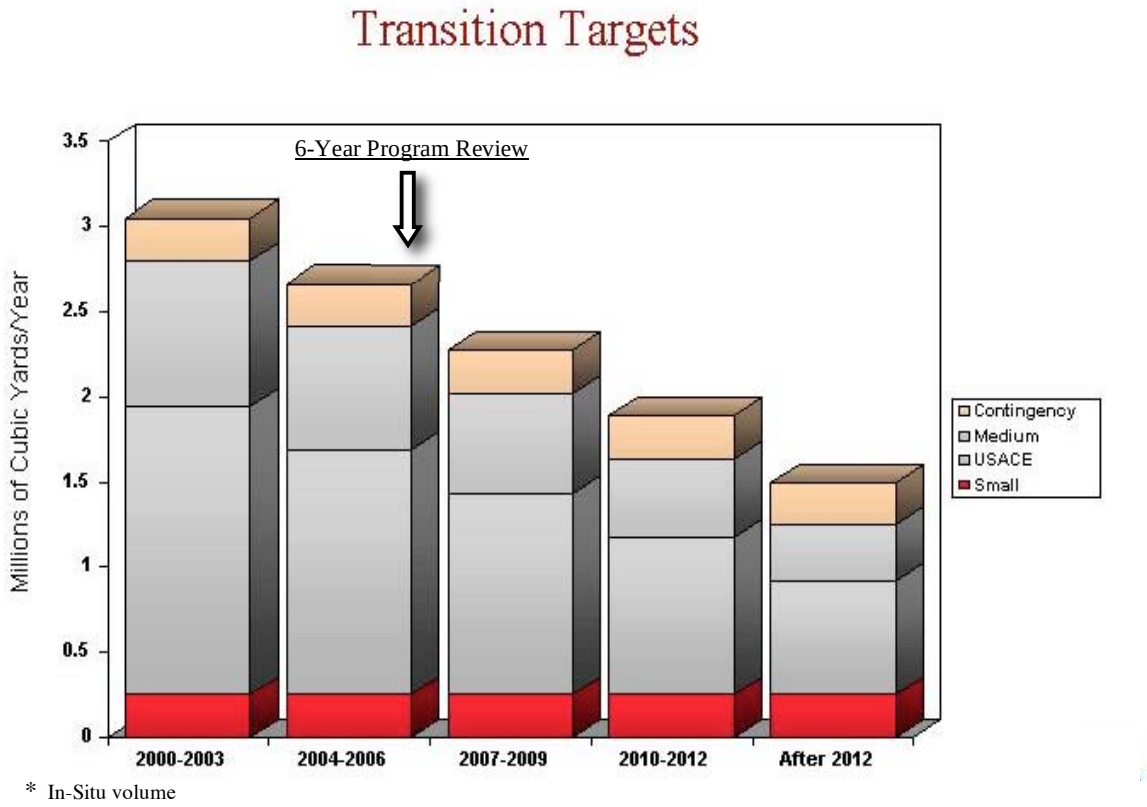
Long Term Management Strategy (LTMS)
Six Year Program Review
May 2006

This document serves as the six-year review of the Long Term Management Strategy (LTMS) for the placement of dredged material in San Francisco Bay. The 2001 LTMS Management Plan established a 12-year "glide path" for achieving the overall goal of reducing in-Bay disposal to approximately 1.25 million cubic yards per year. The Transition Period includes mandatory in-Bay disposal limit step-downs every three years (Figure 1). If average annual disposal volume for any three-year period exceeds the Transition Period limit, specific volume allocations (limits) could be placed on individual dredging projects to ensure that the overall limits would be met in the future. Of course the intent of the LTMS program, in cooperation with area dredgers, is to develop sufficient beneficial reuse opportunities that the region can "beat" the disposal limit each year and continue to avoid the imposition of allocations.

Figure 1. LTMS in-Bay disposal volume targets during the 12-year Transition Period. Every three years, the annual disposal volume limit automatically decreases by 387,500 cy. As long as overall in-Bay disposal does not on average exceed the target for any 3-year period, pre-set volume allocations will not be applied to individual dredging projects.



