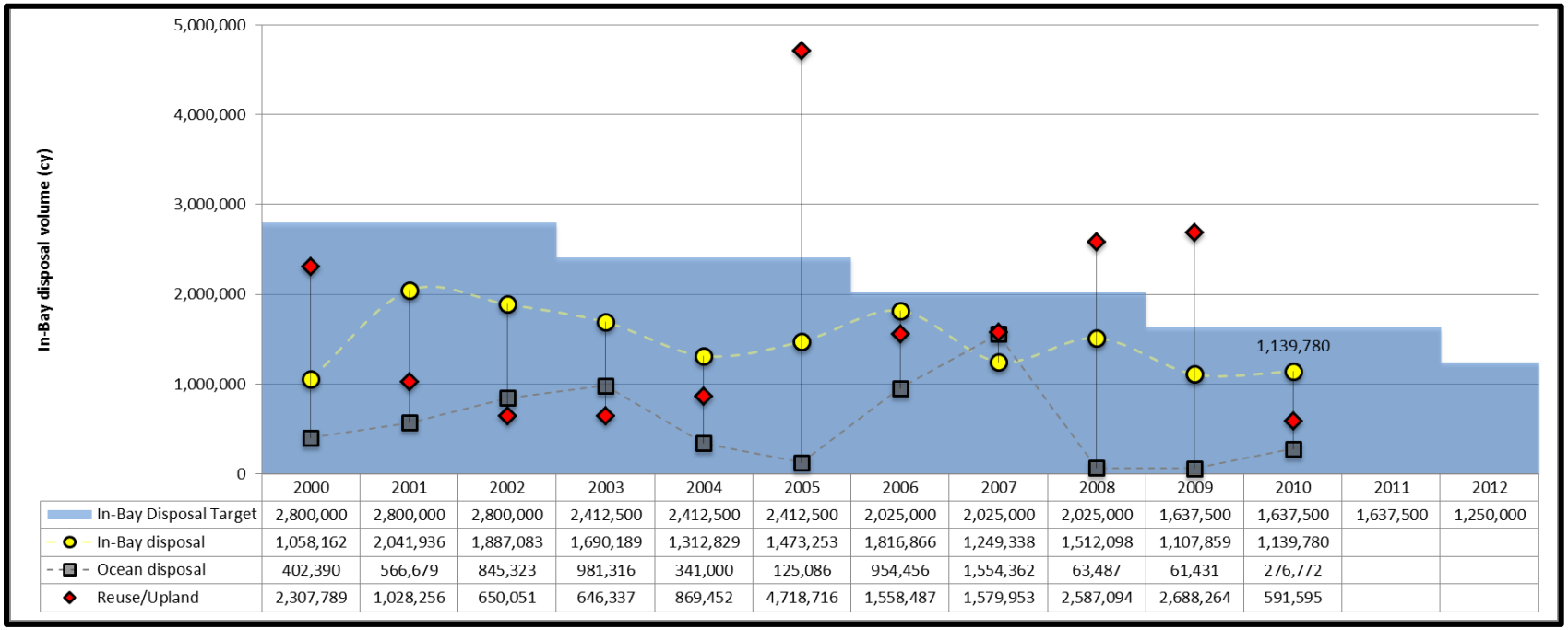


Figure 5

In-Bay Disposal: Capacity and Transition Glide Path



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
In-Bay Disposal Target	2,800,000	2,800,000	2,800,000	2,412,500	2,412,500	2,412,500	2,025,000	2,025,000	2,025,000	1,637,500	1,637,500	1,637,500	1,250,000
In-Bay disposal	1,058,162	2,041,936	1,887,083	1,690,189	1,312,829	1,473,253	1,816,866	1,249,338	1,512,098	1,107,859	1,139,780		
Ocean disposal	402,390	566,679	845,323	981,316	341,000	125,086	954,456	1,554,362	63,487	61,431	276,772		
Reuse/Upland	2,307,789	1,028,256	650,051	646,337	869,452	4,718,716	1,558,487	1,579,953	2,587,094	2,688,264	591,595		

