2/7/03DREDGED MATERIAL MANAGEMENT OFFICE

NEWSLETTER NO. 2 January 2003

Welcome to the second issue of DMMO's semi-periodic Newsletter. The purpose of these newsletters is to provide new information, advise you of recent changes in DMMO procedures, ultimately reduce the time involved in preparing, reviewing and revising documents needed to obtain the necessary permits for your dredging and disposal/reuse project. Send us your comments, suggestions for future newsletters or other information that may help make your life – and ours – simpler and less frustrating.

EVALUATING ALTERNATIVE DISPOSAL OPTIONS: LTMS AND 40/40/20

As we begin the Long Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS) implementation, it is time to begin planning to meet the LTMS goal of 40% of dredged material from the Bay being beneficially reused, 40% being disposed of at the Deep Ocean Disposal Site (SFDODS) and only 20% being disposed of in-Bay. Or if we can beneficially reuse more than 40%, all the better for the Bay and the environment. As part of the implementation of LTMS, the DMMO is requiring that each project proponent prepare and provide with the Sampling and Analysis Plan (SAP) or Tier 1 Decision request, an analysis of the alternatives for in-bay disposal such as beneficial reuse or ocean disposal options available for that project. Providing the information up front with the SAP or Tier 1 request will help ensure that the appropriate tests are performed for the least environmentally damaging practicable alternative disposal option for that project. There is also a requirement to complete a review prior to each episode as conditioned in the BCDC permit and the Regional Board's Water Quality Certification. The following beneficial reuse projects are viable options for the next few years of dredging. However, a few on this list may not be ready to receive dredged material, but should be considered for future projects. If a reuse option is not "online" or permitted, the dredging project proponent simply needs to state that fact in the analysis. Reuse sites for consideration include but are not limited to: Winter Island, Montezuma Wetland Restoration Project, Mare Island, Hamilton, Private Rehandling Facility, Port Sonoma, Construction Projects, Landfill.

When completing the analysis, please include a discussion of the following information for the project: disposal/beneficial reuse site availability, volume available, distance to the disposal site from the project, timing, economics, and air quality issues.
From the LTMS Management Plan, Table 3.3 Section 3.9.1:

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3919

San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111-4704

U.S. Army Corps of Engineers San Francisco District
333 Market Street
San Francisco, CA 94105-2197

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612-1413

California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95835-8202

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

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

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

COMPARISON OF PRE-DREDGE TESTING REQUIREMENTS FOR EXISTING DISPOSAL AND REUSE ALTERNATIVES

The DMMO hopes that dredging project proponents who have read the previous article agree that doing an alternatives analysis before conducting sediment characterization should eliminate any need for sampling and testing for more than one disposal or reuse environment.

The intent of this article, therefore, is to inform applicants of the various testing requirements for the currently available general categories of disposal and reuse (see figure following article). Dredgers should note that the DMMO's local Inland Testing Manual (ITM) implementation guidelines (published with USACE/EPA Public Notice 01-01) cover most of the testing requirements for currently and soon-to-be available disposal and reuse options in the SF Bay Area. Listed below are the four areas where testing requirements for other alternatives may differ from in-bay disposal testing requirements (usually by requiring one or two additional tests):

1. **Elutriate chemistry** is required for any projects (dredged material disposal ponds, levee maintenance, wetland reuse, etc.) that discharge decant water. *(Elutriate chemistry would only be required for ocean and in-bay disposal if the mixing zone model indicated that elutriate toxicity standards could be violated after initial mixing.)*

2. The **elutriate bioassay** for ocean disposal must test three different marine test organisms, whereas in-bay disposal and decant water discharge from upland or wetland sites need only test one aquatic organism.

3. If bioaccumulative contaminants are present, **bioaccumulation testing** with two marine test organisms is required for ocean disposal unless certain Tier 1 decision conditions are met: 1) Sediment from previous dredging projects at the site in question have passed full Tier III testing (including bioaccumulation testing); and, 2) There is no reason to believe there have been any changes that would make the previous testing no longer representative. *(Bioaccumulation testing may be required for in-bay disposal based on the concentration levels of bioaccumulative compounds in the sediment. The DMMO realizes that both regulators and project proponents need more specific local guidance for this difficult decision process. We've therefore made developing this guidance a high priority for the coming year – stay tuned!)*

4. **Leachate testing** (modified California Waste Extraction Test, a.k.a. mWET) is required for upland disposal, levee maintenance, and wetland foundation material.