* In-Situ volume

The 2001 LTMS Management Plan (Chapter 8, Review and Revisions) also established a schedule for reviewing the LTMS program:

> *"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."*

The LTMS agencies (the U. S. Army Corps of Engineers, the San Francisco Bay Regional Water Quality Control Board, the San Francisco Bay Conservation and Development Commission, and the U. S. Environmental Protection Agency) conducted the first three-year review at the end of 2003. That review determined that the Transition Period volume limit for the first three years had not been exceeded (the initial volume limit was 2.8 million cubic yards, but an average of only about 2.3 million cubic yards, bin volume, was actually disposed in the Bay). Individual dredger disposal allocations therefore were not triggered. Consequently, the first of four programmed 387,500 cubic yard step-downs in allowable in-Bay disposal volume (from the initial 2.8 million cubic yards per year down to about 2.4 million cubic yards) automatically took place in January 2004. The next programmed in-Bay disposal volume limit step-down is scheduled to take place in January 2007 (to about 2.0 million cubic yards).

Even though the Transition Period goals were met through 2003, and it appears that they will again be met through 2006, a variety of efforts have been initiated in the past few years to further improve the performance of the LTMS program. For the purposes of conducting the required six-year review of the LTMS program, and of continuing to strengthen our partnership with all interested parties, we offer this summary of key accomplishments and reports from the past several years for discussion at our May 12, 2006 public meeting.

ACCOMPLISHMENTS

1. ***DMMO activities***. The agencies have conducted timely and thorough review of hundreds of dredging project applications to ensure LTMS goals and targets could be met, and would comply with applicable Federal and State requirements. This was made possible by establishment in 1995 of a pilot program, the Dredged Material Management Office (DMMO), hosted by the Army Corps of Engineers, and subsequently made a permanent program in 2002 with oversight by the Dredging Management Committee. DMMO has published guidance, established electronic permitting applications, and reviewed/processed dredging permits to ensure a comprehensive approach to handling dredged material in San Francisco Bay consistent with the LTMS Management plan. This effort was recognized with the Vice-President's Hammer Award in June 1998. Project-specific data are tracked in the DMMO annual reports, are available on the DMMO website:

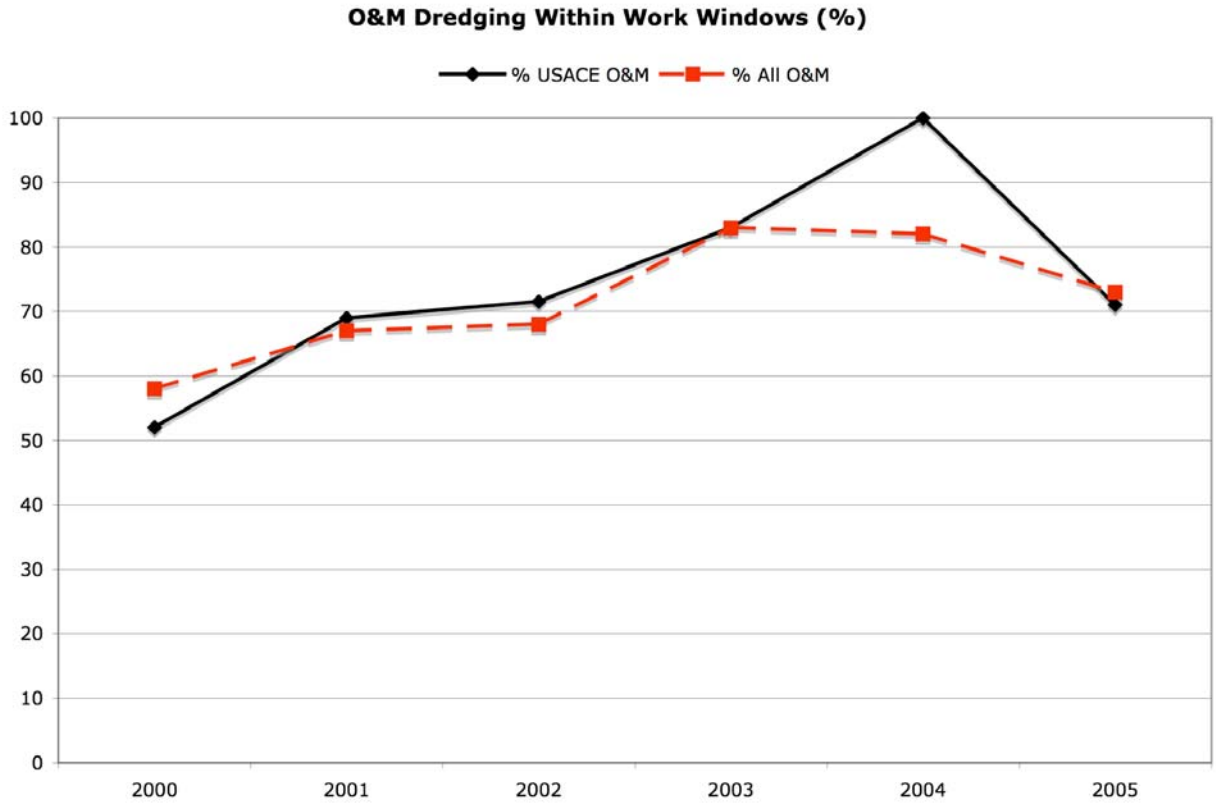
http://www.spn.usace.army.mil/conops/dmmo.htm