Figure 6

Annual Dredging Volumes Since 1956

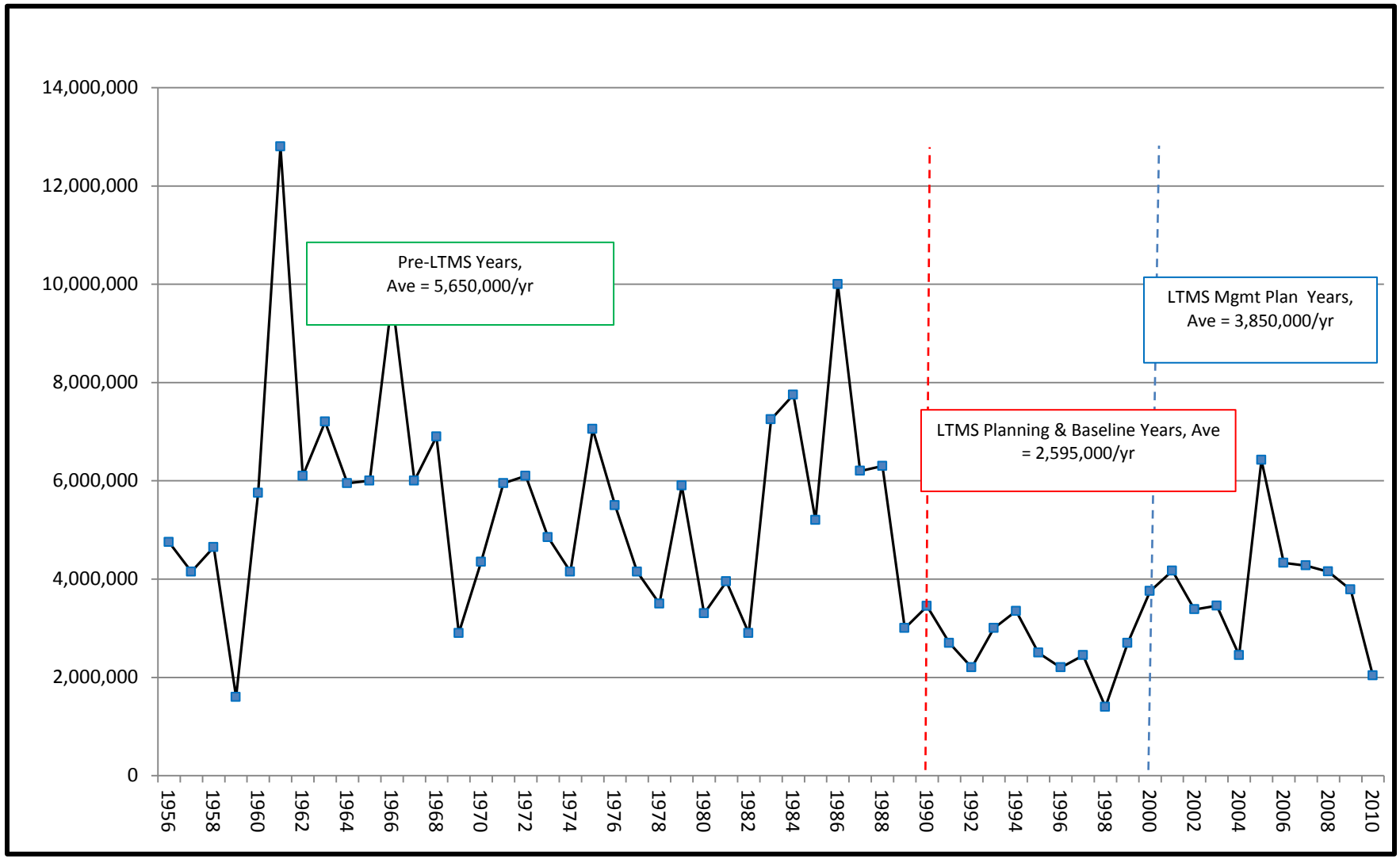


Figure 7

Maintenance Dredging Volumes by Navigation Sector – 2000 to 2010

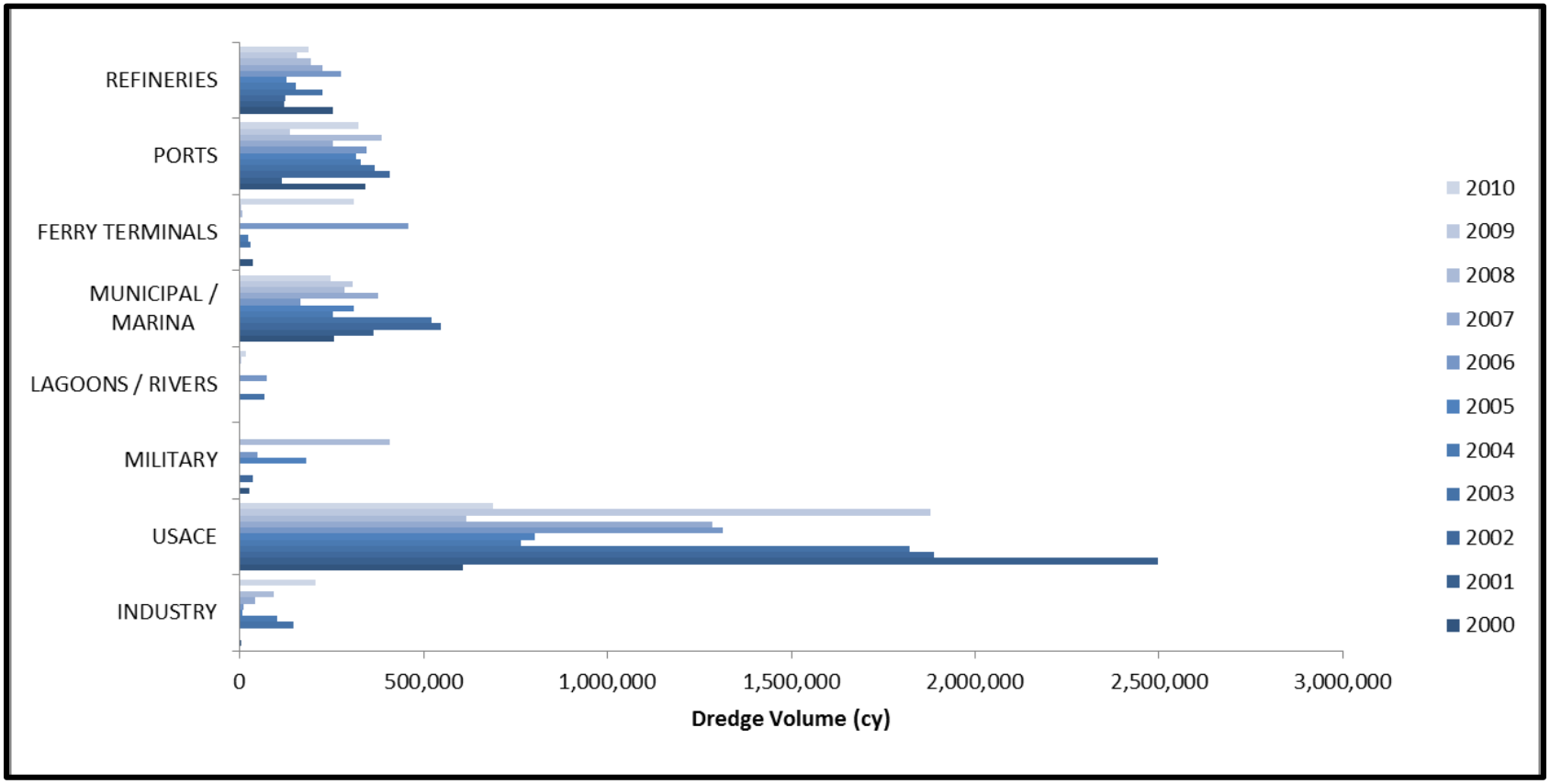


Figure 8

USACE Dredging Volumes by Activity Type – 2000 to 2010

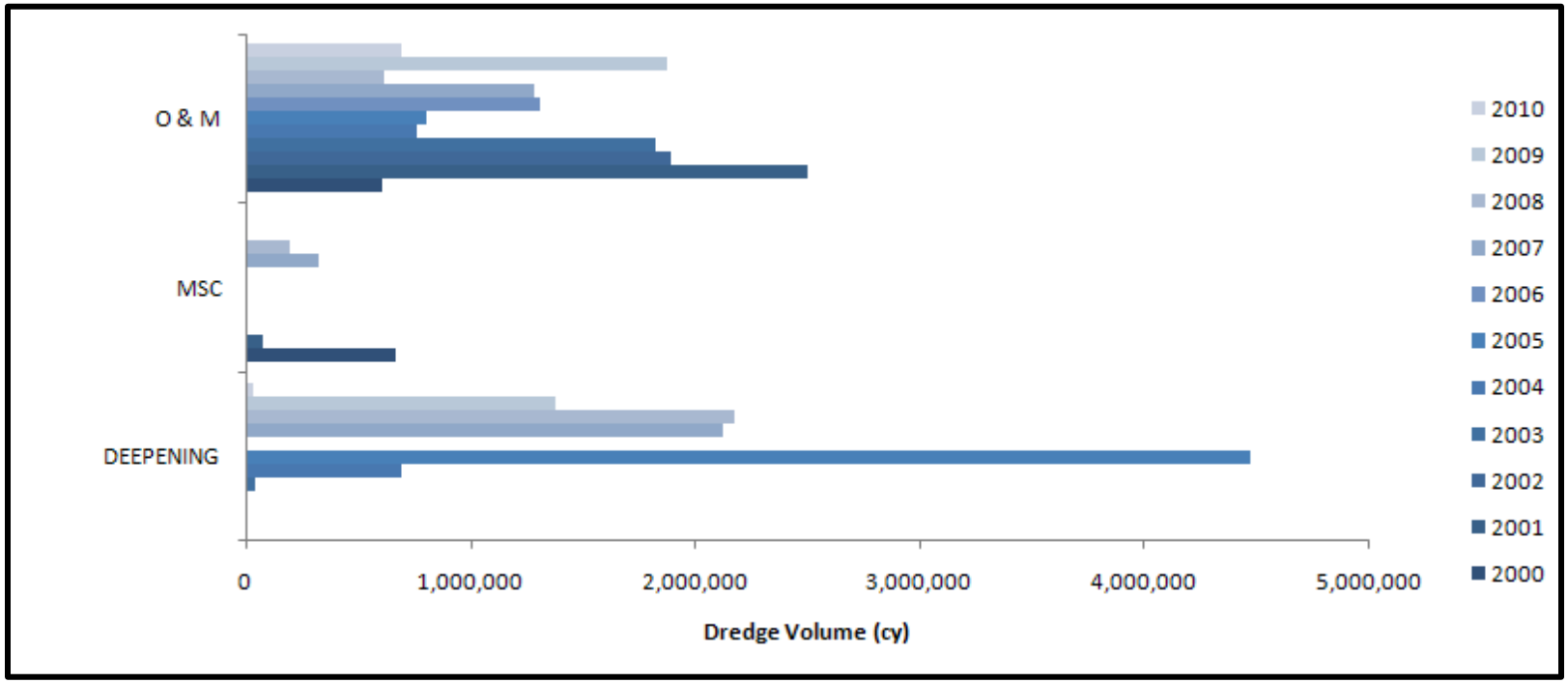


Figure 9

Dredging Volumes for Select Sectors – 2000 to 2010

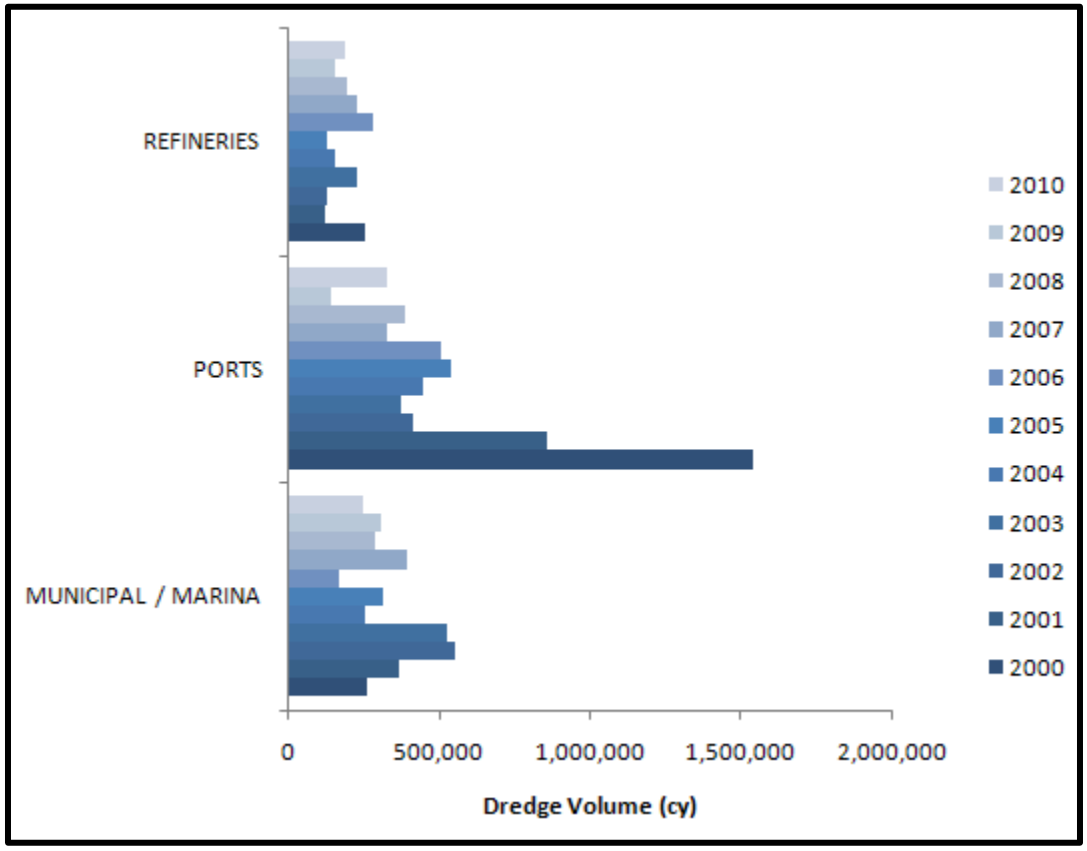


Figure 10

San Francisco Dredging Industry Cost Trends – 2000 to 2012

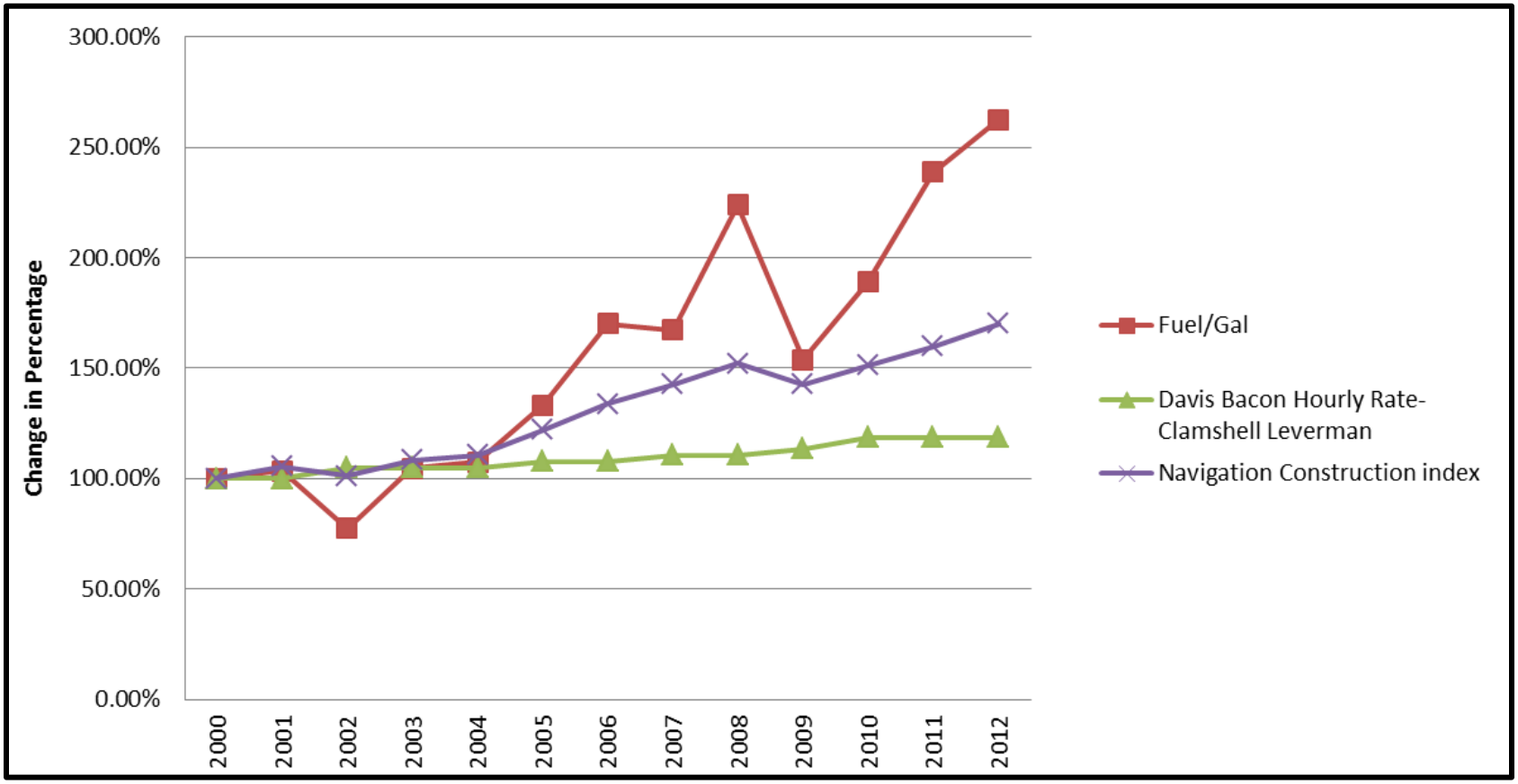


Figure 11

Cost Per Cubic Yard by USACE Maintenance Dredging Project – 2000 to 2011

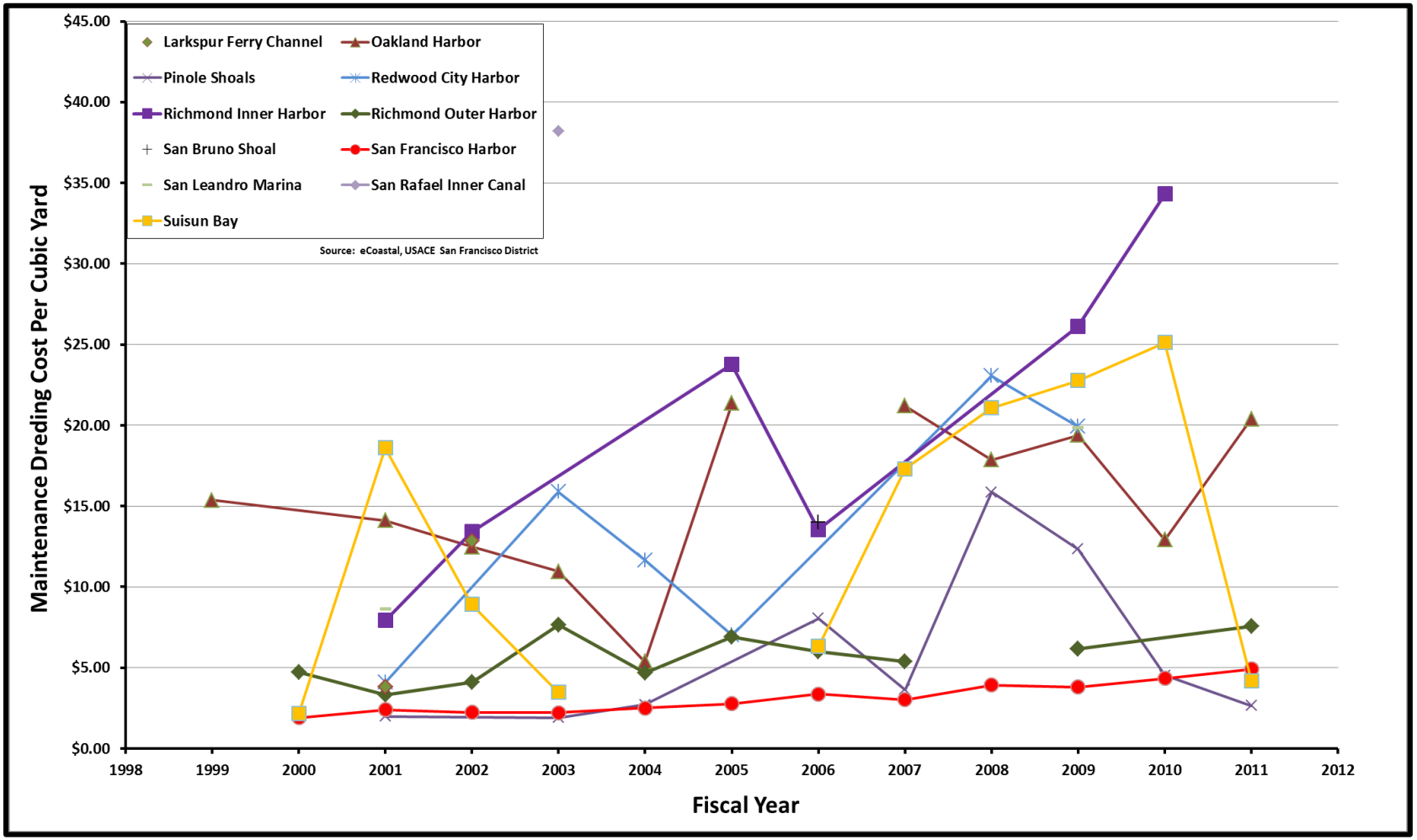


Figure 12

Placement Site Cost Per Cubic Yard for USACE Maintenance Dredging Projects – 2000 to 2011

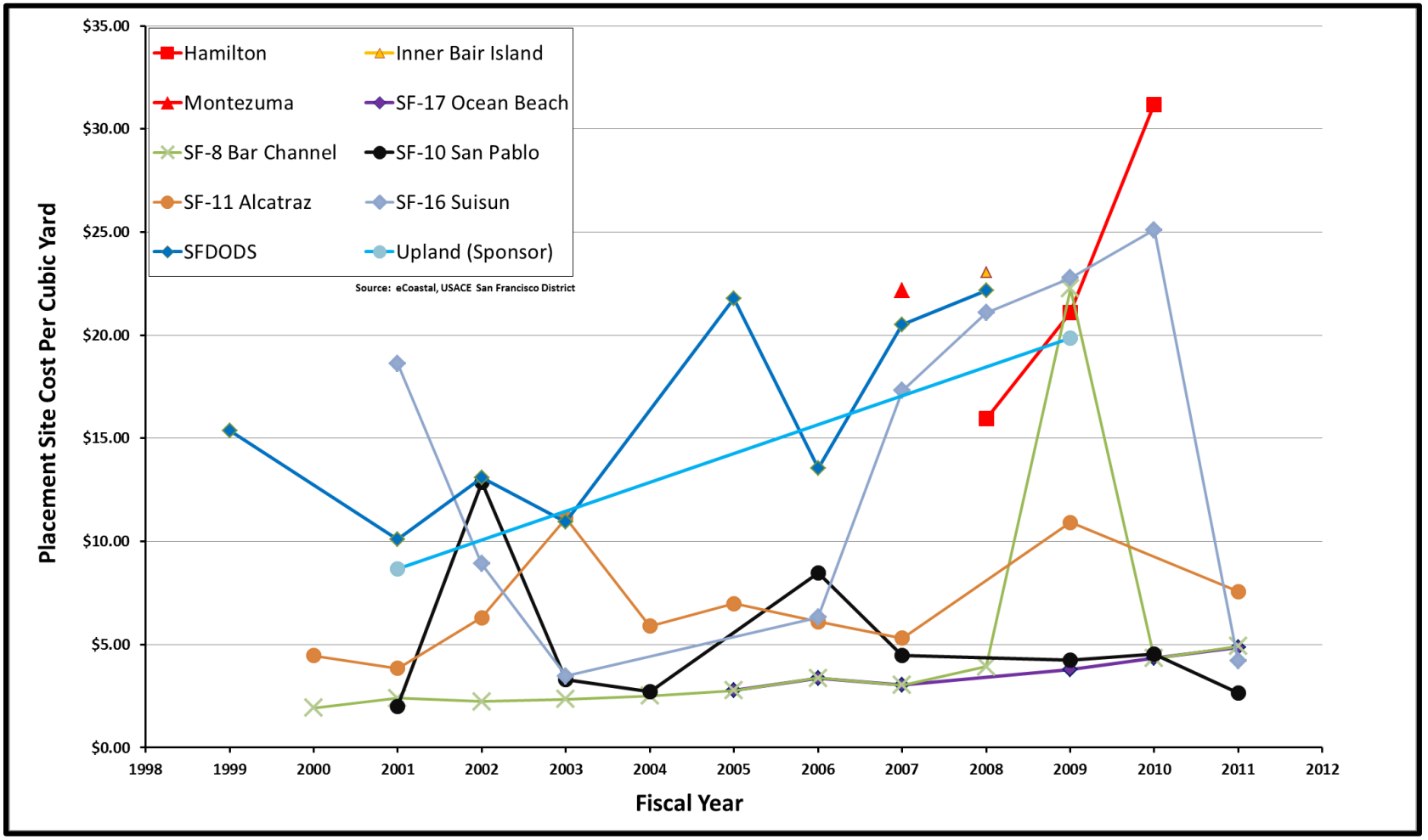
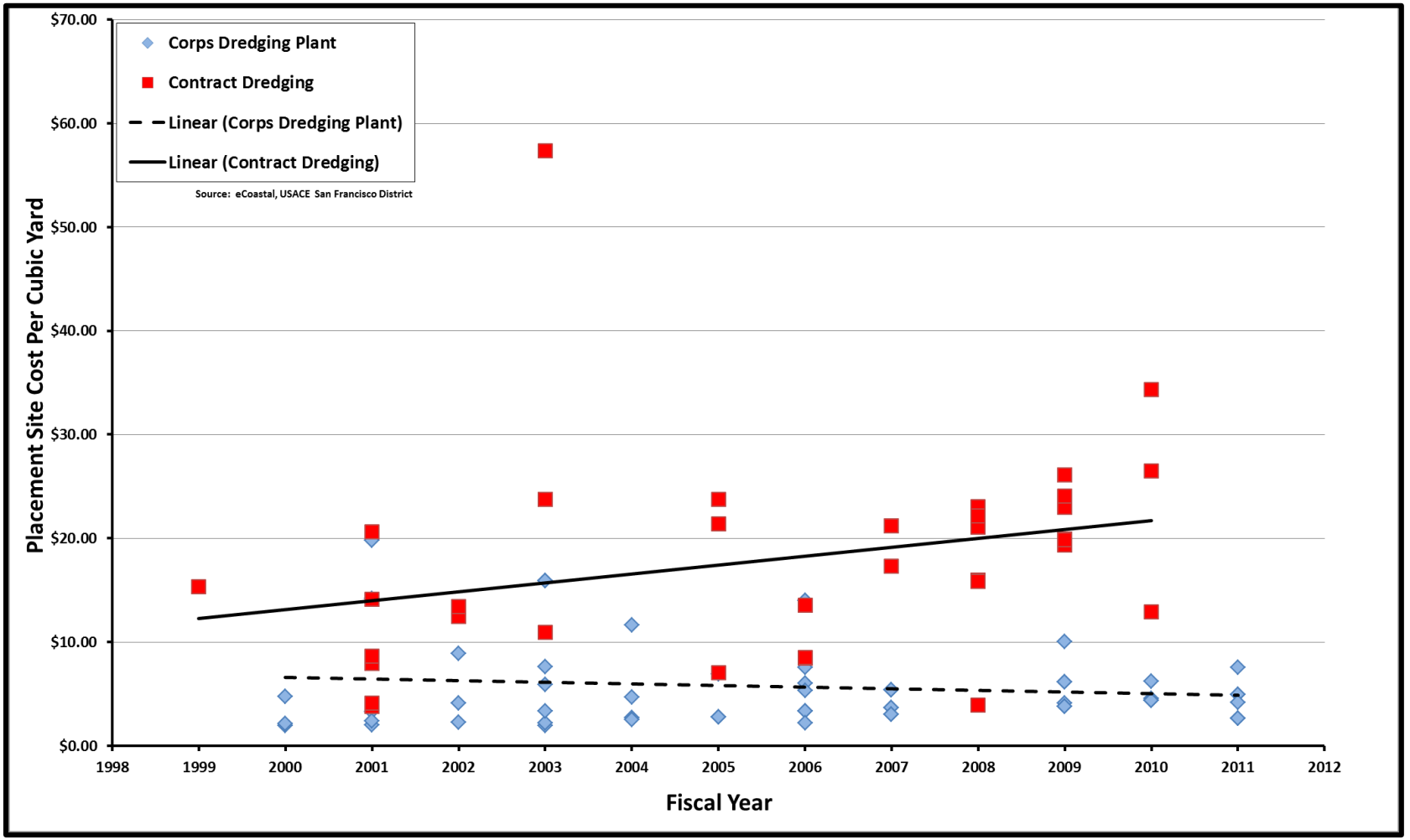


Figure 13

Comparison of Cost Per Cubic Yard for USACE Dredge Plant vs. Contract Dredging – 2000 to 2011



San Francisco Bay
Long Term Management Strategy

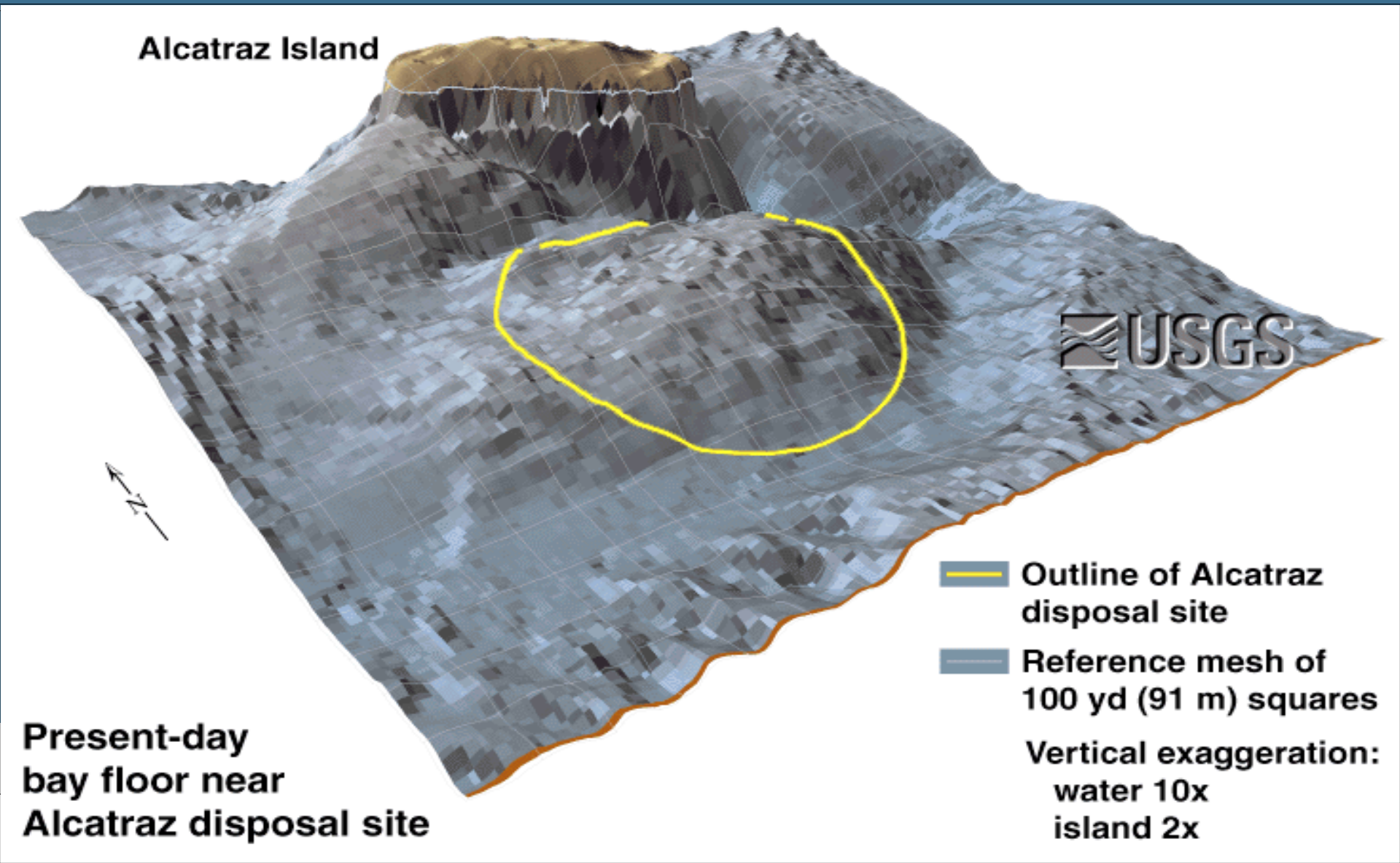
12-Year Review Process Meeting

March 29, 2012

In the Days Before LTMS

Public Objections to In-Bay Disposal – Blockade!

Severe Mounding at the Alcatraz Disposal Site



In the Days Before LTMS

- Public concerns regarding dredging
  - Fisheries declines
  - Impacts to habitat
  - Water quality and turbidity
  - Contaminated sediment
  - Mounding at Alcatraz
  - Lack of trust in permitting process

Origin of the LTMS

The San Francisco Estuary Project's CCMP

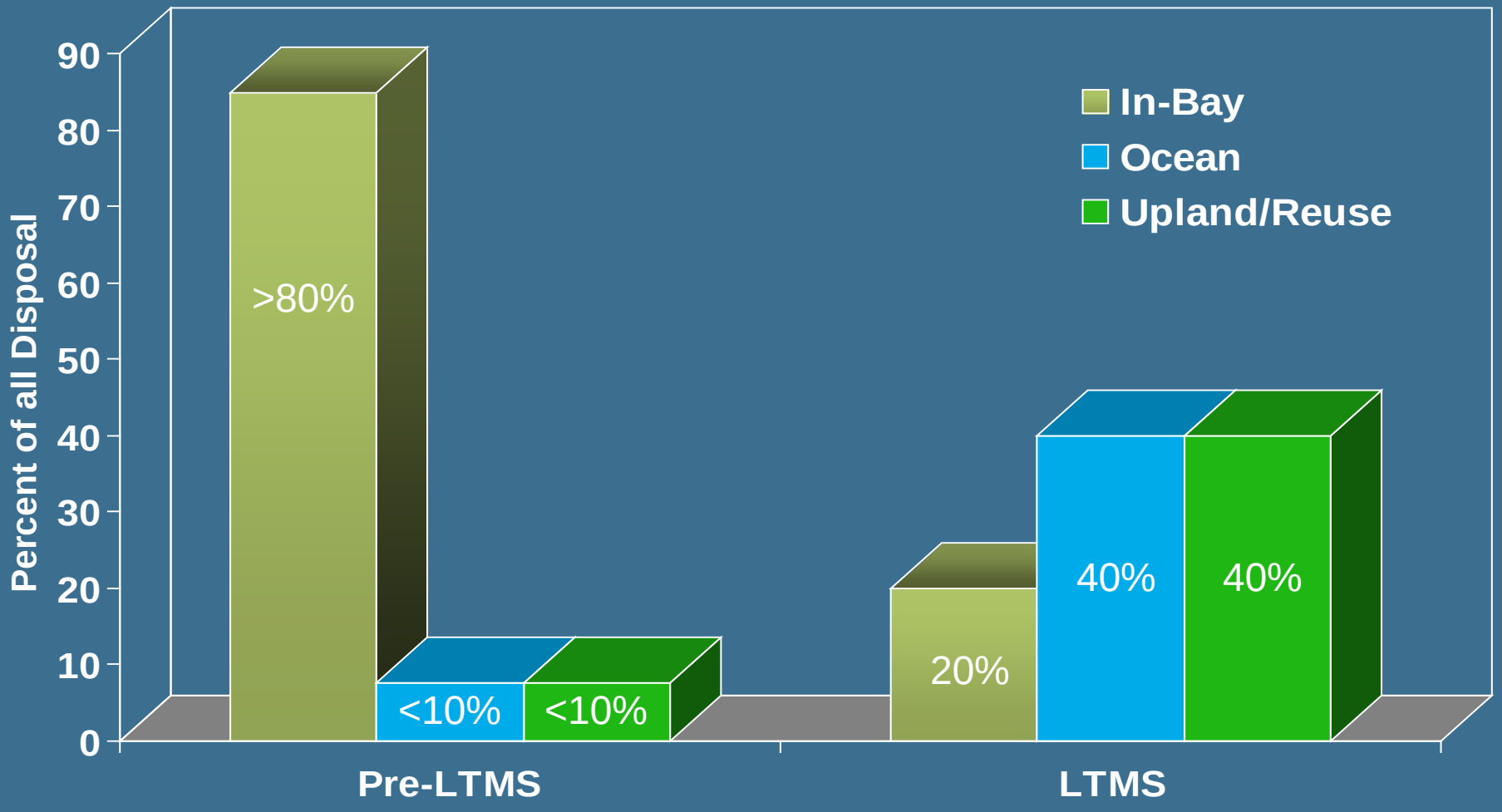
- Five key challenges facing the estuary:
  - Decline of biological resources (especially wetlands and related habitats)
  - Increased pollution
  - Freshwater diversions and altered flow regime
  - Intensified land use and population
  - Dredging and waterway modification
- The San Francisco Bay LTMS
  - Implementing arm of the CCMP for Dredging and Waterway Modification