For those readers who think more in visual and spatial images rather than in words, the following figure attempts to illustrate the current testing requirements for general categories of dredged material disposal and reuse. Please keep in mind that permit conditions for specific projects may require slight variations in testing. For more information on beneficial reuse testing requirements, especially regarding tidal wetland restoration, please refer to the RWQCB staff report, *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*, May 2000, which is available on the DMMO web site.

REPORTING THE SUM OF COMPOUNDS WHEN SOME OR ALL ARE LESS THAN DETECTION LIMITS

The DMMO has been wrestling with the question of how to report testing results as the sum of a family of compounds when some or all of the compounds are less than the laboratory detection limit. Examples are the sum of Butyl Tins, DDTs, PAHs, and PCBs.

We have seen both extremes, reporting the lowest single detection value for any of the components when they are all < DL and summing all the detection limits for the individual compounds making up the group. Neither of these methods seems to be a reasonable estimate of

the potential sum of compounds. One is probably too low and the other too high. We believe the best answer lies in the concept of probability.

Detection Limits are derived through a statistical process. Likewise, the sum of statistical estimates, should be the result of a statistical process, but which one? The best model, in our opinion, is the one used to estimate propagation of errors. The basic formula is to take the square root of the sum of the squares of the contributing factors. As a concrete example let's use the data from the following table:

	Result (μg/kg)	Reporting Limit (μg/kg)	Detection Limit (μg/kg)
2,4'-DDD	<1	2	1
4,4'-DDD	<1	2	1
2,4'-DDE	<1	2	1
4,4'-DDE	<1	2	1
2,4'-DDT	<1	2	1
4,4'-DDT	<1	2	1
Total DDT	?	NA	NA

As stated above, some have reported the Total DDT as $<$ 1 while others have reported it as <6. Our suggested answer is $\sqrt{1^2+1^2+1^2+1^2+1^2+1^2}$ or $\sqrt{6}$ which is 2.45. We suggest the format or protocol should be to report Total DDT in this example as: $<$ 2.45 J. The 'J' is a qualifier indicating that this is an estimated value.

What about when there some detected values? How about this.

	Result (μg/kg)	Reporting Limit (μg/kg)	Detection Limit (μg/kg)
2,4'-DDD	22.7	2	1
4,4'-DDD	51.2	2	1
2,4'-DDE	158	2	1
4,4'-DDE	44.2	2	1
2,4'-DDT	<1	2	1
4,4'-DDT	<1	2	1
Total DDT	?	NA	NA

The sum (rounded to three significant figures) of the detected compounds is 276. But what about the contribution of the two non detects? Using our suggested protocol the amount of the two non detects would be: $\sqrt{1^2+1^2}$ or $\sqrt{2}$ which is 1.41. Adding this to our previous answer

(retaining all significant figures, then rounding) is 278. This is not much of a difference, and is definitely not significant, but following the protocol would be reported as 278 J.

The previous example contained mostly measured concentrations, what about an example that is mostly non detects?

	Result (μg/kg)	Reporting Limit (μg/kg)	Detection Limit (μg/kg)
Aroclor 1016	< 10	20	10
Aroclor 1221	< 10	20	10
Aroclor 1232	< 10	20	10
Aroclor 1242	< 10	20	10
Aroclor 1248	< 10	20	10
Aroclor 1254	72	20	10
Aroclor 1260	< 10	20	10
Total PCBs	?	NA	NA

Following the protocol the Total PCB result would be: $72 + \sqrt{10^2 + 10^2 + 10^2 + 10^2 + 10^2 + 10^2}$ which is $72 + \sqrt{600}$ which is 72 + 24.5 or 96 J as the final answer. In this case the contribution of the estimated non detects may be significant.

SAP AND TEST RESULTS GUIDANCE

First and foremost, we urge all project proponents, permit applicants, agents and consultants to familiarize yourselves with existing DMMO guidance documents, namely PN 01-01 (Proposed Guidelines for Implementing the Inland Testing Manual), PN 99-4 (Proposed Guidance for Sampling and Analysis Plans (Quality Assurance Project Plans)), and PN 00-1 (Tier I). These documents provide you with the majority of tools and information you need to prepare and submit reports that will be accepted the at the first review.