2. ***Policy innovations in dredge permitting***. LTMS has resulted in a number of policy and permit process improvements since the Management Plan was released. In addition to the basic regulatory streamlining and related benefits associated with interagency coordination via the DMMO, improvements include: the use of Integrated Alternatives Analyses (IAAs) that reduce paperwork while encouraging planning for beneficial reuse, by considering a permittee's overall dredging program for a number years (most larger dredgers, including the Corps of Engineers, now have their projects covered by IAAs); publication of the Small Dredger Programmatic Alternatives Analysis (SDPAA) that reduces paperwork and speeds permitting for dozens of projects without reducing environmental protections (over 60 small dredger projects are now covered by the SDPAA); and support for judicious use of in-place "knockdowns" between major dredging episodes in order maintain navigability while at the same time reducing dredging that might otherwise have to occur outside of work windows. Further improvements we hope to implement in the future include: standardize and consolidate permit conditions among the agencies; and establish a database for permit tracking and sediment test data.

3. ***Success in achieving upland and wetland re-use (UWR).*** Beneficial reuse is key to the overall success of the LTMS program. Since the inception of the LTMS several important UWR projects have come on line or been expanded, including Hamilton Wetlands Project (Marin County), Montezuma Wetlands (Solano County), Winter Island (Contra Costa County), Sherman Island (Sacramento County), the Oakland Middle Harbor Habitat Area (Alameda County), a portion of the SF-8 disposal site (San Francisco County), and the Ocean Beach demonstration beach nourishment project (San Francisco County), along with several other smaller or one-time-use UWR sites. Well over 7 million cubic yards of dredged material have been delivered to these sites to date. LTMS's focus will continue to be on increasing capacity for and practicability of beneficial re-use, including via such potential projects as the Hamilton Aquatic Transfer Facility (ATF), Bel Marin Keys Unit V (Marin County), Bair Island (San Mateo County), the South Bay Salt Ponds, and Ocean Beach.

4. ***Success meeting Environmental Work Windows***. Environmental Work Windows are locations and times when sensitive species are least likely to be present, so that impacts from dredging and disposal are minimized. Although the percentages of material placed at Ocean, Upland/Reuse, and in-Bay sites varied significantly from year to year as major projects were completed or others initiated, advance planning resulted in significant improvement in the amount of dredging initiated and completed within the specified work windows. Prior to 2001 only about 50% of dredging occurred during work windows. But by 2003, and since, an average of 80% of dredging has been within the windows; and in 2004, 100% of all Federal maintenance dredging was conducted within the work windows (Figure 2). In 2005, LTMS completed additional programmatic consultation with USFWS that resulted in modifications to some of the work windows. We also expect that additional programmatic consultation with NOAA Fisheries will be completed in 2006, resulting in some additional modification to the work windows. The LTMS agencies will continue to coordinate with the Federal and State resource agencies to refine the programmatic work windows as new information becomes available, including data from LTMS supported studies.