LTMS Goals

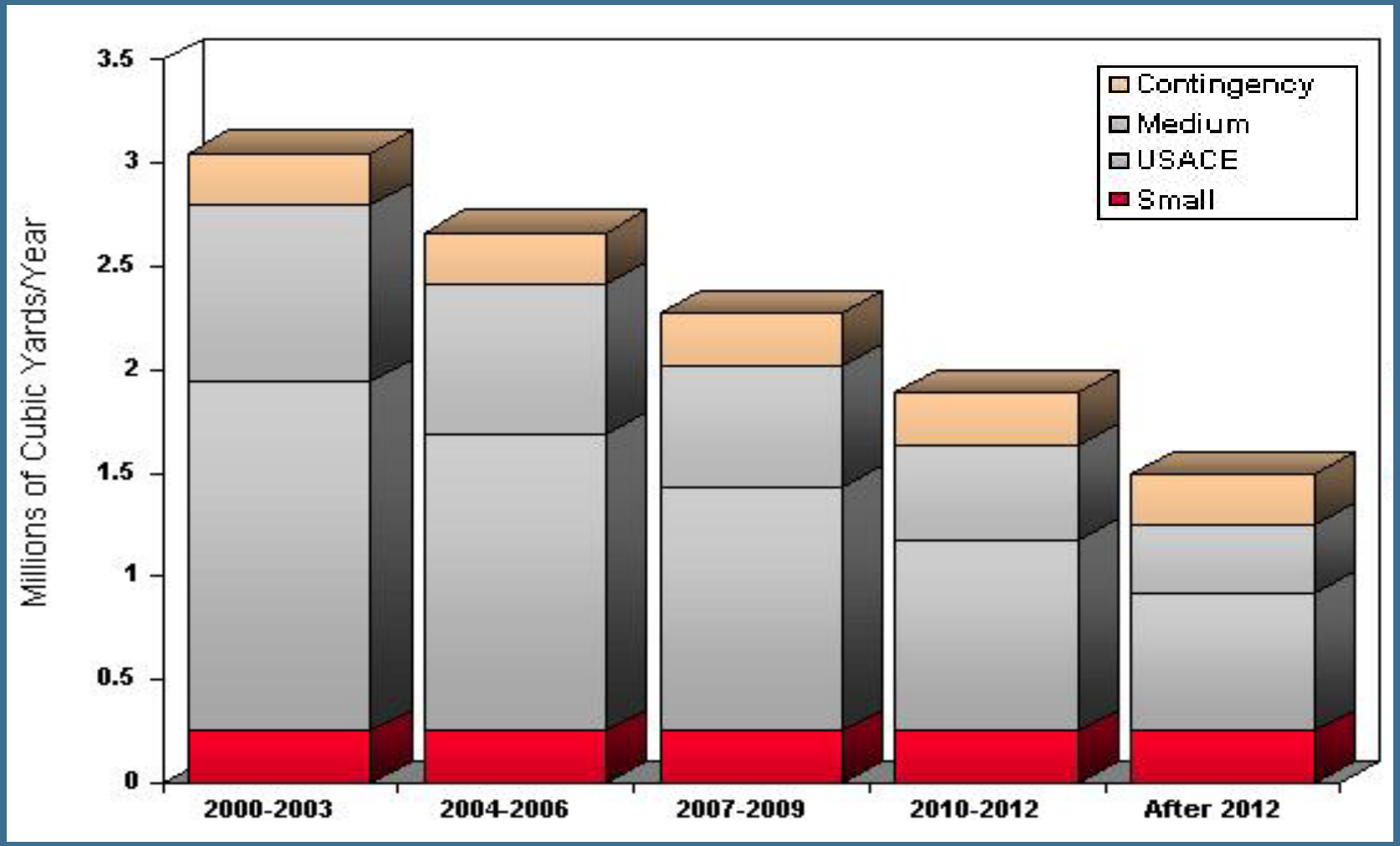
- Maintain…those channels necessary for navigation…and eliminate unnecessary dredging
- Conduct dredged material disposal in the most environmentally sound manner
- Maximize use of dredged material as a resource
- Establish a cooperative permitting framework

LTMS Executive Committee, 1991

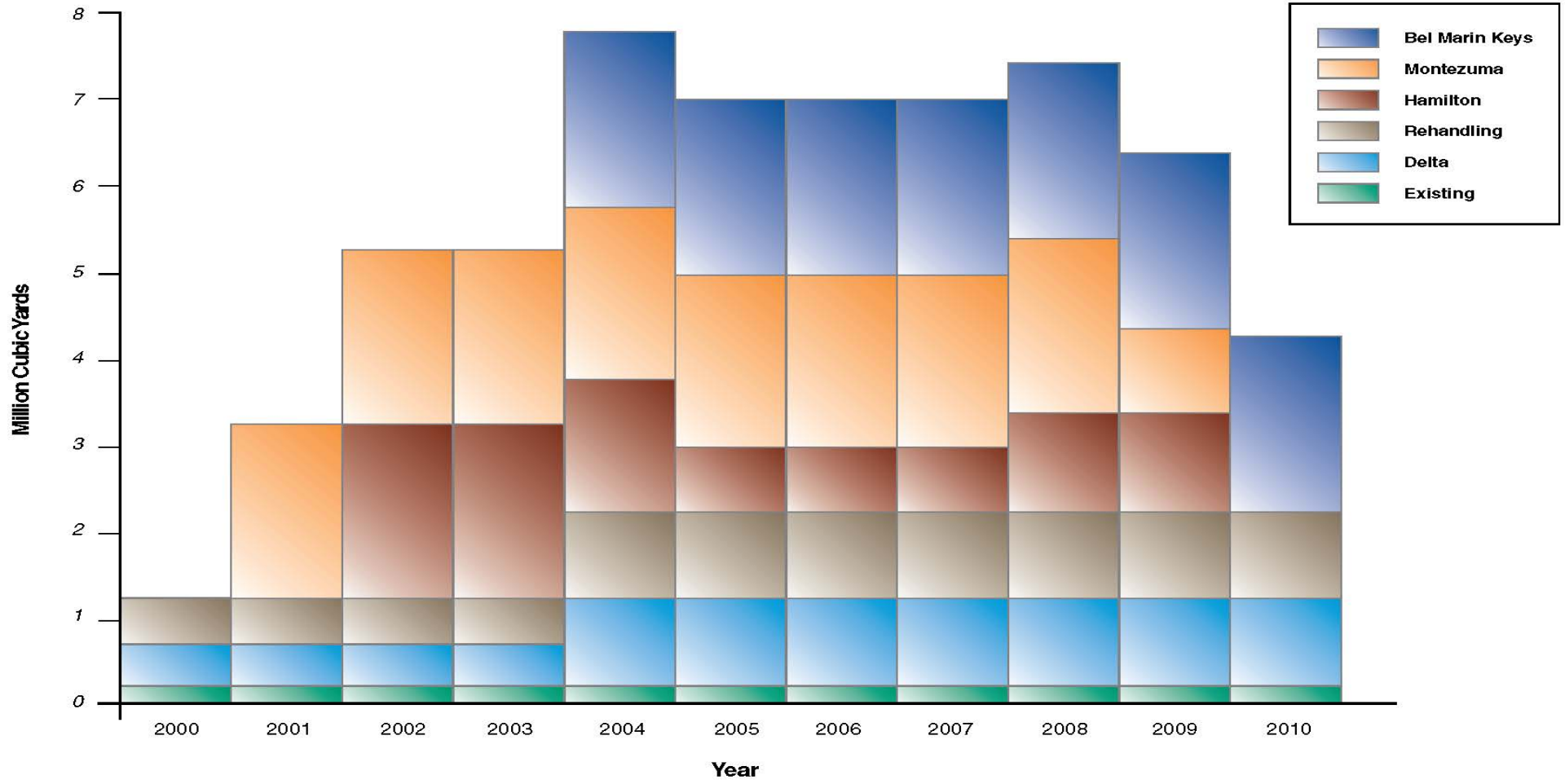
The LTMS EIS/EIR Decision (1998-1999)



2001 Management Plan Transition Glide Path

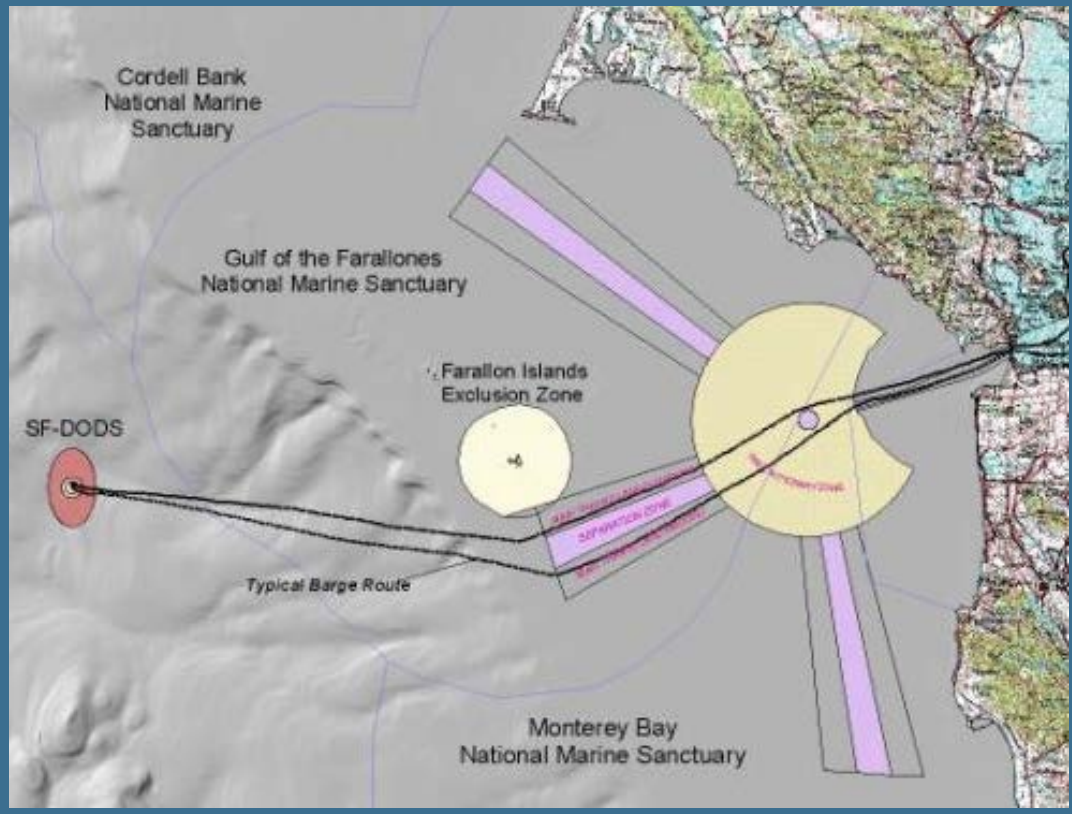


Management Plan-Projected Beneficial Reuse and Upland Disposal Capacity



Management Plan – SF-DODS as "Safety Valve"

- Deep ocean site ~ 55 miles offshore
- Successfully used and monitored since 1995
- Negligible ocean impacts
- Reduced risk to Bay resources
- Where practicable, preferred over in-Bay disposal when beneficial reuse sites not available
- But still "disposal"



12-Year Program Review Metrics

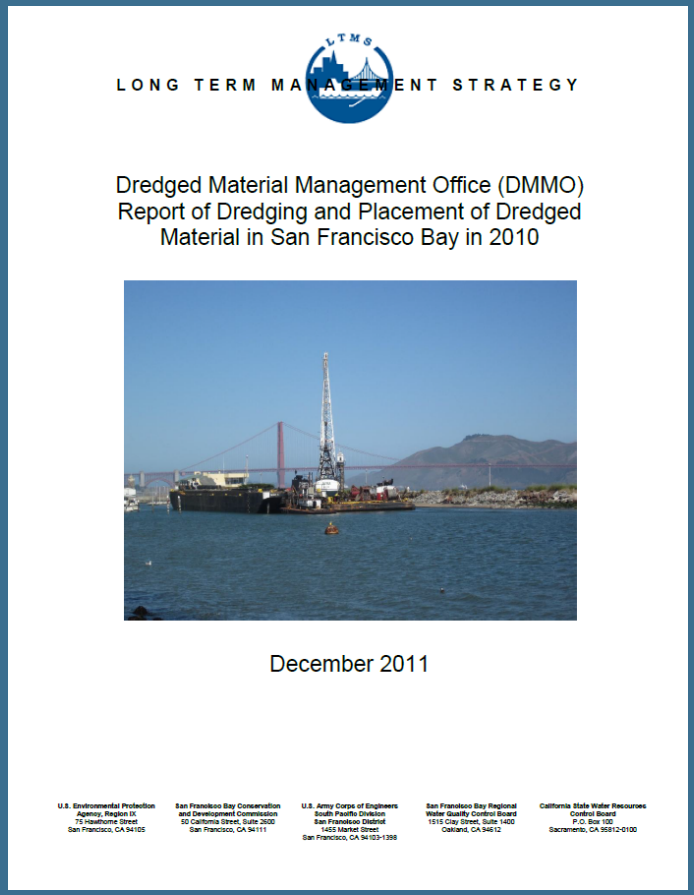
1. Use the quantitative and qualitative success criteria from Chapter 8 of the LTMS Management Plan
2. Evaluate additional measures of effectiveness at meeting the LTMS Goals

But First:

What are the dredging statistics under the LTMS?

Dredging and Disposal Trends Under the LTMS – 2000 to 2011

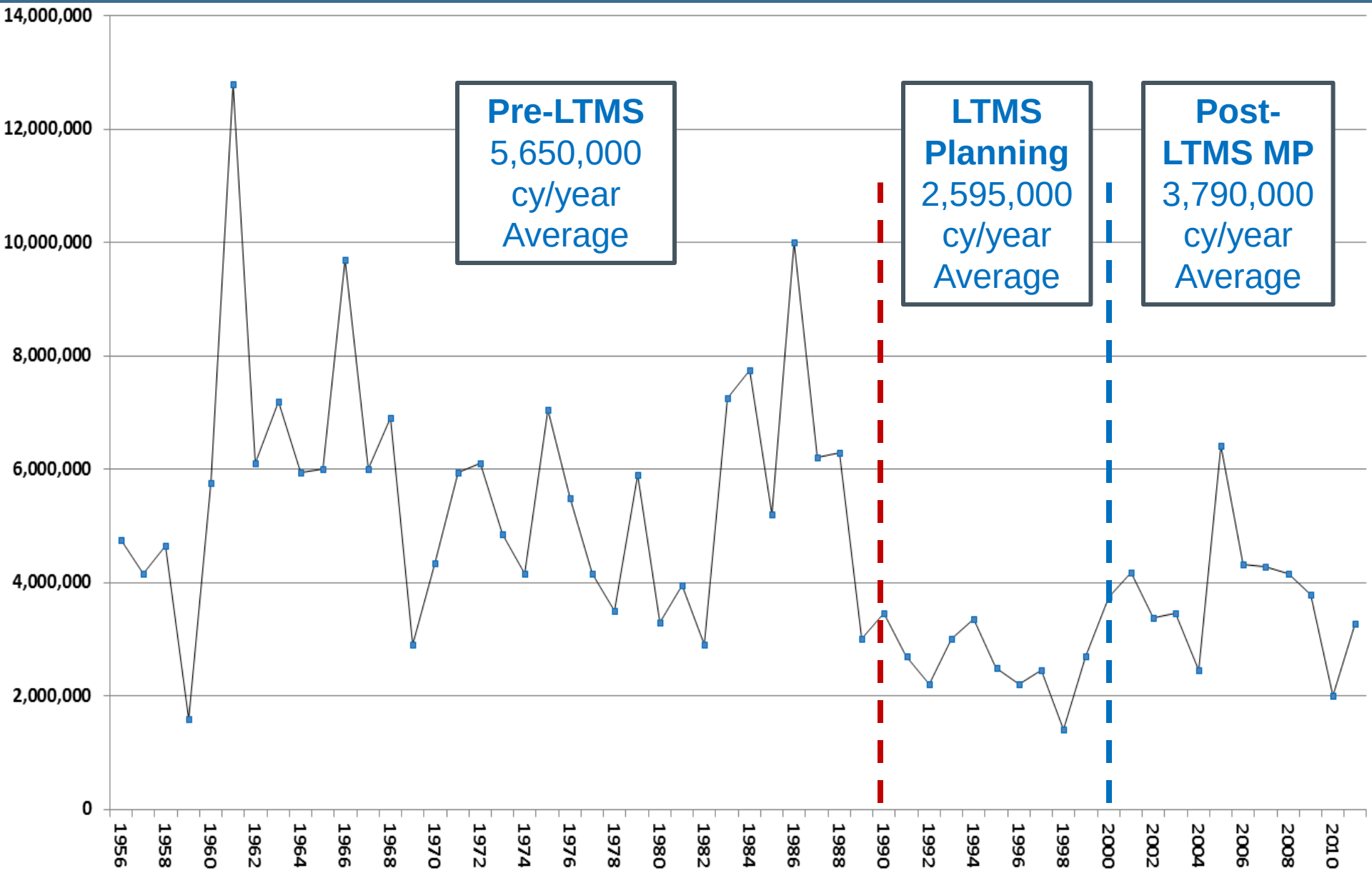
- Dredging and disposal volumes from DMMO Annual Reports
- Spreadsheets with the detailed data have been provided for stakeholder review


LONG TERM MANAGEMENT STRATEGY

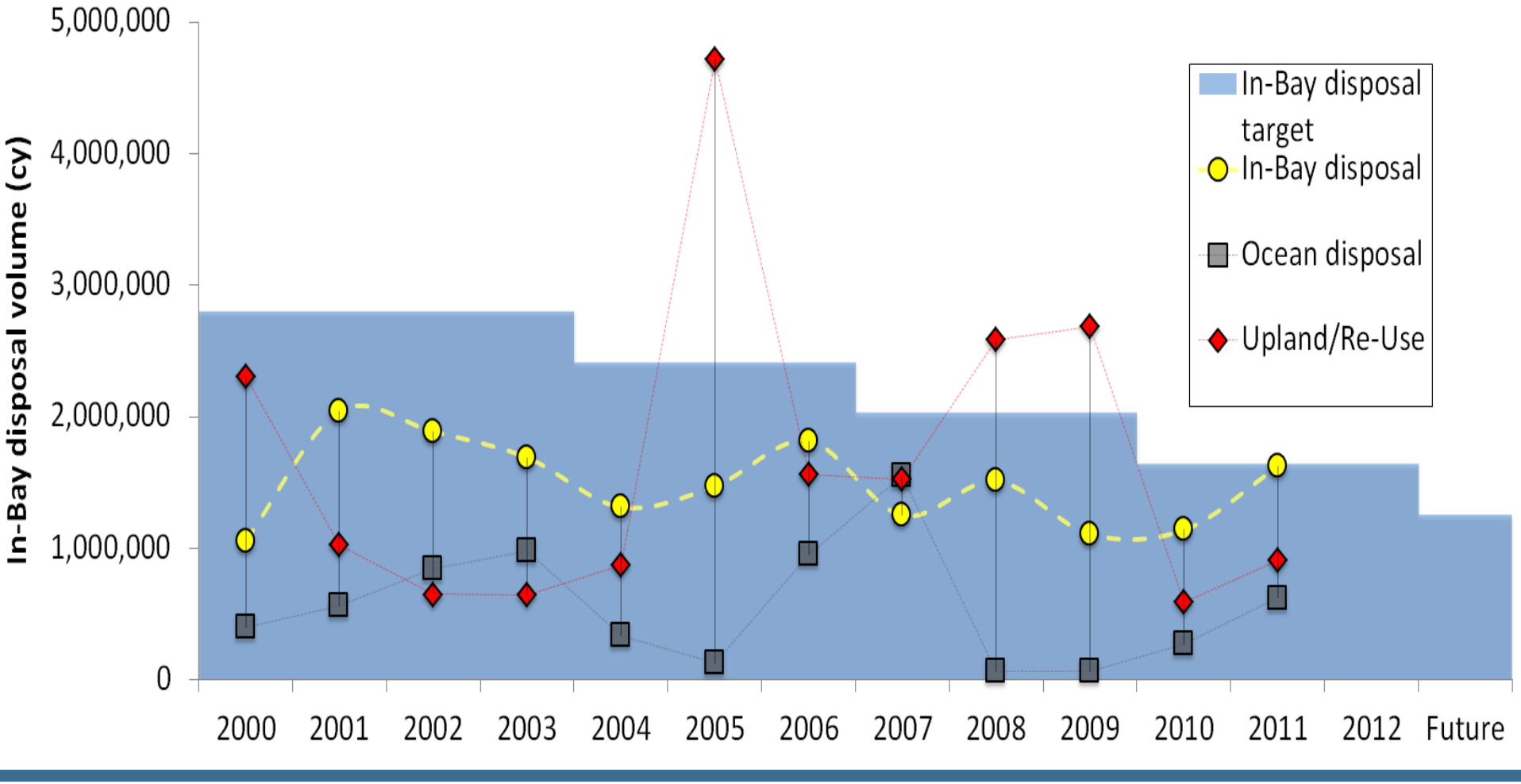
Dredged Material Management Office (DMMO)
Report of Dredging and Placement of Dredged Material in San Francisco Bay in 2010