Here are some tips for providing a complete document:

FIGURES

- Include a map, showing the general location of the proposed project, preferably in the context of the Bay as a whole or the particular Basin involved. Make sure that the map resolution is sufficient to easily identify the project site.
- Include station (sampling) locations on bathymetric maps – and always include the date the survey was done (not the date the map was prepared). If the project is large, depths are often illegible on a 8.5 x 11 or 11 x 17 sheet. In these cases, provide DMMO with a single large-scale bathymetric map. Multiple 2' x 3' maps are not necessary.
- Show all pertinent features on a station location map (this does not have to include bathymetry). These features include: storm drains, fuel piers or docks, streams or creeks, nearby industrial facilities, and any other land- or water-based activities that may be sources of contaminants to the sediments proposed for dredging.
- Clearly indicate the proposed area(s) to be dredged on the station location and/or bathymetric map. Not a rectangle generally outlining the boundaries of a berth, but the actual footprint to be dredged.
- All figures should be legible.

QA/QC

The purpose of a QA/QC program is to ensure that the data that are produced are of sufficient quality for DMMO to render a decision as to the suitability of the material proposed for disposal/reuse. If QA/QC is inadequate, we may not be able to use the chemistry or biological results to make a regulatory decision.

TEST CONDITIONS/METHODOLOGIES

- Proposed test conditions (e.g., number of organisms, number of replicates, photo-period) for biological tests should be specified in the SAP. The ITM, Appendix E provides national guidance on biological testing. DMMO understands that some local deviations from the national guidance may be appropriate. However, the reason(s) for such deviation(s) should be clearly outlined in the SAP.
- PN 99-3 lists recommended test methods and required Reporting Limits. Other test methods may be acceptable, but you must provide the reason(s) for using methods other than those specified in PN 99-3 in the SAP. Furthermore, if the laboratory is unable to meet the required Reporting Limits, you must specify the cause in the SAP. Resulting data that fall between the MDL and RL must be flagged in the Results report. Please note that failure to achieve required RLs may result in the need for re-testing.

DEVIATIONS FROM THE SAP

You must document all deviations from the approved SAP in the results report (e.g., changes in sample locations, failure to achieve required sample depths or RLs). We encourage you to contact DMMO in the event that a substantial deviation is necessary (e.g., use of an organism other than that in the approved SAP, use of higher salinity seawater for preparing the 100% elutriate). Failure to properly document these deviations may result in rejection of the results and delay of your project.

COMPLETE INFORMATION

- We cannot stress enough the need for information about past dredging and disposal operations. While particularly critical for Tier I requests, inclusion of these data in your SAP will likely result in quicker approval of the SAP and also guide the DMMO in determining potential areas of concern in your dredging project. Many times, we receive SAPs with no past information – sometimes simply because the consultant writing the SAP didn't have any files on the project. This is may lead to a need for more samples than would be necessary if

- past history was provided. Project proponents – provide your consultants with your records of past projects.
- Chain of custody forms are often missing or incomplete in results reports. We need C-O-C's from cradle to grave; in this case, from field sampling to final testing (biological and physical/chemical). C-O-C's should be signed by person relinquishing the samples and receiver, including dates and times. The receiver should note the temperature of the samples on the form. (DMMO recommends using a temperature blank, rather than simply measuring the air temperature in the package.)
- Please include all existing permit numbers for each of the agencies in each of the documents produced for the DMMO.

A FEW BUREAUCRATIC NICITIES

- Don't use LPC (Limiting Permissible Concentration) when proposing an in-Bay disposal or upland reuse project. The term LPC is restricted to ocean dumping.
- Proper use of terminology goes a long
- Remember, with the exception of SAPs, DMMO doesn't approve anything. Rather, DMMO makes recommendations to our respective agencies regarding suitability of material and permitting.
- Finally, DMMO's goal is to streamline the permitting process, while ensuring adequate environmental protection – and that also means minimizing the amount of paper we generate. *please*, use double-sided copies.

THE RESPONSIBILITY OF THE PROJECT PROPONENT/APPLICANT

We remind all project proponents/applicants that the primary, ultimate responsibility for ensuring an adequate product (i.e., SAP, Results Report, or other documentation) rests with you. We strongly suggest that you review and understand the DMMO guidance and review all documents prior to their submittal. If you have questions about any of the guidance or procedures, please call one of the DMMO members to discuss your questions. We are all interested in getting the best product for the projects as possible and are here to assist you. We urge you to take an active part in all aspects of your dredging project, including the dredged material testing.