Figure 2. Percentage of annual Bay Area maintenance dredging accomplished within the established Environmental Work Windows. Advance planning and coordination has resulted in substantially increased compliance with Windows in just a few years.



5. ***LTMS funding support for scientific studies***. Each agency funds its own participation in ongoing LTMS activities. However, since the Management Plan was published, most new LTMS scientific studies have been funded directly by the Army Corps of Engineers. Many study needs are identified by the Windows Work Group for LTMS agency consideration. From 2001 through 2005, approximately $3.25 million has been allocated to study various issues of importance to LTMS, including: data gaps relating to Environmental Work Windows; mercury methylation potential and management; disposal plume tracking and modeling; effects of dredged material plumes on herring eggs; and juvenile salmonid distribution in the San Francisco estuary. As new needs are identified in cooperation with the Work Groups and stakeholders, LTMS expects to continue to support relevant studies on a priority basis, subject to the availability of funds. And as study results become available, the LTMS agencies will periodically consider whether program changes may be warranted.

6. ***LTMS working groups focus on key concerns of participants***. In 2000, the disposal site monitoring group and the sediment quality guidelines group were formed, and met to discuss issues as needed. In 2001 the Environmental Windows Work Group was established to identify and recommend study priorities to LTMS, in order to streamline the ESA consultation process with Federal (USFWS, NOAA Fisheries) and State (CDFG) resource agencies. This group has worked to identify short term and long-term solutions via subcommittees on science/data gaps, herring, dredging technology and operations, "confounding factors", and funding. The Environmental Windows group has since evolved into a key stakeholder forum for discussion of all LTMS policies and activities. The work group's annual reports, summarizing their activities and recommendations to the Management Committee, are available on the DMMO web site referenced above.

7. ***Continuity of involvement by the Management Committee.*** In a spirit of partnership and cooperation, LTMS Management Committee meetings have increasingly been used for informal public meetings with interested parties to focus on issue resolution. Since 2004, almost all Management Committee meetings include stakeholder discussion sessions. External support by key parties enabled establishment of an LTMS budget line-item in the Corps' budget, at a $1.23 million level in FY05, and $1.44 in FY06, to support DMMO operations and key LTMS studies.

8. ***Establishment of the Deep Ocean Disposal Site.*** In 1994, EPA established the San Francisco Deep Ocean Disposal Site (SF-DODS). This site is deeper (nearly 10,000 feet) and farther offshore (55 miles) than any dredged material disposal site In the United States. SF-DODS was the first major alternative to in-Bay disposal, and its designation was one of the first major accomplishments of LTMS. To date, over 10 million cubic yards of suitable dredged material have been diverted from in-Bay disposal to SF-DODS (about 25% of all material dredged to date under the 2001 Management Plan), and extensive annual monitoring confirms that there have been no significant adverse impacts. In the future SF-DODS will continue to serve as an important "safety valve" to help keep in-Bay disposal as low as practicable, even at times when beneficial reuse alternatives may not be readily available.

9. ***On track to meet the LTMS goals.*** Compared to pre-LTMS years when dredging averaged approximately 6 million cubic yards annually, overall dredging volume has decreased to an average of just over 4 million cubic yards per year (Figure 3). Overall, approximately 21 million cubic yards were dredged from 2001 through 2005. In-Bay disposal volume targets have been met each year, as well as on average for each 3-year period. However, in order to meet the monthly disposal limits at individual in-Bay disposal sites, some material from some projects has occasionally been diverted from one disposal site to another. Of the 21 million cubic yards dredged overall, about 8 million cubic yards were beneficially reused (39%), 3.8 million cubic yards were disposed at ocean sites (18%), and 8.9 million cubic yards were disposed in-Bay (43%) (Figure 4). This is significant progress from pre-LTMS days when over 80% of dredged material was disposed in-Bay, and shows that the region is well on its way toward achieving the "40-40-20" goal by 2012. In 2005, due to the Oakland Deepening Project, the rate of reuse in the region actually exceeded the long-term goal of 40 percent (Figure 5).