December 2011

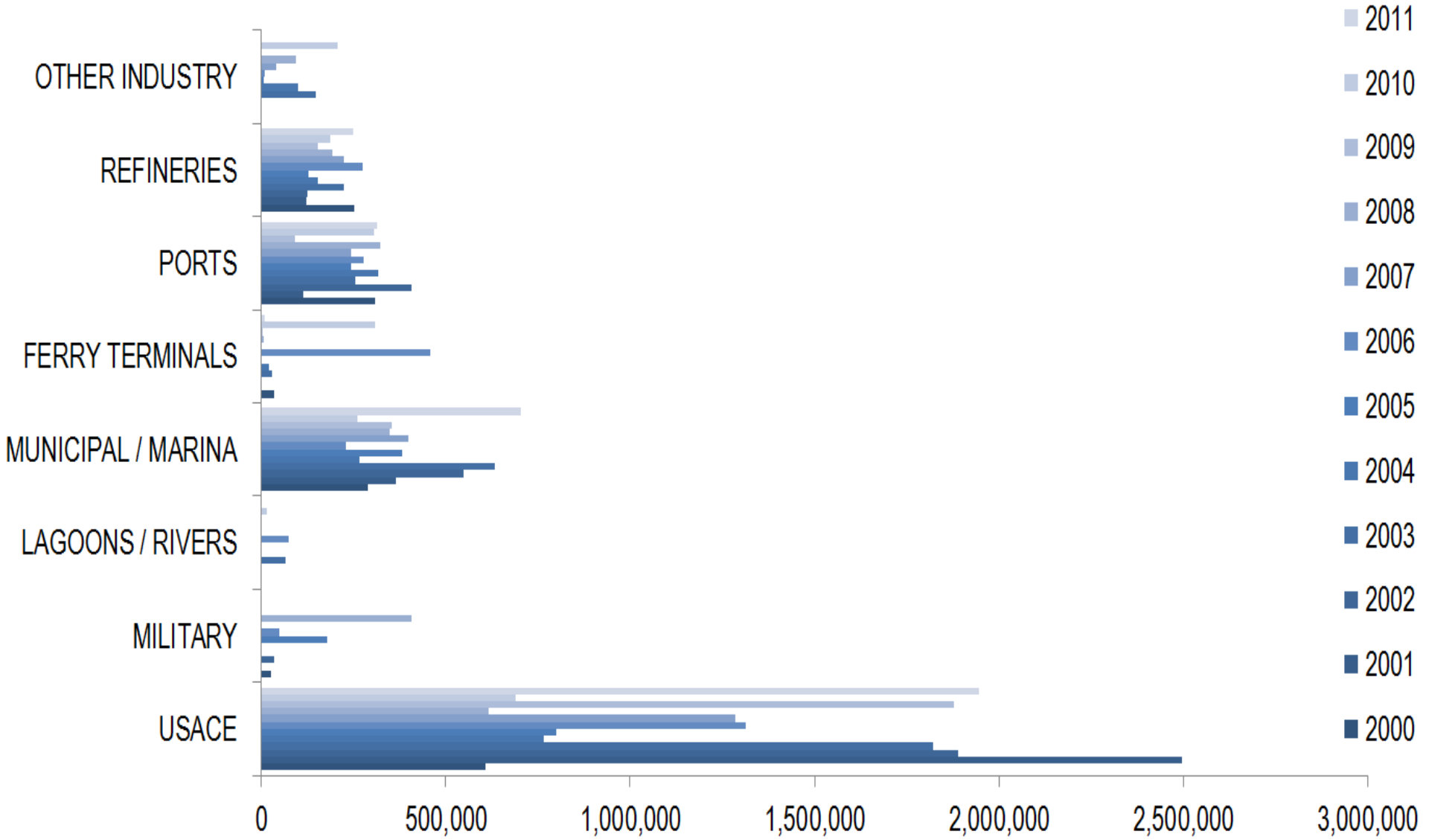
Total Annual Dredging Volumes Since 1956



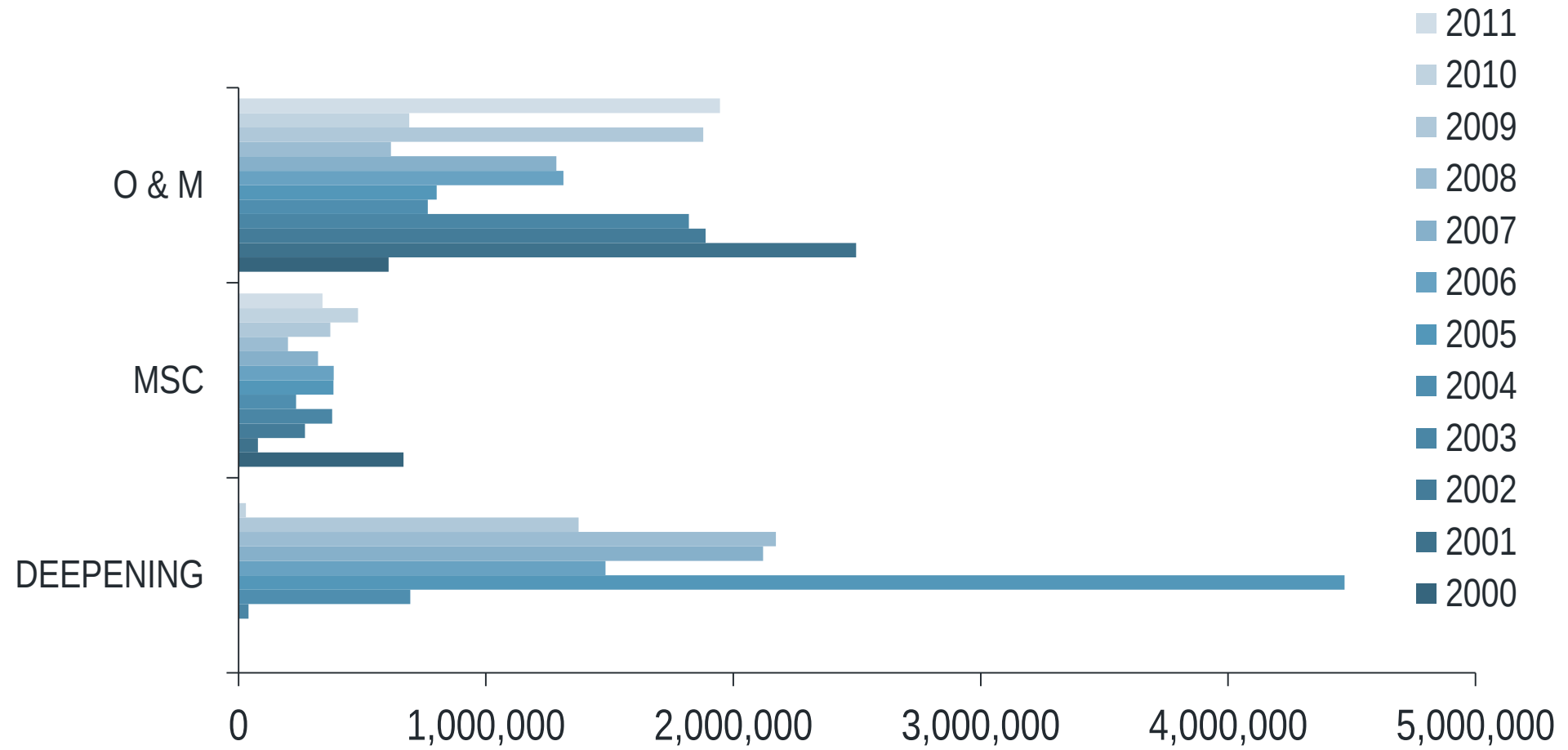
In-Bay Disposal vs. Transition Glide Path – 2000 to 2011



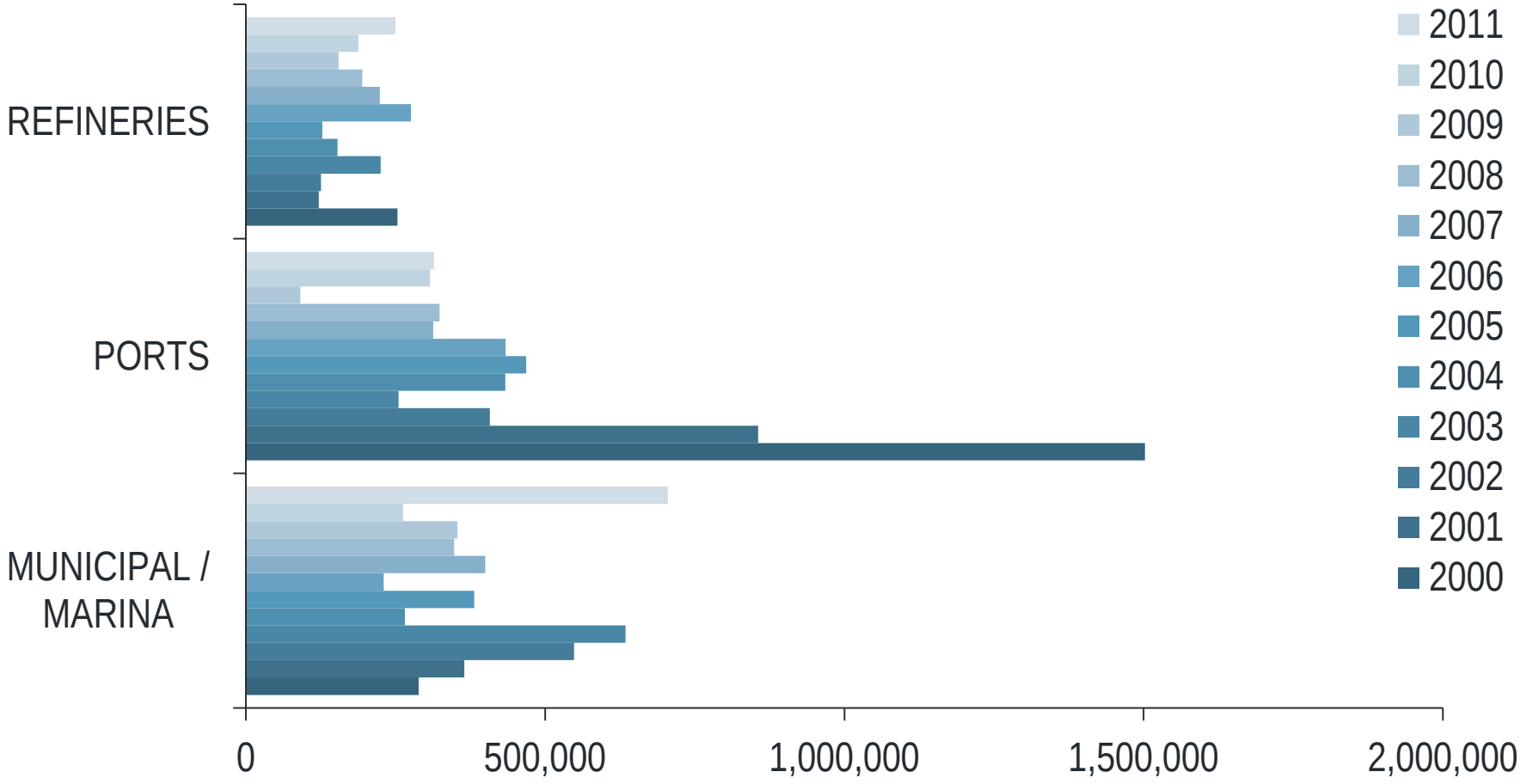
Maintenance Dredging Volumes by Navigation Sector – 2000 to 2011



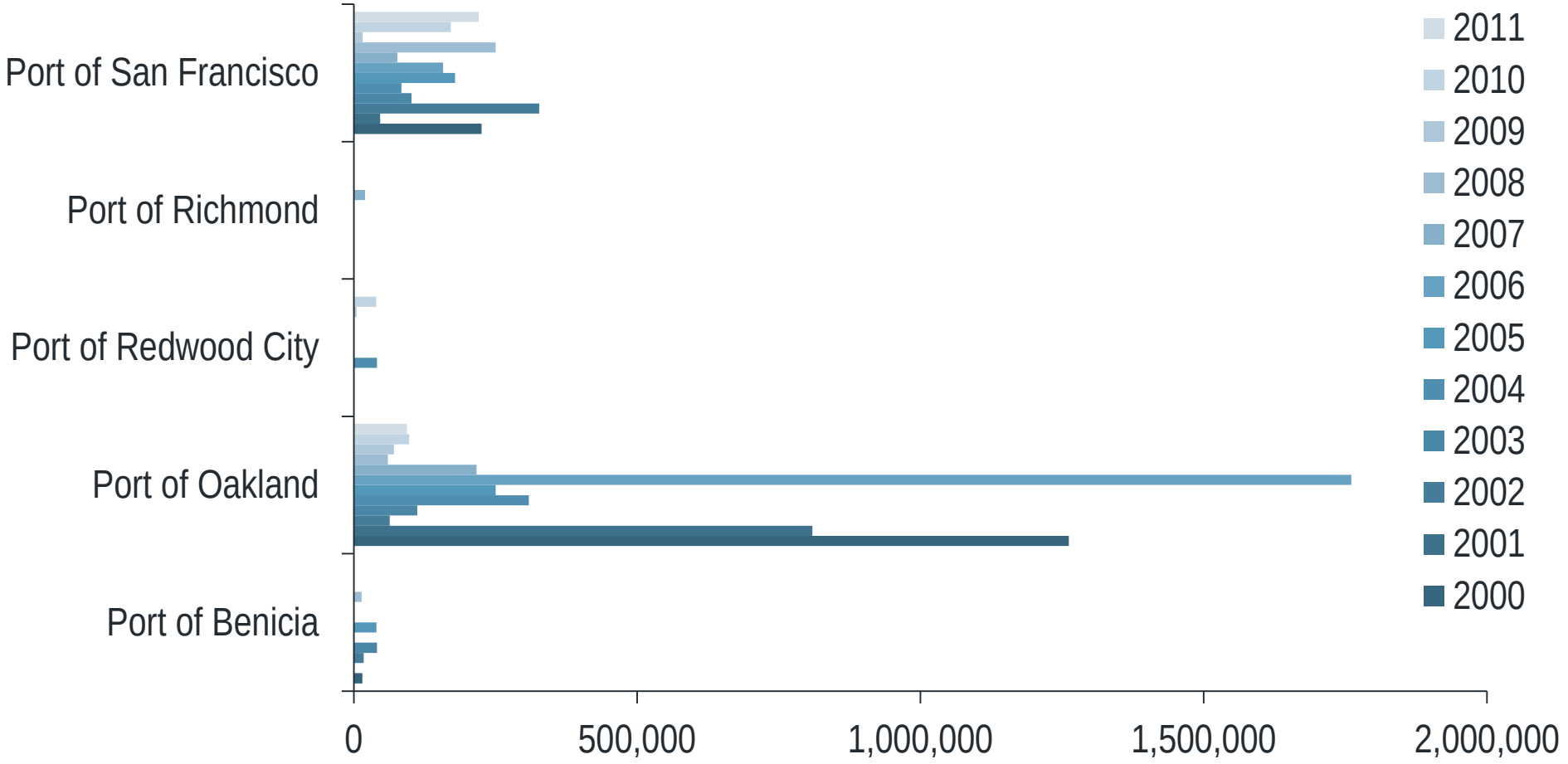
Total USACE Dredging Volumes by Activity Type – 2000 to 2011



Maintenance Dredging Volumes for Select Sectors – 2000 to 2011



Total Dredging Volumes for Ports – 2000 to 2011



Questions and Comments

Photo: Brian Ross, USEPA

Program Review Per LTMS Management Plan Criteria

- Uses the quantitative and qualitative success criteria included in Chapter 8 of the LTMS Management Plan
- More detailed information is provided in Tables 1 and 2 of the Background Information Document

Review Issues Per Management Plan

Quantitative Measures (Chapter 8)	Performance
Document long-term trends and variability in dredging volumes	☺
Meet or beat transition glide path	☺
Increased number of approved alternatives to in-Bay disposal	☺
Available in-Bay disposal capacity	☺
Number of sites for material that is not suitable for unconfined aquatic disposal to be reused	☺
Increased number of re-handling facilities	☺
10% increase in funding for upland disposal annually	☹
Adequate funding for LTMS	☹
Reduced cost for upland disposal	☹

Review Issues Per Management Plan

Quantitative Measures (Chapter 8)	Performance
Acreage of Bay habitat restored using dredged material	☺
Acreage of habitat created for threatened and endangered species	☺
Reduced impact of dredged material on native species	☺
Footprint of Alcatraz and other sites	☺
Maintain navigability and project depths	~
Reduced navigational incidents or accidents (i.e., groundings)	☺
Depth of Alcatraz disposal site	☺
No lawsuits	☺

Review Issues Per Management Plan

Qualitative Measures (Chapter 8)	Performance
Do we have upland sites?	☺
Is regional planning under way?	☺
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	~
In-Bay monitoring efforts of LTMS and RMP linked	☺

Old Review Issues Per Management Plan

Qualitative Measures (Chapter 8)	Performance
Healthier Bay	☺
Reduce uncertainty as to adverse effects of disposal or reuse of dredged material	☺
Predictability of testing (Regional Implementation Manual approved/adopted)	☺
Process for dredging is “predictable”	☺
Consensus on nomenclature for suitability of dredged material	☺

Questions and Comments

Review Issues By LTMS Goal

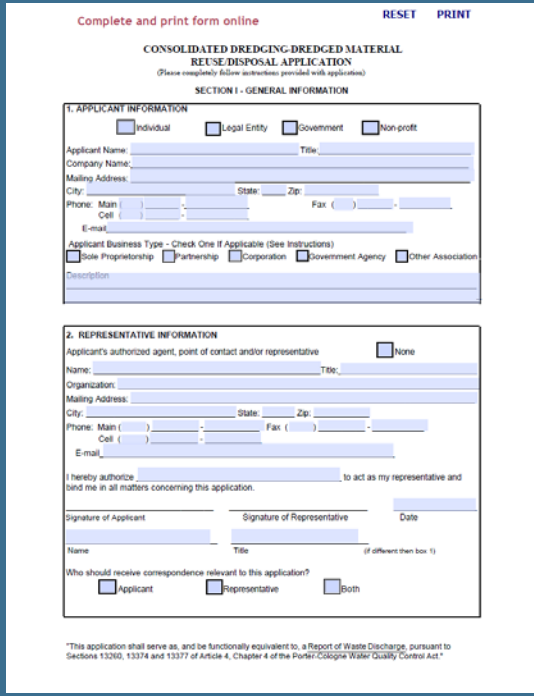
- Establish a cooperative permitting framework
- Conduct dredged material disposal in the most environmentally sound manner
- Maximize use of dredged material as a resource
- Maintain…those channels necessary for navigation…and eliminate unnecessary dredging

Dredged Material Management Office/Permit Coordination

- Issues:
  - Complicated coordination between agencies and applicants
  - Inconsistent project descriptions and permit conditions
  - Delays in permit issuance and thereby dredging

Dredged Material Management Office/Permit Coordination

- Benefits:
  - Consolidated permit application used by all LTMS agencies
  - Regular public meetings offer coordination opportunities
  - Permit processing time and consistency has improved and predictability has increased
  - Fewer permit revisions
  - 10 year permits available from all agencies
  - Permitting of advance maintenance dredging where need is demonstrated



Complete and print form online RESET PRINT

CONSOLIDATED DREDGING-DREDGED MATERIAL REUSE/DISPOSAL APPLICATION

(Please completely follow instructions provided with application)

SECTION I - GENERAL INFORMATION

1. APPLICANT INFORMATION

Individual Legal Entity Government Non-profit

Applicant Name: Title:

Company Name:

Mailing Address:

City: State: Zip:

Phone: Main ( ) - Fax ( ) -

Cell ( ) -

E-mail:

Applicant Business Type - Check One If Applicable (See Instructions)

Sole Proprietorship Partnership Corporation Government Agency Other Association

Description

2. REPRESENTATIVE INFORMATION

Applicant's authorized agent, point of contact and/or representative None

Name: Title:

Organization:

Mailing Address:

City: State: Zip:

Phone: Main ( ) - Fax ( ) -

Cell ( ) -

E-mail:

I hereby authorize to act as my representative and bind me in all matters concerning this application.

Signature of Applicant Signature of Representative Date

Name Title (if different than box 1)

Who should receive correspondence relevant to this application?

Applicant Representative Both

"This application shall serve as, and be functionally equivalent to, a Report of Waste Discharge, pursuant to Sections 13260, 13374 and 13377 of Article 4, Chapter 4 of the Porter-Cologne Water Quality Control Act."

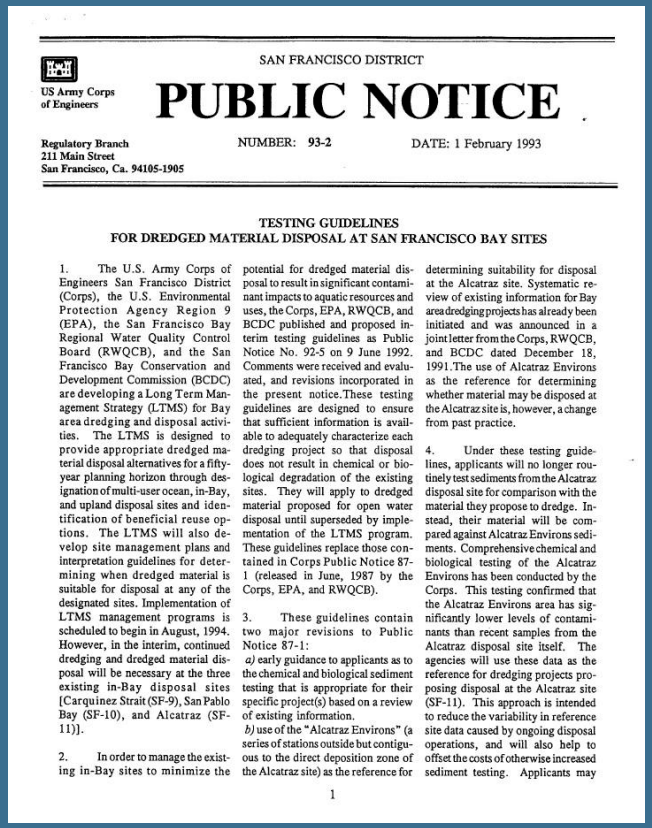
Dredged Material Management Office/Permit Coordination

- Benefits (continued):
  - Authorization of in-place knock-downs in permits (monitoring required for projects above 5,000 cy)
  - Multi-year sediment testing schedules
  - Less frequent environmental review
  - Increased flexibility in meeting LTMS goals through:
    - Programmatic alternative disposal site analysis for small projects
    - Integrated alternative disposal site analysis for larger projects
- Constraints:
  - Database has not yet been made public
  - Separate agency permits are still required

Testing/Suitability

Pre-LTMS situation:

- PN 87-1 (1987)
  - Chemistry + 1 water column toxicity test
  - Alcatraz as its own reference => "hot spot"
- PN 93-2 (1993)
  - Chemistry + 1 water + 1 sediment (amphipod) toxicity test
  - New "Alcatraz Environs" reference area and database
  - Minimum sampling and compositing guidance



SAN FRANCISCO DISTRICT

US Army Corps of Engineers

PUBLIC NOTICE

Regulatory Branch
211 Main Street
San Francisco, Ca. 94105-1905

NUMBER: 93-2 DATE: 1 February 1993

TESTING GUIDELINES FOR DREDGED MATERIAL DISPOSAL AT SAN FRANCISCO BAY SITES

1. The U.S. Army Corps of Engineers San Francisco District (Corps), the U.S. Environmental Protection Agency Region 9 (EPA), the San Francisco Bay Regional Water Quality Control Board (RWQCB), and the San Francisco Bay Conservation and Development Commission (BCDC) are developing a Long Term Management Strategy (LTMS) for Bay area dredging and disposal activities. The LTMS is designed to provide appropriate dredged material disposal alternatives for a fifty-year planning horizon through designation of multi-user ocean, in-Bay, and upland disposal sites and identification of beneficial reuse options. The LTMS will also develop site management plans and interpretation guidelines for determining when dredged material is suitable for disposal at any of the designated sites. Implementation of LTMS management programs is scheduled to begin in August, 1994. However, in the interim, continued dredging and dredged material disposal will be necessary at the three existing in-Bay disposal sites [Carquinez Strait (SF-9), San Pablo Bay (SF-10), and Alcatraz (SF-11)].

2. In order to manage the existing in-Bay sites to minimize the potential for dredged material disposal to result in significant contaminant impacts to aquatic resources and uses, the Corps, EPA, RWQCB, and BCDC published and proposed interim testing guidelines as Public Notice No. 92-5 on 9 June 1992. Comments were received and evaluated, and revisions incorporated in the present notice. These testing guidelines are designed to ensure that sufficient information is available to adequately characterize each dredging project so that disposal does not result in chemical or biological degradation of the existing sites. They will apply to dredged material proposed for open water disposal until superseded by implementation of the LTMS program. These guidelines replace those contained in Corps Public Notice 87-1 (released in June, 1987 by the Corps, EPA, and RWQCB).

3. These guidelines contain two major revisions to Public Notice 87-1:

a) early guidance to applicants as to the chemical and biological sediment testing that is appropriate for their specific project(s) based on a review of existing information.

b) use of the "Alcatraz Environs" (a series of stations outside but contiguous to the direct deposition zone of the Alcatraz site) as the reference for determining suitability for disposal at the Alcatraz site. Systematic review of existing information for Bay area dredging projects has already been initiated and was announced in a joint letter from the Corps, RWQCB, and BCDC dated December 18, 1991. The use of Alcatraz Environs as the reference for determining whether material may be disposed at the Alcatraz site is, however, a change from past practice.

4. Under these testing guidelines, applicants will no longer routinely test sediments from the Alcatraz disposal site for comparison with the material they propose to dredge. Instead, their material will be compared against Alcatraz Environs sediments. Comprehensive chemical and biological testing of the Alcatraz Environs has been conducted by the Corps. This testing confirmed that the Alcatraz Environs area has significantly lower levels of contaminants than recent samples from the Alcatraz disposal site itself. The agencies will use these data as the reference for dredging projects proposing disposal at the Alcatraz site (SF-11). This approach is intended to reduce the variability in reference site data caused by ongoing disposal operations, and will also help to offset the costs of otherwise increased sediment testing. Applicants may

1

Testing/Suitability

- Under the Management Plan
  - PN 01-01: meets National testing guidelines (ITM)
    - Chemistry + 1 water and 2 sediment toxicity tests
    - Bioaccumulation testing when needed
  - In-Bay and ocean suitability have similar basis
  - Tier I exclusions where baseline is adequate

Testing/Suitability

- Continued improvements
  - Testing for dredging is distinct from CA SQOs
  - Integrated with TMDLs for Mercury and PCBs
    - TMDL limits directly reflected
    - Program recognized as "net remover" of contaminants
  - Integrated with programmatic EFH agreement
    - Predictable bioaccumulation and "residuals" testing
    - Some triggers recalculated annually by SFEI:
      - Mercury
      - PCBs (40)
      - PAHs (25)

Testing/Suitability

Table 1. Initial (2011) Sediment Chemistry Bioaccumulation Trigger (BT) Levels, for Unconfined in-Bay Placement at Designated San Francisco Bay Disposal Sites

	Mercury (mg/kg)	Total PAHs (µg/kg)	Total PCBs (µg/kg)	Total DDTs (µg/kg)	Total Chlordane (µg/kg)	Dieldrin (µg/kg)	Dioxins/ Furans (pg/g)
Bioaccumulation Trigger (Initial)	0.33	4800	16	50	37	1.9	10
Basis	a	a	a	b	b	c	d

EFH consultation established testing triggers for 7 compounds

http://www.spn.usace.army.mil/conops/LTMSEFHfullsignedagreementFINAL6-9-2011.pdf

Testing triggers for 3 of the compounds vary as calculated annually by SFEI

Thresholds Effective in Calendar Year 2012 (Based on 2002-2010 RMP Data)

Contaminant	90% UTL of 90th percentile	DMMO BTs	90% UTL of 99th percentile (TMDL Disposal Limits)	Notes
Hg (mg/kg dry wt.)	0.341	0.34	0.471	Total Mercury
PCB (µg/kg dry wt.)	16.8	17	26.4[1]	Sum of 40 congeners[2]
PAH (µg/kg dry wt.)	4,735	4,700		Sum of 25 PAHs[2]

http://www.sfei.org/content/dmmo-ambient-sediment-conditions

Programmatic EFH Consultation

- LTMS Programmatic EFH consultation process completed in June 2011
  - Provided further protection of eelgrass
  - Added testing requirements for specific chemical analytes (bioaccumulation and residuals)
  - Required further study of impacts of dredging on benthic invertebrates and subaquatic vegetation
  - Technical modification has since been made limiting the need for additional mercury testing

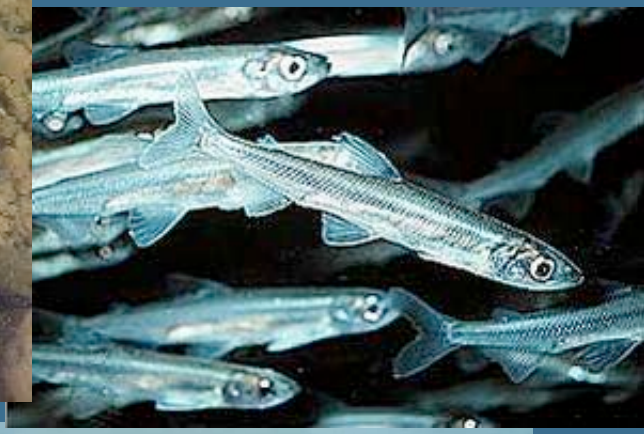
Programmatic EFH Consultation

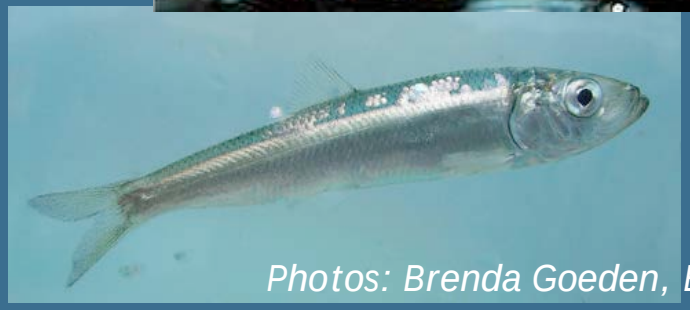
- Benefits
  - Less permit processing time for USACE, NMFS and permittees
  - Establishment of BMPs that reduce frequency of disturbance to EFH
  - Study of recovery following dredging disturbance
  - Certainty in minimization and mitigation measures for projects with proximity to eelgrass
  - Better reporting

Programmatic EFH Consultation

- Impacts
  - Additional testing requirements (including residuals and bioaccumulation testing) may increase cost and timelines for some projects
  - Inclusion of silt curtains and/or light monitoring for projects adjacent to eelgrass beds increases costs

CESA and ESA





Photos: Brenda Goeden, BCDC

Environmental Work Windows

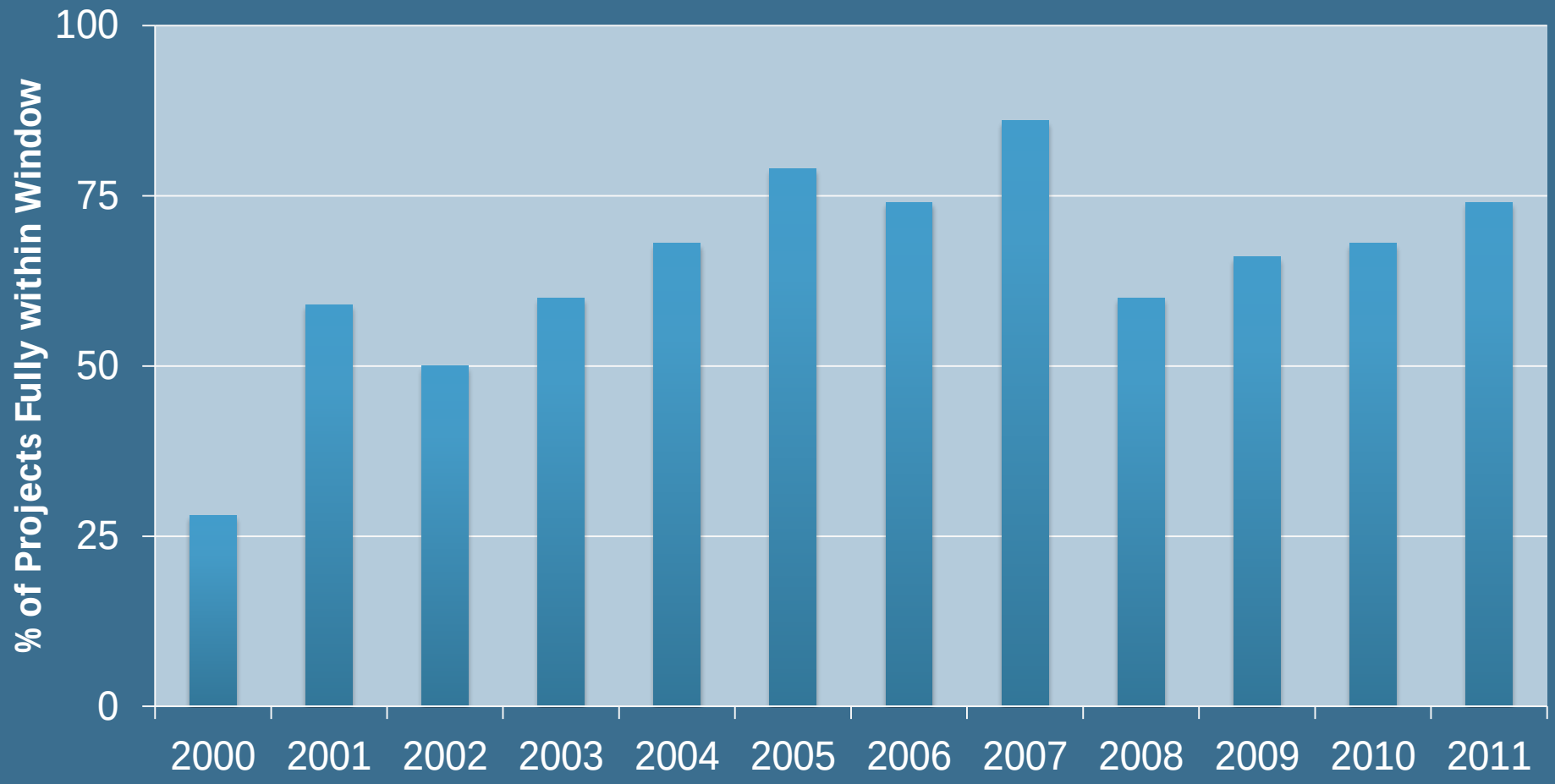
Site	Species	Jan 1-15	Jan 16-31	Feb 1-15	Feb 16-28	Mar 1-15	Mar 16-31	Apr 1-15	Apr 16-30	May 1-15	May 16-31	Jun 1-15	Jun 16-30	Jul 1-15	Jul 16-31	Aug 1-15	Aug 16-31	Sep 1-15	Sep 16-30	Oct 1-15	Oct 16-31	Nov 1-15	Nov 16-30	Dec 1-15	Dec 16-31
SF Bay to Carquinez Strait	Chinook Salmon, Steelhead																								
SF Bay to Richmond	Chinook Salmon, Steelhead, Herring																								
Carquinez Bridge to Collinsville	Delta Smelt, Salmon and Steelhead																								
Berkeley Marina to San Lorenzo Creek within 1 mile of coastline	Least Tern Salmon and Steelhead																								
Napa and Petaluma Rivers, Sonoma Creek	Steelhead, Delta Smelt (Napa Only)																								
North SF Bay & San Pablo Bay shallow berthing areas	Dungeness Crab																								
Baywide within 250 feet of Salt Marsh Habitat	California Clapper Rail																								
Within 300' of known roost site	California Brown Pelican																								
In Areas with Eelgrass Beds	California Least Tern																								
Baywide in Areas of Salt Marsh Habitat	California Clapper Rail																								
In and Adjacent to Salt Marsh Habitat	Salt Marsh Harvest Mouse																								

For more detailed information, see Appendix F of the LTMS Management Plan or the LTMS EIR/EIS.
* Depths are represented in MLLW, and are project depth, not including over dredge allowance
**This chart is for operations and maintenance dredging of existing navigational facilities. Other species may be affected by work in other areas.

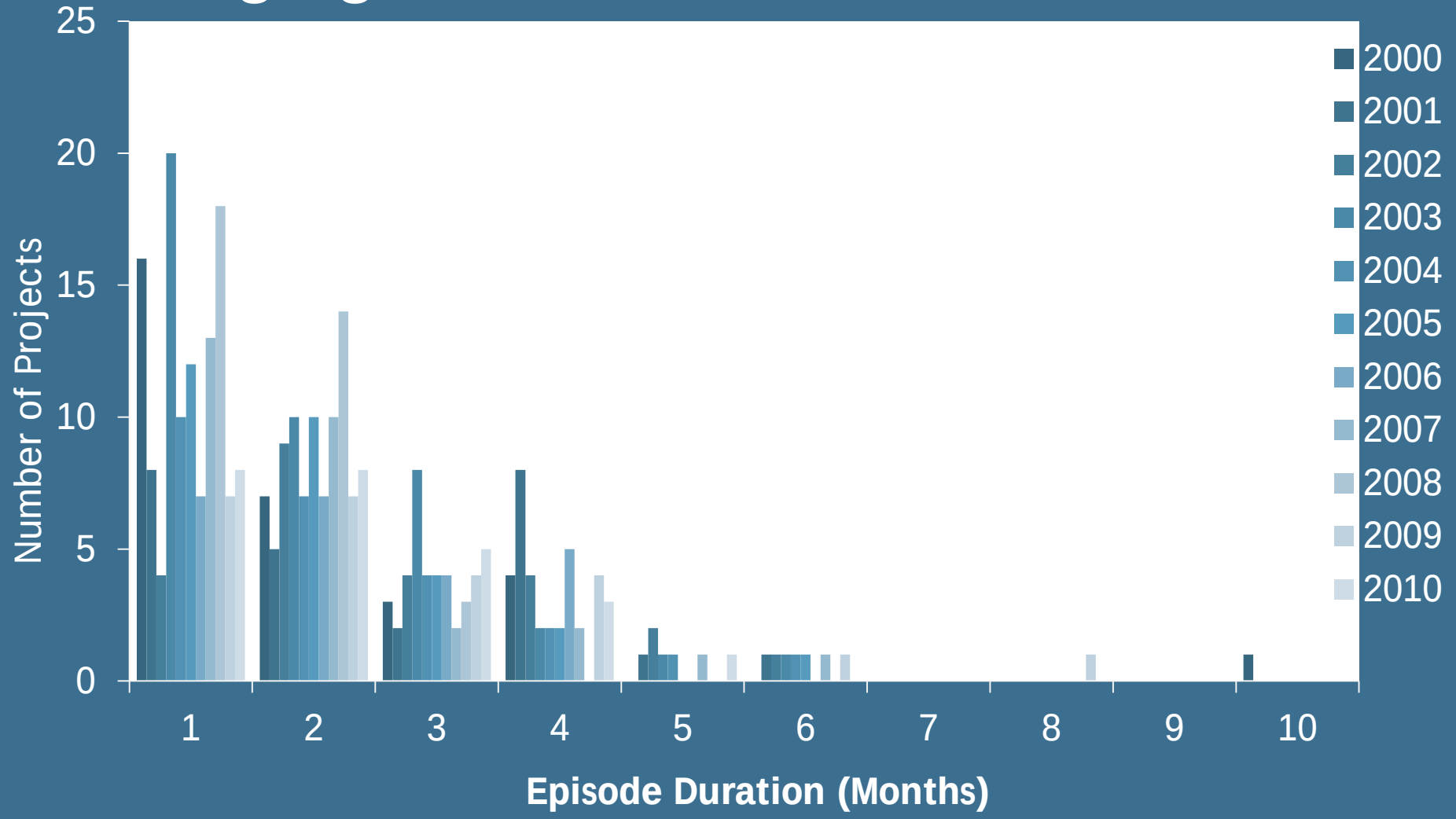
WORK WINDOW

CONSULTATION REQUIRED

Overall Compliance with Work Windows



Dredging Duration



Emerging Permitting and Testing Issues

- Equipment: entrainment by hydraulic dredges
- Water quality: dredging scow water “overflow”
- Recent listings: green sturgeon and longfin smelt
- New R.I.M.: updating PN 01-01
- Updated reference site(s)?
- Emerging contaminants
- Changing chemical thresholds (TMDLs, etc.)