Figure 3. Annual Bay Area dredging volumes. Prior to initiation of the LTMS, the long-term average dredging volume was approximately 6 million cy per year. (Note that the "bin volumes" shown are typically 20-40 percent higher than in-place volumes, because material generally "bulks up" temporarily as a result of the dredging process.)

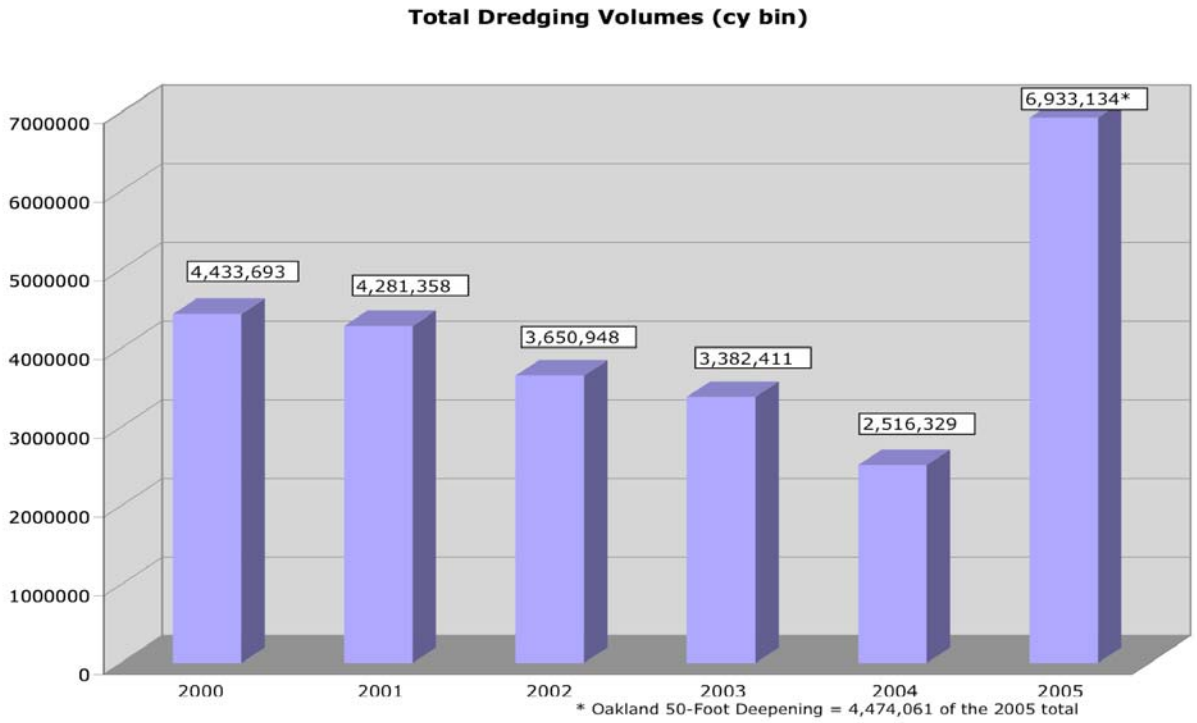


Figure 4. Overall dredged material volumes sent to each placement environment under the 2001 LTMS Management Plan. The long-term goal is to achieve at least 40% beneficial reuse and no more than 20% in-Bay disposal, with ocean disposal for the remainder.