Questions and Comments

Photo: Eric Jolliffe, USACE

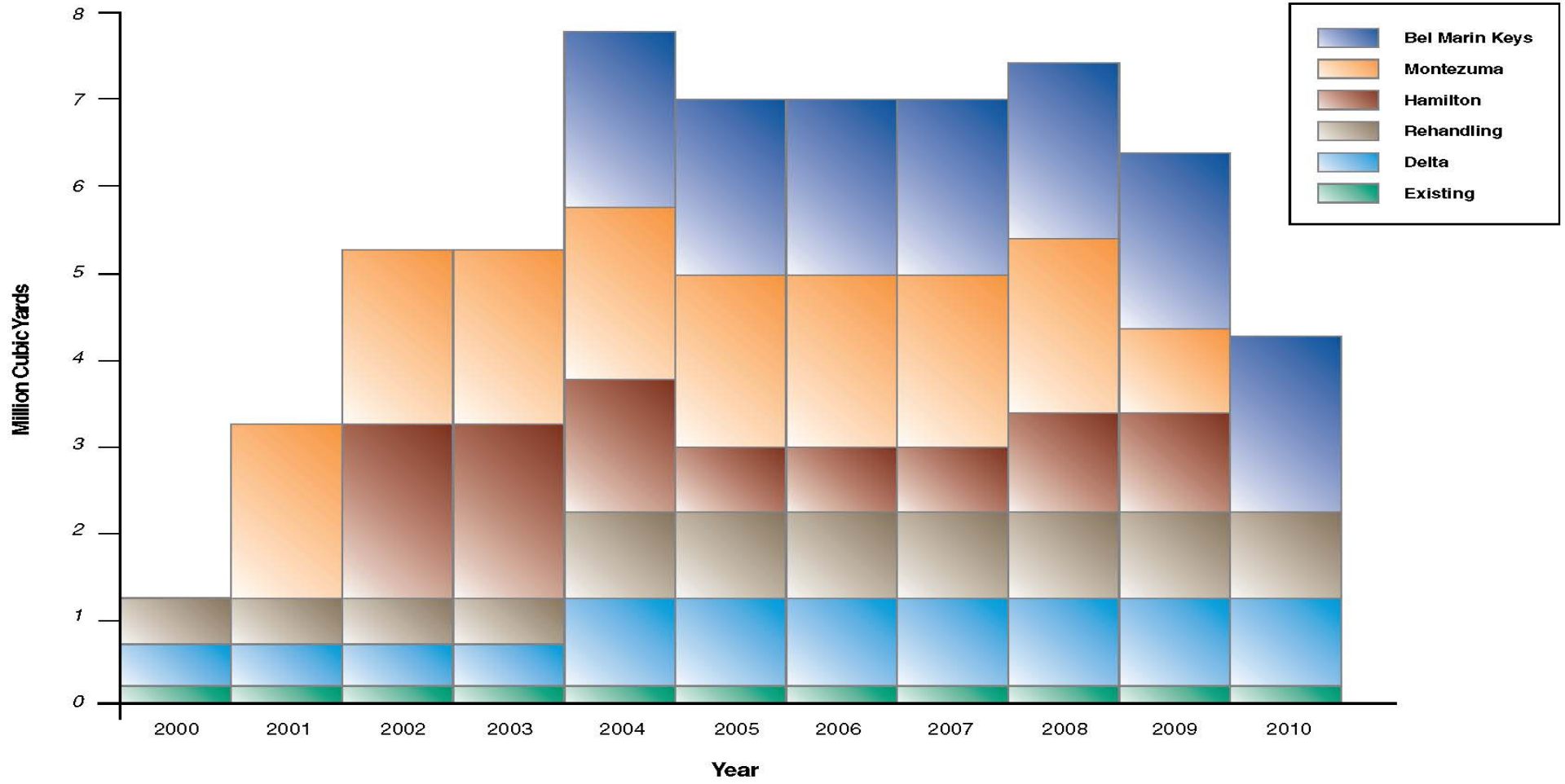
Review Issues By LTMS Goal

- Establish a cooperative permitting framework
- Conduct dredged material disposal in the most environmentally sound manner
- Maximize use of dredged material as a resource
- Maintain…those channels necessary for navigation…and eliminate unnecessary dredging

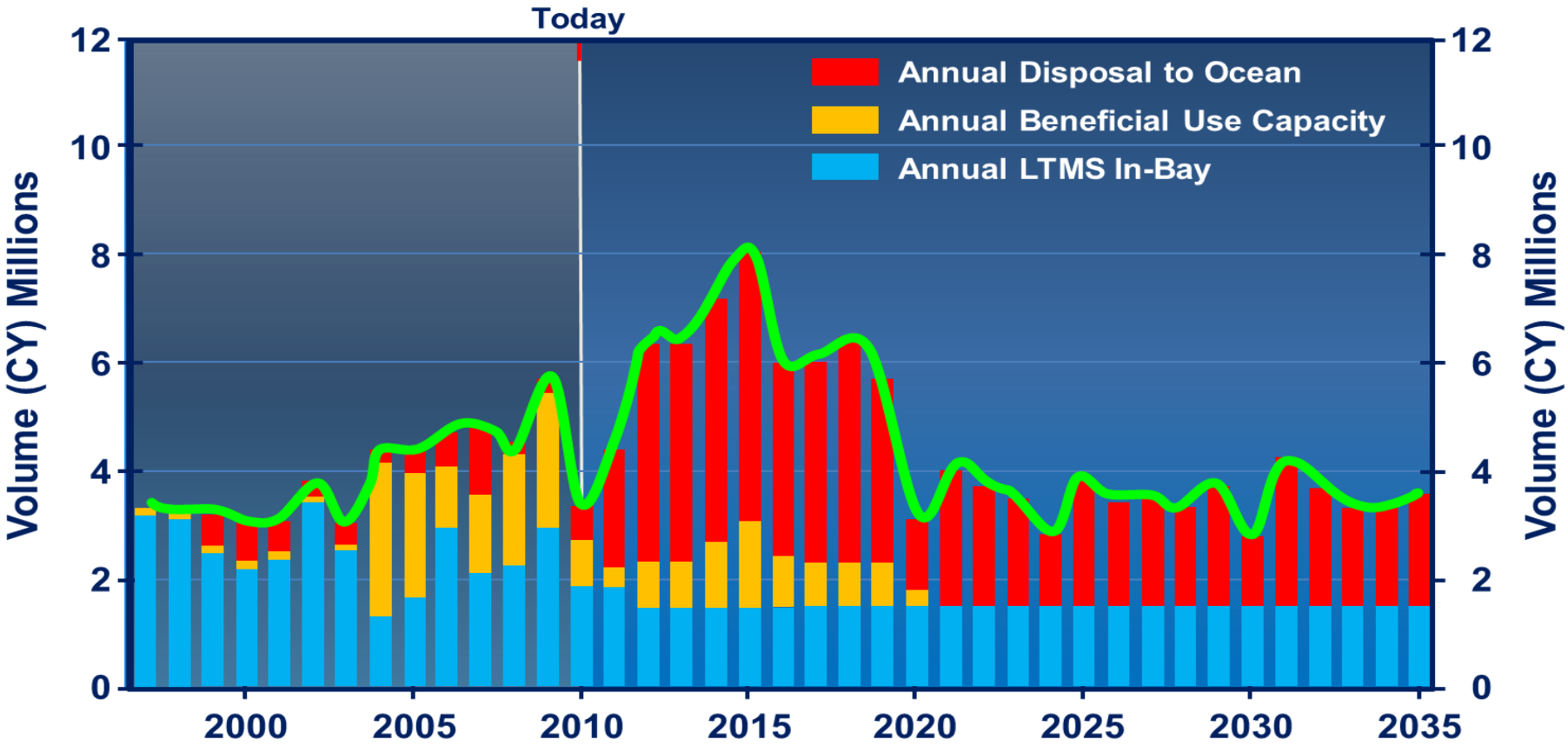
Beneficial Reuse

- Over 19 million cy of dredged material has been beneficially reused for wetland creation and restoration, levee maintenance, construction fill, sand, and landfill daily cover
- Over 2,100 acres of habitat have been restored using dredged material:
  - Middle Harbor Enhancement Area, Inner Bair Island, Hamilton, Montezuma, Sonoma Baylands, Castro Cove, Yosemite Slough, Port of Richmond Shipyard 3, Stege Marsh, and Peyton Slough

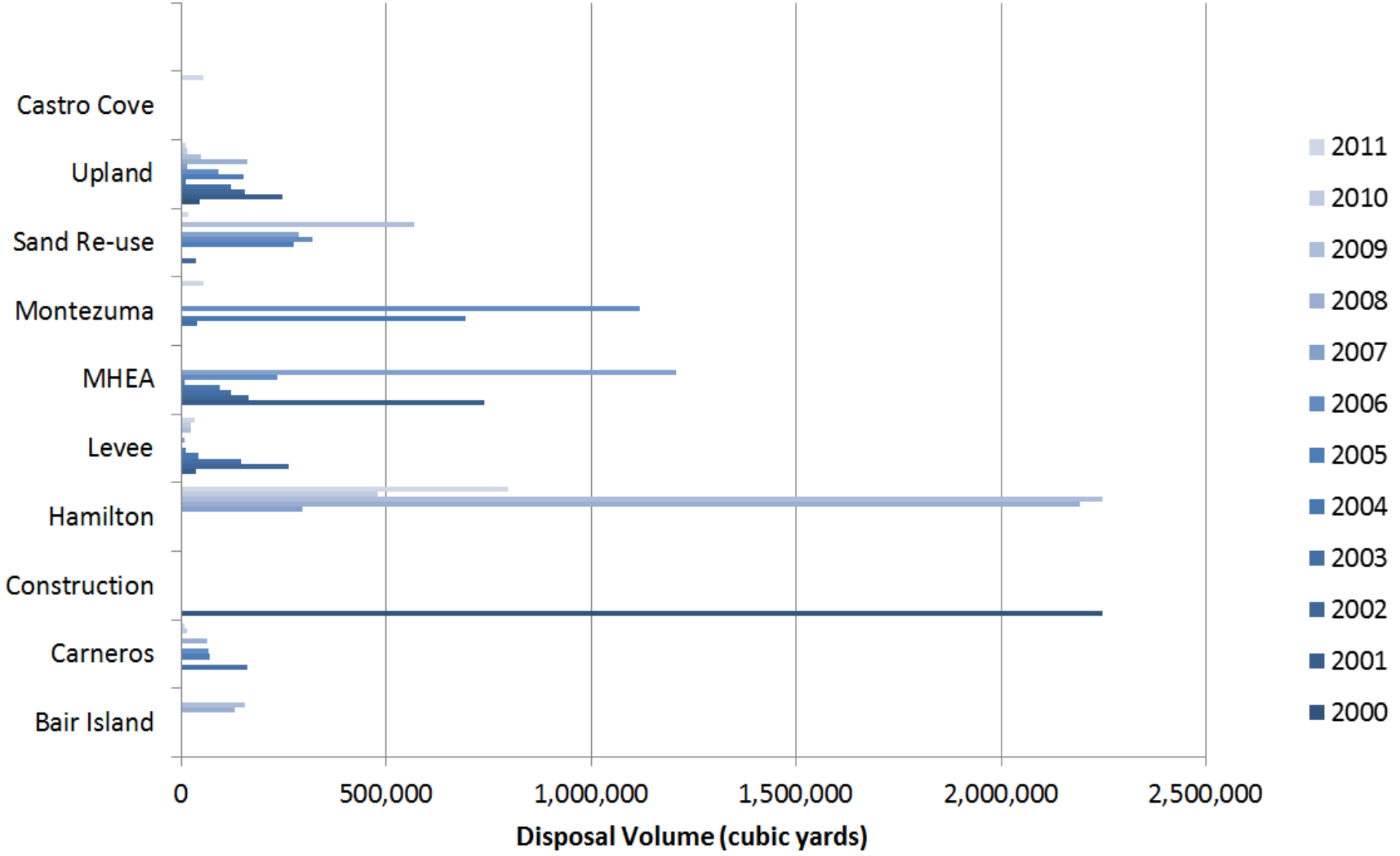
Management Plan-Projected Beneficial Reuse and Upland Disposal Capacity



DMMP-Projected Ocean, Beneficial Reuse, and In-Bay Disposal Capacities



Actual Beneficial Reuse by Category – 2000 to 2011



Large Beneficial Reuse Sites

Questions and Comments

Photo: Brian Ross, USEPA

Review Issues By LTMS Goal

- Establish a cooperative permitting framework
- Conduct dredged material disposal in the most environmentally sound manner
- Maximize use of dredged material as a resource
- Maintain…those channels necessary for navigation…and eliminate unnecessary dredging

Maintaining Navigation

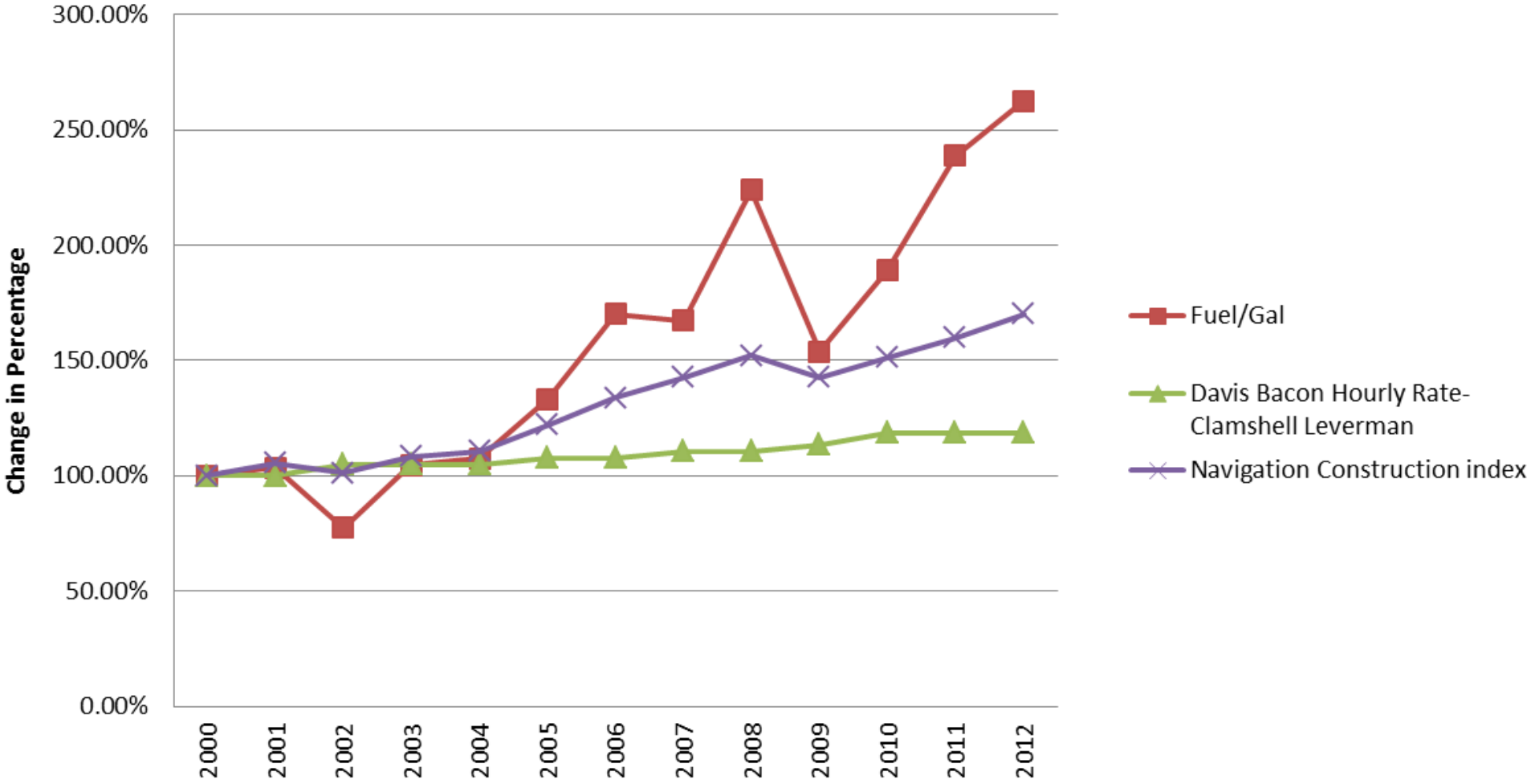
Photo: Javier del Castillo, BCDC

USACE Maintenance Dredging and Disposal Costs

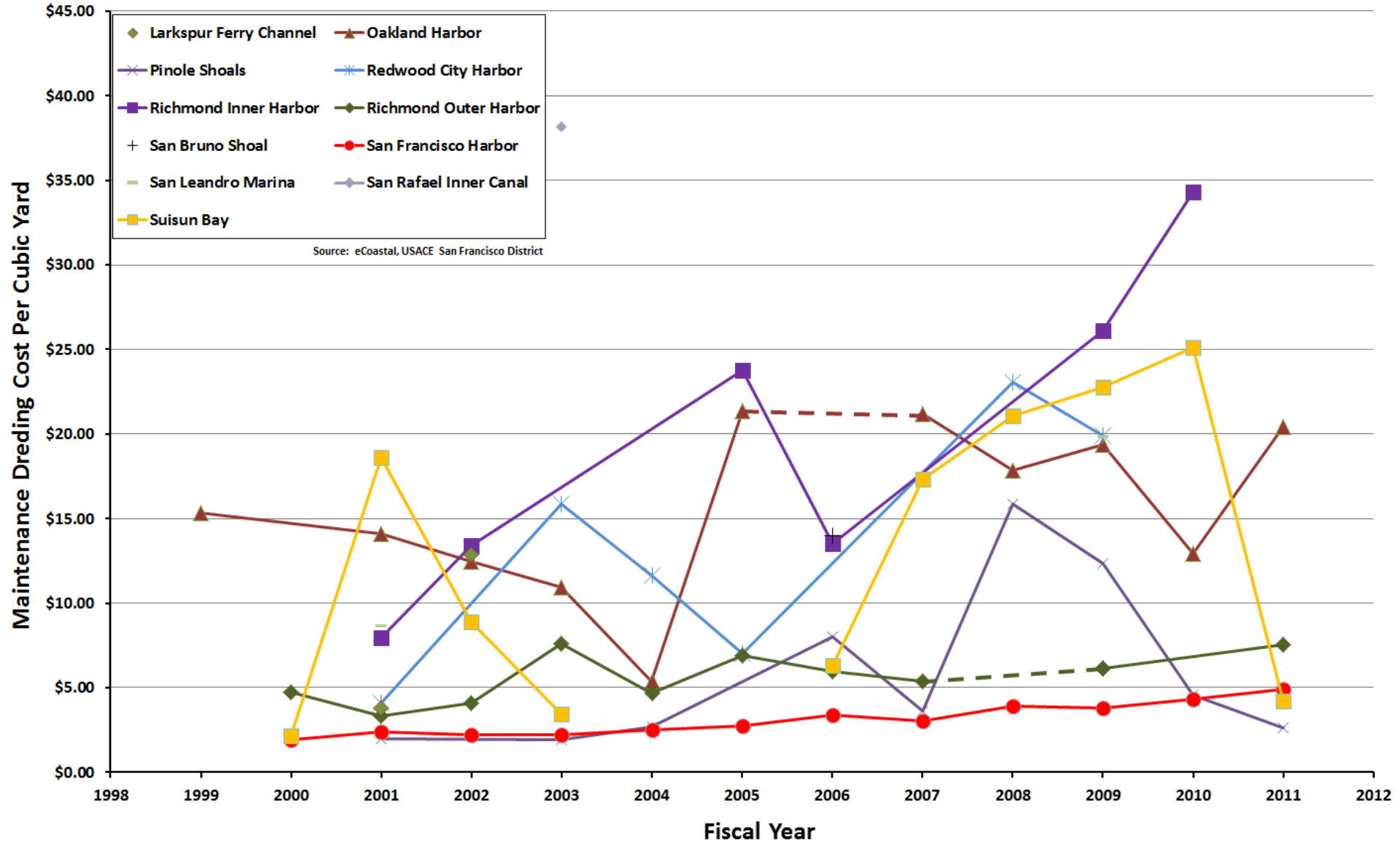
- Information was collected from official USACE contract documents and *Essayons* and *Yaquina* records
- All deepening costs have been removed

Essayons and Yaquina Dredges
Photos: USACE, Portland District

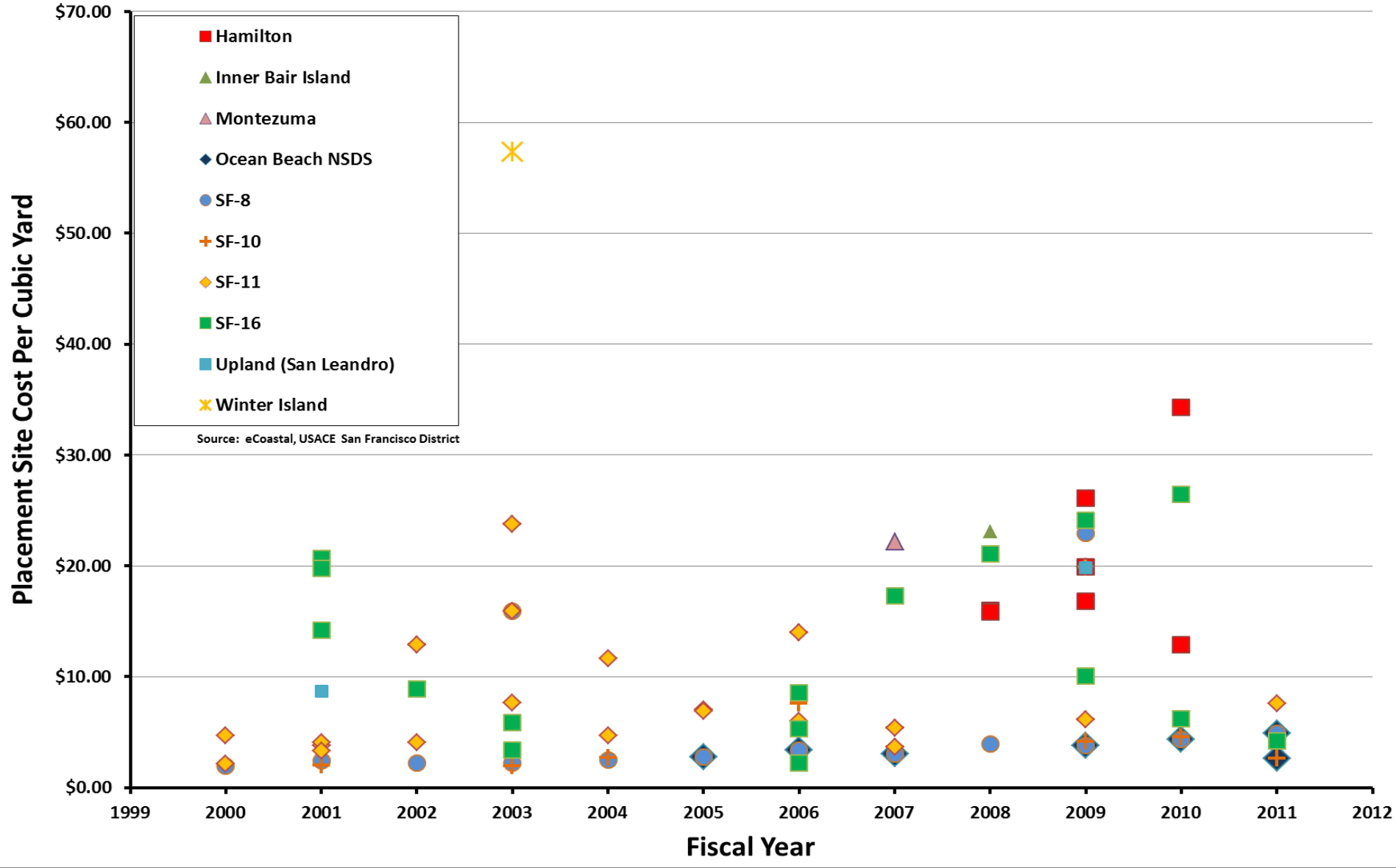
San Francisco Dredging Industry Cost Trends – 2000 to 2012



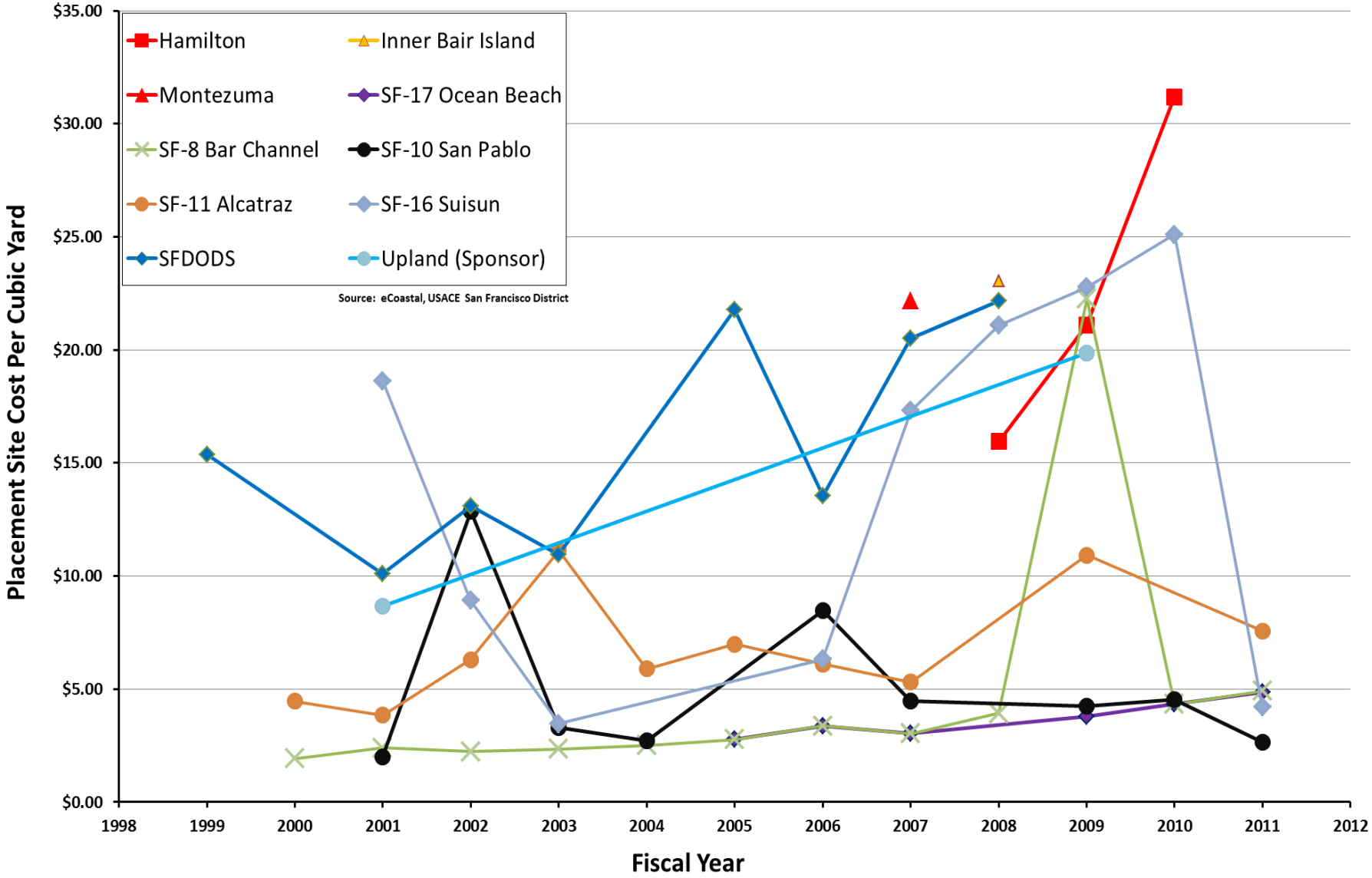
Cost Per Cubic Yard by USACE Maintenance Dredging Project



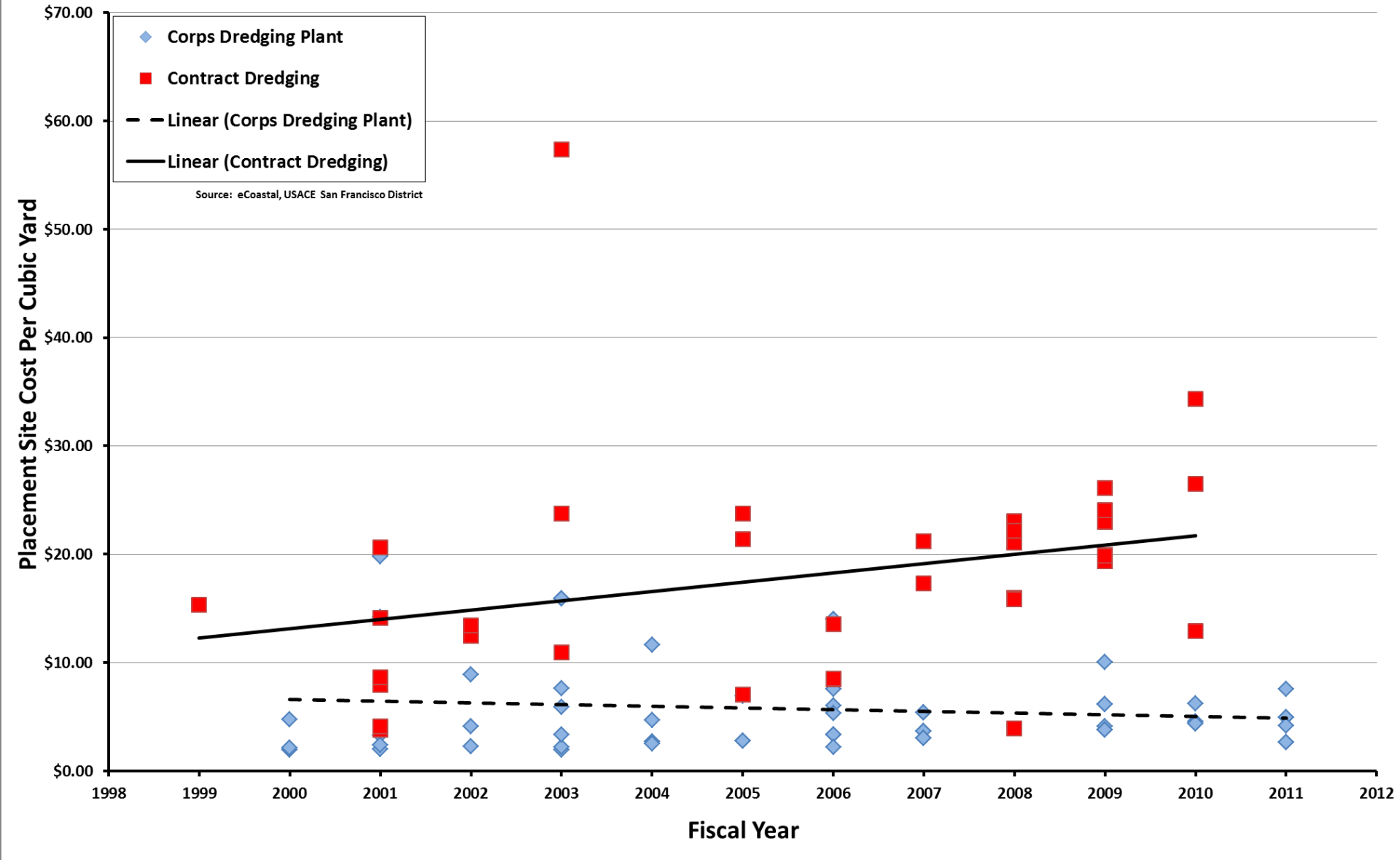
USACE Maintenance Dredging Cost Per Cubic Yard by Placement Site



Placement Site Cost Per Cubic Yard for USACE Maintenance Dredging Projects



Comparison of Cost Per Cubic Yard for USACE Dredge Plant vs. Contract Dredging



Additional USACE Dredging Cost Analyses to Come

- Evaluate USACE's mobilization/demobilization costs (percent of total contract cost)
- Evaluate Hamilton/ Port of Oakland/ Middle Harbor costs (looking at specific components, including offloading, dredging, transport, and on-land, etc.)

Photo: Jenny Quay, BCDC

Non-USACE Anecdotal Information on Increase of Dredging Costs

- Reduced in-Bay disposal increases distances to placement sites and fuel costs
- When special equipment is required to use certain sites, costs increase and efficiency decreases
- Short (6 months or less) dredging window
  - Prices seem to be set based on dredgers earning their annual income in half a year
  - Scheduling is competitive and prices increase later in the season

Non-USACE Anecdotal Information on Reducing Dredging Costs

- Nearby project proponents can consider scheduling joint dredging projects
- Development of the aquatic transfer facility project would increase efficiency
- Project proponents can consider creating their own upland disposal sites

Non-USACE Anecdotal Information on Reducing Dredging Costs

Montezuma

- Beneficial reuse project that accepts "noncover" sediment
- 3.5 million cy received since December 2003
- Competitive with SF-DODS: reported total cost is $21-$29/cy (dredging, transport, and placement of cover sediment, includes the $9-$12/cy tipping fee)

Photo: Jenny Quay, BCDC

Questions and Comments

Meeting Recap

- LTMS program has largely met its goals
  - In-Bay disposal significantly reduced
  - Many beneficial reuse successes
  - Sediment quality/testing improvements
  - Coordinated permitting/DMMO

Looking Forward

- Increasing costs; level or decreasing federal budget
- Contracting improvements for beneficial reuse: example – 2011 Value Engineering Study
- Long-term planning:
  - Sea level rise
  - Reduced Bay sediment supply
  - Subtidal Habitat Goals integration/coordination
  - Identification of new beneficial reuse approaches
  - Regional Sediment Management

Open Discussion

LTMS 12-Year Review Meeting
March 29, 2012

Next Steps

- Finalize 12-Year Review Report
  - Some additional analyses will be included. Is a meeting needed to cover the final report?
- Proceed with stakeholder meetings focused on recommendations for program improvements
  - Topics for future meetings?
  - Anticipated time frame for future meetings
- Consider whether there is a need to revise elements of the Management Plan

LONG TERM MANAGEMENT STRATEGY

LTMS 12-Year Review Process Meeting

MEETING HIGHLIGHTS
Bay Conservation and Development Commission
Thursday, March 29, 2012
9:30 AM – 3:30 PM

INTRODUCTION

MEETING ATTENDEES
Please email Katie Chamberlin for a scanned copy of the meeting sign-in sheet.

MEETING MATERIALS
The Background Information Document, meeting agenda, and meeting minutes are available at http://www.spn.usace.army.mil/ltms/ltms_program_review.html.

MEETING PURPOSE
To provide information to agencies and stakeholders regarding the implementation of the first 12 years of the Long Term Management Strategy Program for the Placement of Dredged Material in the San Francisco Bay Region (LTMS) to inform future discussions on future program implementation.

DESIRED OUTCOME
To establish a common understanding of the status of the LTMS Program policies and actions undertaken to date, and to identify additional discussion items for future analysis.

Brief LTMS Program Overview – Presented by Brian Ross (U.S. Environmental Protection Agency)

Brian Ross presented an overview of the development of the LTMS Program. He explained the transition plan for in-Bay disposal that was selected as the preferred alternative in the LTMS Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and implemented by the Management Plan, noting that the transition was reliant on the development of beneficial reuse sites and the San Francisco Deep Ocean Disposal Site (SF-DODS) as an interim safety valve to alleviate in-Bay disposal during periods when beneficial reuse was challenging. Brian Ross noted that this 12-year review effort will consist of an evaluation of the program in accordance with the quantitative and qualitative measures presented in the Management Plan as well as LTMS program's ability to meet its goals.

Dredging and Disposal Trends under the LTMS – Presented by Jenny Quay (Bay Conservation and Development Commission [BCDC])

Jenny Quay presented a series of charts showing disposal volumes from 2000 to 2011. Specific to the slide 14 chart titled In-Bay Disposal vs. Transition Glide Path – 2000 to 2011, Jenny Quay noted that the beneficial reuse, upland, and SF-DODS disposal volumes would have contributed partly to the in-Bay disposal volumes had the LTMS Program not been working to reduce in-Bay disposal targets.

Public comments pertaining to this agenda item included:

- Jim McGrath (BCDC Commissioner and San Francisco Bay Regional Water Quality Control Board member) noted that the chart should not include material from deepening projects. The Port of Oakland's material would not have been disposed of in-Bay had the LTMS not existed; instead, it would have gone to SF-DODS.
- Tom Gandesbery (California Coastal Conservancy) suggested developing charts that present a percentage of projects that were not permitted due to testing data or other reasons.

Program Review per LTMS Management Plan – Presented by Pascale Soumoy (BCDC)

Pascale Soumoy presented a summary of the LTMS Program's performance compared to the quantitative and qualitative evaluation measures presented in Chapter 8 of the Management Plan.

Public comments pertaining to this agenda item included:

- Mark D'Avignon (U.S. Army Corps of Engineers [USACE]) noted that "no lawsuits" is owed to improved public perception in terms of the management capabilities of regulatory agencies.
- Doug Lipton (Lipton Environmental) noted that it is a misconception that upland sites are becoming more expensive. Montezuma's costs are currently the same as they were years ago and may even reduce in the future once certain improvements are made to the site.
- Brenda Goeden (BCDC) confirmed that the only upland sites currently open are Montezuma, Cullinen Ranch, and Winter Island. Cullinen Ranch is currently available, but is requiring the dredging project sponsor to offload the material and provide offloading equipment similar to Winter Island. However, the site owners are in the process of permitting an offloader along the Napa River which would provide additional draft for scows but likely require a tipping fee.
- Ellen Johnck (independent) suggested expanding the focus on habitat creation to include aquatic habitat.
- Brenda Goeden stated that by completing dredging projects within the established work windows, impacts on aquatic species are reduced.
- Lynford Edwards (Golden Gate Bridge Highway and Transportation District) asked whether the LTMS has a graphic that shows the distribution of sites that have been used over the past 12 years. Brenda Goeden responded that the LTMS does not but could create one.
- Len Cardoza (Weston Solutions) commented that "maintain navigability and project depths" should be red (and not yellow) as ports continue to face recurring issues.
- Barbara Salzman (Marin Audubon Society) noted "upland site volumes" are not actually going to "upland" sites, but are really "non-Bay" and "non-SF-DODS" volumes.
- Jim Haussener (California Marine Affairs and Navigation Conference) asked whether it is safe to assume that, because turbidity is down, we have a healthier Bay. Was our original premise even correct at understanding what constituted a healthy Bay?