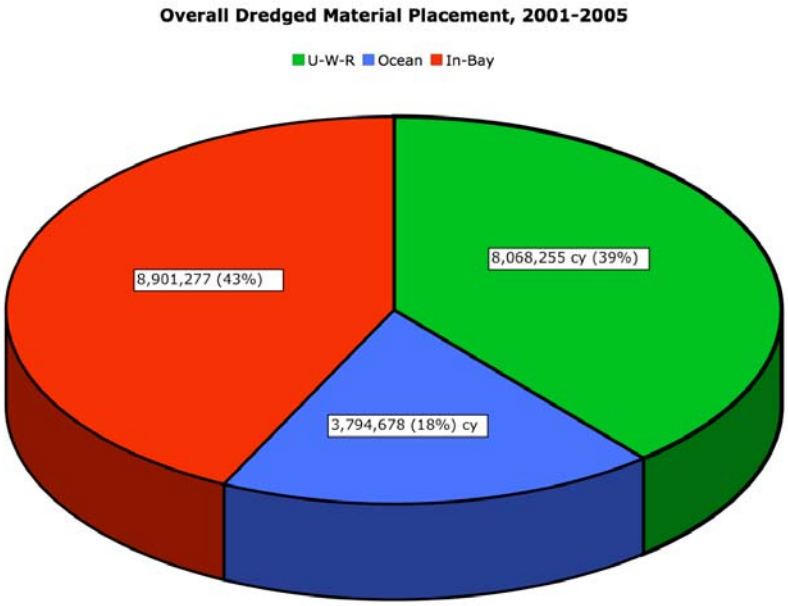
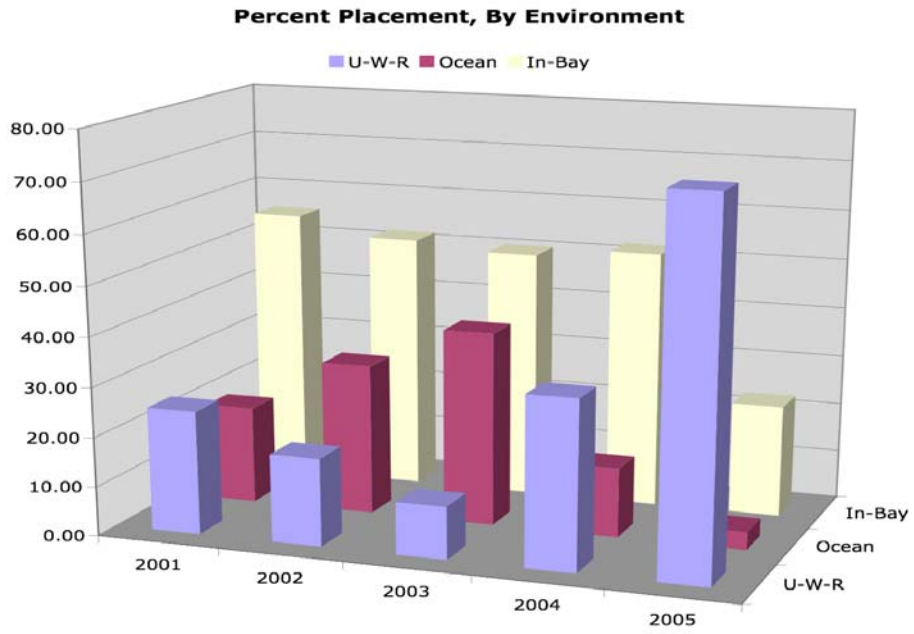


Figure 5. Percentages of dredged material sent annually to each placement environment. In 2005, the Oakland 50-Foot Deepening Project helped significantly boost the region's beneficial reuse.



REPORTS

Listed below are many of the key reports produced under the LTMS and the DMMO since release of the management plan in 2001. The DMMO annual reports summarize projects, dredged volumes, and other key data including statistical information about dredging and disposal for each year. Other reports document the results of LTMS-supported studies, or provide important regional policy guidance. Together, these reports capture well many of the accomplishments and issues noted above, and have been used to provide ongoing analysis of the agencies and participants' abilities to meet the LTMS goals and targets. These reports are available via the DMMO web site: http://www.spn.usace.army.mil/conops/dmmo.html