Program Review Per LTMS Goals

Establish a Cooperative Permitting Process and Manage Dredged Material in an Environmentally Sound Manner – Presented by Rob Lawrence (USACE), Brian Ross, and Brenda Goeden

Rob Lawrence provided an overview of the Dredged Material Management Office (DMMO), including its history, benefits, and constraints. The DMMO has resulted in numerous benefits, including: a consolidated permit application; regular public meetings; improved processing timeframes; increased predictability; fewer permit revisions; 10-year permits; ability to permit advanced maintenance dredging and knock-downs where justified; multi-year testing schedules; less frequent environmental review (due to the programmatic Biological Opinions [BOs] and essential fish habitat [EFH] consultation); and

increased flexibility in meeting LTMS goals. The DMMO database is anticipated to be available for public use by mid-2012.

Brian Ross presented an overview of the DMMO's testing program. The LTMS published Regional Guidance (Public Notice 01-01) for the Inland Testing Manual (ITM) in 2001. The ITM made the suitability determinations more similar for in-Bay versus ocean disposal projects. Tier One exclusion from testing approvals allows projects without a history of contamination to minimize testing efforts.

Brian Ross provided a recap of the LTMS/National Marine Fisheries Service (NMFS) programmatic EFH consultation. The consultation resulted in increased eelgrass protection, including the requirement for dredging projects to mitigate for both direct and buffer impacts. The consultation also added the need for bioaccumulation tests when certain bioaccumulation triggers were exceeded and to test the new, post-dredge surface (z-layer) in those cases, and increased the LTMS agencies' reporting requirements.

Brenda Goeden provided an overview of the programmatic LTMS BOs and associated work windows for listed species and species of special concern. She presented a chart showing overall compliance with established work windows in the Bay (see Slide 39). A key point of the charts is that most of the dredging projects in the Bay can complete dredging within 4- or 6-month work windows, with many of the projects only requiring 1 to 2 months of dredging. The real issue is having the equipment necessary to complete all of the projects with the available equipment.

Emerging issues facing the LTMS Program include minimizing impacts to longfin smelt and green sturgeon from hydraulic dredges; scow water overflow from dredge barges; updating the ITM; updating reference sites; emerging contaminants; and changing chemical thresholds.

Public comments pertaining to these agenda items included:

- Doug Lipton asked whether the DMMO has discussed a master approval for non-cover projects. Rob Lawrence responded that the DMMO is not directly working on that effort on their own, but supports others working together on it.
- Barbara Salzman recommended that the DMMO require relevant environmental documents to undergo updates.
- Vicki Frey (California Department of Fish and Game) suggested adding that consultation is required year-round for longfin smelt and green sturgeon to the work windows chart. Brenda Goeden agreed and noted that the addition would be made.
- Jim Haussener asked about the amount of DMMO agencies' staff time needed to issue episodic approvals (other than Tier 1s). Brenda Goeden responded that the total number of hours needed per agency is approximately eight. If the DMMO was not in place, even more time would be needed. Jim Haussener responded that he would like more transparency, and suggested that the LTMS add to the charts the month that projects begin dredging. Brenda Goeden noted that she intended to include this; most projects begin dredging in July or August.
- Lynford Edwards asked whether Coho salmon have been removed from the work windows chart in full. Gary Stern (NMFS) responded that Corte Madera Creek is designated as Coho salmon habitat, and that GGBHTD could make the case that dredging at the Larkspur Ferry Terminal does not impact the habitat in Corte Madera Creek. Brenda Goeden stated that this is a revision that the LTMS may be able to address.
- Colonel Torrey DiCiro (USACE) requested that the DMMO draft an overview the DMMO database specific to what it will contain and its capabilities. He requested that the document be released to

the public prior completion of the programming so that necessary adjustments can be made. Rob Lawrence and Shelah Sweatt (USACE) will develop such text.

- Ellen Johnck noted that the LTMS has no funding for 2012 or 2013, and questioned who is working to address this.
- In response to a question about the programmatic EFH implementation, Brian Ross confirmed that the LTMS will complete the benthic recovery study and compile data on light monitoring mitigation as required. Project proponents are only required to complete light monitoring or use a silt curtain if within the 250 meter buffer, and to provide mitigation for direct impacts to eelgrass.
- Jim McGrath commented that the DMMO's efforts to revise the testing program and enforce work windows are success stories. Now the focus should shift to contracting approaches that encourage beneficial reuse.
- Scott Bodensteiner (Weston Solutions) asked whether the LTMS agencies will consider developing historical reference site databases for other in-Bay disposal sites in addition to the Alcatraz disposal site.
- Brenda Goeden added that the Science Work Group's Framework Document was important in identifying scientific data gaps around which the LTMS focused studies. Bill Brostoff and Phil Lebednik have led the Science Work Group and carried out a number of studies – most of which are now posted on the LTMS website.

Maximize the Beneficial Reuse of Dredged Material – Presented by Brenda Goeden

Brenda Goeden presented an overview of the beneficial reuse projects that have accepted dredged material since 2000. Over 19 million cubic yards of dredged material have been beneficially reused for wetland creation and restoration, levee maintenance, construction fill, sand, and landfill daily cover. Over 2,100 acres of habitat have been restored using dredged material at Middle Harbor Enhancement Area, Inner Bair Island, Hamilton, Montezuma, Sonoma Baylands, Castro Cove, Yosemite Slough, Port of Richmond Shipyard 3, Stege Marsh, and Peyton Slough.

Public comments pertaining to this agenda item included:

- John Lazorik (Valero Refinery) shared that Dutra's 2012 cost estimate for taking material to Winter Island or Montezuma was equivalent to their estimate for taking material to SF-DODS.
- Jerry Diamantides (David Miller and Associates) noted that as part of the Dredged Material Management Plan (DMMP) work that USACE has completed, potential new upland sites are being identified and analyzed for feasibility.
- Brenda Goeden brought up the idea of incentivizing facilitating beneficial reuse through tax or donation credits, for example.
- Jim McGrath noted that Table 3 in the Background Information Document should include total volumes, new work versus maintenance volumes, and information on grain size.
- Doug Lipton commented that the LTMS needs to focus on contracting approaches that encourage reuse activity instead of relying solely on the standard contracting mechanisms USACE employs or on the contractor to encourage beneficial reuse.
- Jim Haussener suggested that the LTMS define or re-define the terms beneficial, reuse, and use.

Maintain Navigation Channels in an Economically and Environmentally Sound Manner – Presented by Al Paniccia, USACE

Al Paniccia provided an overview of costs, primarily focusing on USACE maintenance dredging costs. The information presented was derived from official USACE contract documents and *Essayons* and *Yaquina* records. The information does not include any deepening costs but does include mobilization and demobilization costs.

Public comments pertaining to this agenda item included:

- Jerry Diamantides added that the chart shows that there are many variables at play and that comparing details and identifying trends is difficult.
- Jay Ach (Port of San Francisco) asked whether the costs included insurance and the loan for capital costs. Jessie Burton Evans (USACE) noted that the loan is covered in the revolving funds and USACE is self-insured. Jay Ach added that it is a bit unfair to compare USACE costs to contractor costs.
- Jim Haussener added that the costs should consider the cut face; if the cut face is relatively low, costs can increase.
- Dilip Trivedi (Moffat & Nichol) noted that our goal should be to see how we might be able to reduce upland beneficial reuse site costs.
- Dave Doak (USACE) noted that the idea of private investment in public sites has come up before, that the Realize America's Maritime Promise Act (RAMP) Act may provide additional funding to make this possible, and that the ports could also benefit from a dredging co-op.
- Anne Whittington (Port of Oakland) noted that for projects that complete Integrated Alternatives Analyses and dispose material at the same location each year, a list of potentially available sites does not help; definitive answers are needed.
- Ellen Johnck noted that since we have so many species in the Bay that are here year-round, are the windows the best management strategy for the estuary? Can we open up the year to dredging? Barbara Salzman disagreed with Ellen Johnck's comment.
- Beth Huning (San Francisco Bay Joint Venture) noted that the San Francisco Bay Joint Venture has identified about 20 additional projects beyond those discussed today, and would like to work with the LTMS on matching up projects with beneficial reuse sites.
- B.K. Cooper (R.E. Staite Engineering, Inc.) noted that if there was a way to provide certainty on when dredging would start, this could help with costs.
- Jim McGrath commented that it is time to look at the costs, timing, and sediment deficit issues as well as the short- versus long-term tradeoffs. If you're enhancing habitat for the system, does that warrant the opportunity to work outside of the window?

Meeting Recap and Open Discussion

The LTMS Program has largely met its goals. There are additional issues that now require our attention that were not originally under consideration when the Management Plan was developed.

General comments from meeting participants on the presentation and Background Information Document included:

- Costs charts should be modified as follows: separate Operations and Maintenance (O&M) versus new work numbers; separate Pinole advanced maintenance on O&M cost charts; separate USACE hopper costs versus 2008 contract hopper costs; normalize cost and cubic yards charts to constant costs; include Galbraith costs; graph total volume plus total cost over time (not per project) for in-Bay versus ocean versus reuse; compare San Francisco Bay costs to national dredging costs
- More detailed text should be added on: aquatic and wetland habitat created for threatened and endangered species; reuse costs; why LTMS sees the Bay as healthier; tracking of depth limitations (annual projects and pilots' restrictions); and what happened to technological committees envisioned in the Management Plan
- Graphics/tables should be modified as follows: add graphics regarding individual reuse sites (capacity, type of material, etc.); add longfin smelt and green sturgeon to environmental work window year-round; Table 3 should include volumes, new work, and O&M breakout (including

grain size, sand at Hamilton, and mud at Middle Harbor Enhancement Area); include a graphic that shows projects' start date in relation to work window

Future topics and associated issues suggested by the meeting participants for upcoming LTMS 12-year review-focused meetings are listed below.

Beneficial Reuse Issues

- Define the terms "beneficial," "reuse," and "use"
- Identify currently open and operating beneficial reuse sites to aid project planning
- Identify policies and practices that would or could foster habitat projects
- Contracting approaches that actively encourage beneficial reuse
- Other incentives for beneficial reuse (i.e., tax breaks)
- Focus on grain size in relation to reuse sites (regarding capacity and practicability)
- Identify DMMP and San Francisco Bay Joint Venture sites
- South Bay salt ponds rehandling/feeder sites
- Aquatic transfer facility discussion: status and lessons learned (including a discussion on Hamilton)
- How to consider short-term impacts in beneficial reuse projects
- Carbon sequestering in wetlands - credit for dredgers that reuse material?

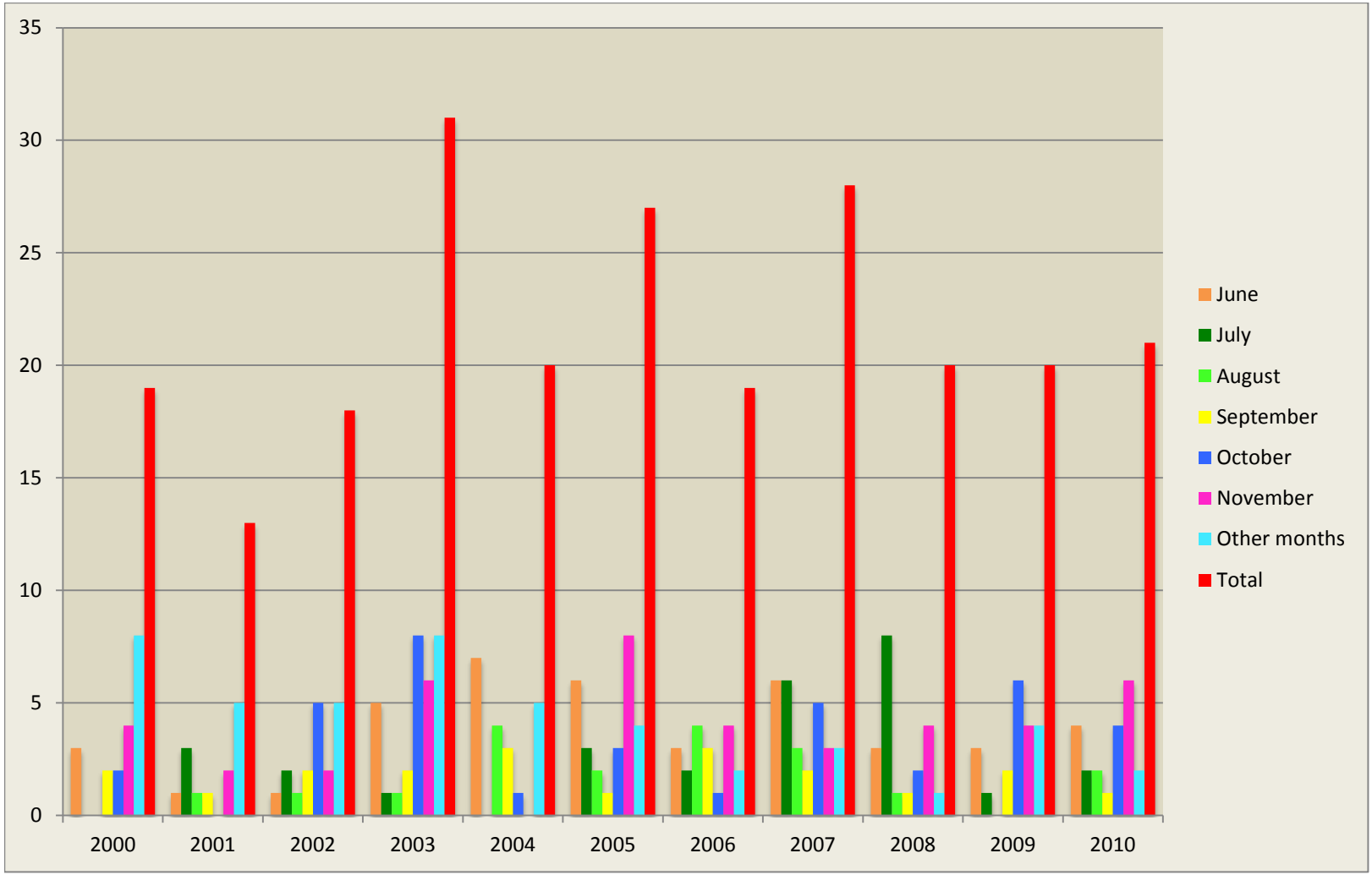
Costs/Contracting Issues

- Value Engineering Study next steps and results
- Value Engineering study contract acquisition strategies
- Make better use of the dredging contracting (e.g., Dredging Contractors of America, American Association of Port Authorities) community to improve understanding
- Groups of dredgers coordinating regarding equipment and contracting
- Optimize federal funds across the year, not just by projects
- Reduced timing uncertainty leads to reduced bid funds and capacity
- Reenergize Confounding Factors Work Group

Policy/Strategy Issues

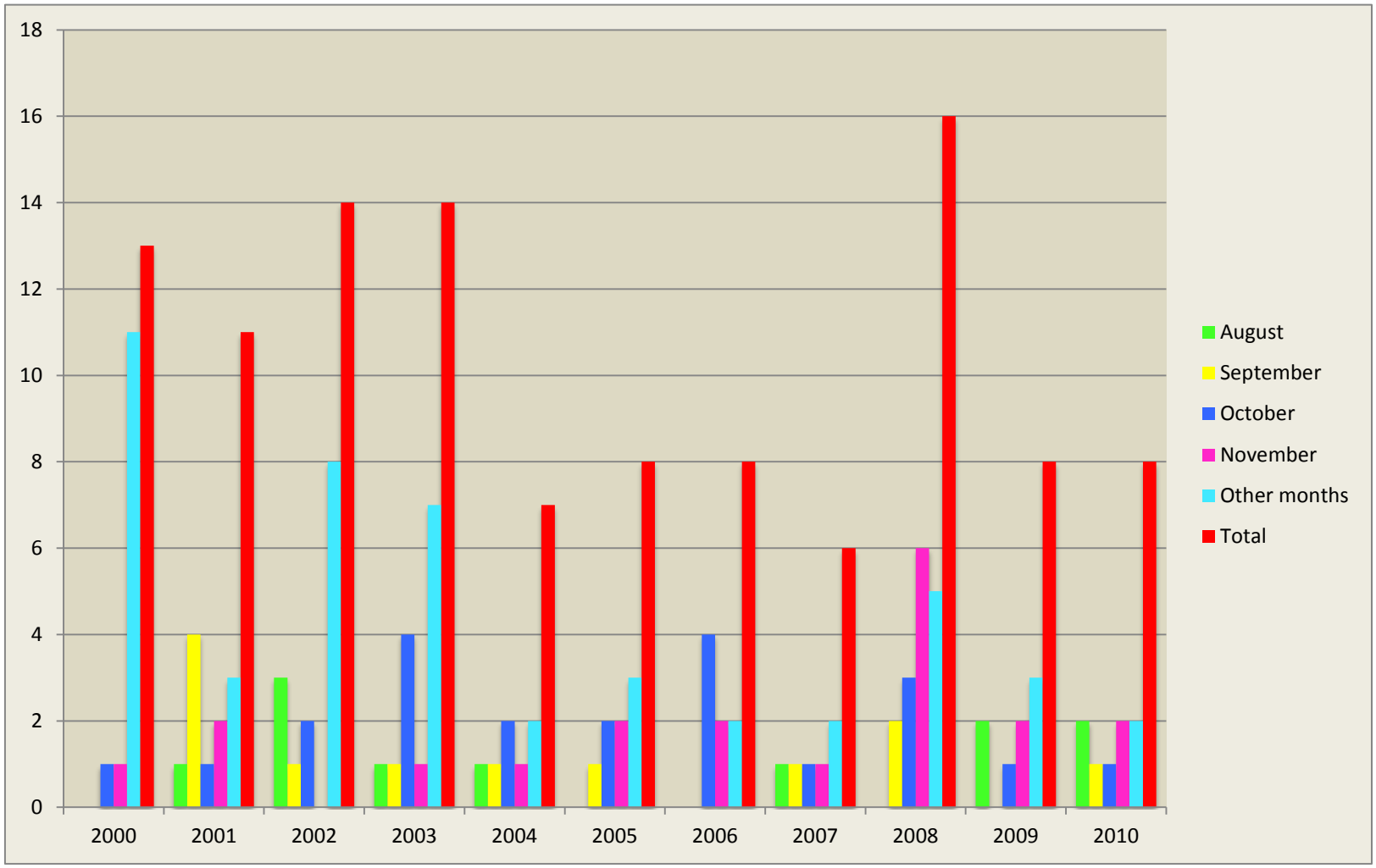
- Independent external review of the LTMS Program
- Communicate the value of the LTMS Program and the need for continued dredging funds
- Revalidate, modify, and add LTMS goals based on the last 12 years of experience
- Maintaining navigability needs to be a stronger goal
- More specific adaptive management measures for in-Bay limits, turbidity, etc.
- Windows affect equipment and cost/practicability including beneficial reuse
- Will air emissions be a constraint in the future and/or should they be?
- Allow Integrated Alternatives Analyses to cover longer times (e.g., five years)?
- Find better management tools and windows or ways to ease them, if possible
- LTMS Program to date has protected the environment well; don't remove 'windows'
- Retrospective on how EFH conservation measures have impacted the 2012 dredging
- Which LTMS policies helped benefit environment and how?

Dredging Projects Starts by
Month Work Window: June 1 through November 30*



* This additional information was prepared after the public meeting.

Dredging Projects Starts by
Month Work Window: August 1 through November 30*



* This additional information was prepared after the public meeting.

Total Dredging Volumes from 2000 through 2012*

Year	In-Bay Disposal Target	Ocean Disposal	Reuse/Upland	In-Bay Disposal	Total Dredging
2000	2,800,000	775,000	2,294,676	880,000	3,949,676
2001	2,800,000	566,679	1,028,256	2,041,936	3,636,871
2002	2,800,000	866,400	650,051	1,887,083	3,403,534
2003	2,800,000	1,113,814	646,337	1,890,000	3,650,151
2004	2,412,500	341,000	869,452	1,312,829	2,523,281
2005	2,412,500	137,717	4,718,716	1,473,253	6,329,686
2006	2,412,500	954,456	1,558,487	1,816,866	4,329,809
2007	2,025,000	1,554,362	1,527,549	1,249,338	4,331,249
2008	2,025,000	175,855	2,587,094	1,512,098	4,275,047
2009	2,025,000	72,289	2,688,264	1,107,859	3,868,412
2010	1,637,500	285,460	591,595	1,139,780	2,016,835
2011	1,637,500	652,970	971,368	1,668,043	3,292,381
2012	1,637,500	772,760	1,014,561	821153	2,608,474
2013	1,250,000				
Totals		**8,268,762**	**21,146,406**	**18,800,238**	**48,215,406**
Percent of Total		17.15	43.86	38.99	100.00

* This additional information was prepared after the public meeting.