- DMMO Annual Report for calendar year 2000 (April 2001)
- Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region (2001)
- SF-DODS Reference Area Database
- DMMO Annual Report for calendar year 2001 (March 2002)
- DMMO Annual Report for calendar year 2002 (May 2003)
- Report Card to the National Dredging Team/Annual Report for 2003 (2004)
- Environmental Work Windows Informal Consultation Preparation Guidance (2004)
- DMMO Annual Review/Annual Report for 2004 (2005)
- Small Dredger Programmatic Alternatives Analysis (SDPAA) (2005)
- Updated USFWS Programmatic Consultation

- Environmental Window Work Group annual reports to the Management Committee
- LTMS-supported studies:
  - Mercury Concentrations Bordering the Hamilton Airfield Remediation Site (2002)
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  - A Bibliography of Scientific Literature on Pacific Herring (*Clupea pallasie*) (2004)
  - Framework for Assessment of Potential Effects of Dredging on Sensitive Fish Species in San Francisco Bay (2004)
  - Pre-construction Biogeochemical Analysis of Mercury in Wetlands Bordering the Hamilton Airfield (HAAF) Wetlands Restoration Site – Interim Report (2004)
  - Spatial Characterization of Suspended Sediment Plumes During Dredging Operations Through Acoustic Monitoring (2004)
  - A Review of Scientific Information on the Effects of Suspended Sediment on Pacific Herring (*Clupea pallasie*) Reproductive Success – Final Report (2005)
  - Assessment of Sediment Resuspension by Vessel Traffic at Richmond Longwharf (2005)
  - Characterization of Suspended Sediment Plumes Associated with Knockdown Operations at Redwood City, CA (2005)
  - Pre-construction Biogeochemical Analysis of Mercury in Wetlands Bordering the Hamilton Airfield (HAAF) Wetlands Restoration Site (2005)
  - White Paper – Potential Impacts of Dredging on Pacific Herring in San Francisco Bay (2005)

ONGOING EFFORTS AND CHALLENGES

Looking ahead, continued success in meeting the LTMS goals and the Transition Period "glide path" (Figure 1) will depend largely on making additional beneficial reuse capacity available and affordable for as many dredgers as possible. The LTMS agencies look forward to working in partnership with our stakeholders to meet this primary challenge, as well as to:

- Continue permit processing improvements (new guidance, standardized permit conditions)
- Better integrate resource agencies into the DMMO process
- Continue to support key Windows/Science studies and incorporate findings
- Continue Work Groups and Management Committee meetings as key opportunities for stakeholder involvement
- Work to increase beneficial reuse opportunities, incl. Hamilton ATF, Ocean Beach
- Provide a forum to coordinate on emerging issues (e.g., overdredge guidance)
- Complete the USACE Dredged Material Management Plan (DMMP) for Federal maintenance dredging projects
- Update programmatic consultations for any new ESA listings (e.g., green sturgeon)
- Complete programmatic Essential Fish Habitat consultation
- Work toward a DMMO permit tracking and sediment quality database
- Coordinate with CALFED and "Delta LTMS" regarding reuse for levees, etc.
- Coordinate with the Subtidal Goals project
- Coordinate with the State Water Resources Control Board on the role of its upcoming Sediment Quality Objectives in dredged material management
- Work with SFEI to evaluate the effects of decreasing in-Bay disposal volumes on Regional Monitoring Program fees

CONCLUSIONS AND FINDINGS

As of this writing, the LTMS program is operating as the EIS/EIR and Management Plan anticipated, and remains on track with the Transition Period milestones (Figure 1) and overall LTMS goals (Figure 4). Therefore the LTMS agencies are not proposing any overall policy or program-level changes. We reaffirm that the overall LTMS goals, including the basic "40-40-20" split, remain appropriate and viable targets for the program. We also reaffirm and will retain the existing Transition Period structure, including the scheduled January 2007 reduction of the annual in-Bay disposal limit to 2,050,000 cubic yards.

Even though no fundamental program changes are proposed at this time, the LTMS agencies intend to continue to integrate new knowledge and information into management of dredging projects, within the existing program. For example, results from ongoing LTMS scientific studies, changes in the status of sensitive species, or availability of new beneficial reuse sites or technologies may warrant changes to agency policies or management of existing disposal sites, even though the fundamental LTMS goals and Transition Period timelines remain in place.