operations will result in higher dredging unit costs.

3. Weather: Inclement weather has little impact on in-Bay dredging and upland disposal operations; it can have major impacts on offshore disposal operations and therefore can halt dredging operations with substantial increases in unit dredging costs.

4. Equipment Impacts: Equipment wear and tear and insurance costs have a significant impact on offshore disposal operations, but this factor also affects upland disposal costs depending on the amount and type of equipment required (levees, pipelines, booster pumps, barge unloading equipment at the upland disposal site) which is not required for offshore disposal.

5. Hauling Conditions: Distance to the disposal site (offshore or upland) from the dredging site, the transiting conditions and depths may favor upland disposal provided adequate water depth is available to the upland disposal site.

6. Commercial Navigation Interference: Dredging in Bay channels (as well as transiting channels and sea lanes to reach disposal sites is like moving a slow truck along a confined roadway filled with normal traffic. Regulatory requirements state that all dredged barges disposing at an offshore site must traverse the large offshore Farallones Marine Sanctuary within a major sea lane leading into and out of the Bay. Transiting to the Collinsville upland disposal site requires very little actual barge ship channel transit. In addition, the use of a pipeline dredge to pump (via pumpline) dredged material to an upland site (in lieu of a clamshell and barge or hopper dredged operation) will require cessation of dredging in the busy channels to minimize interference with commercial navigation.

7. Regulatory Constraints: Many regulatory agency constraints have been proposed or imposed on offshore disposal operations. These include, but are not limited to: light barge loading (fewer cubic yards than barge capacity) to prevent possible wave overtopping from washing material out of the barge, installation of wave barriers on barges, installation of positioning devices to insure that barges are where they are permitted to be during disposal operations and restrictions on operations during high wave and wind conditions, all of which will have a substantial impact on offshore unit disposal costs.

8. Monitoring Costs: The costs to determine the environmental impact of offshore disposal are relatively unknown due to lack of experience, but could be high; those of upland disposal are relatively well defined due to experience with landfills and water quality discharge requirements; however, monitoring in wetland restoration projects is definitely a significant added cost and must be

factored into the per unit dredging cost.

B. Lack of cost-sharing mechanisms and/or cost-sharing plans

Current cost-sharing formulas for dredging projects (based on the Water Resources Development Act (WRDA) of 1986) for both existing, Congressionally authorized maintenance and generally, new navigation projects, dictate that the local dredging project sponsor pay 100% of the costs (land and easement acquisition and site development) for disposal in an upland location. Thus, because of current law there is no economic incentive to develop and utilize alternative disposal sites (other than the historical, open water site). We are supporting the adoption of new cost-sharing provisions in the WRDA '96 which would level the playing field and clarify that the cost of dredged material disposal facilities should be cost-shared at the same rate as other navigation project elements.

11

Another concept which requires more exploration by the LTMS agencies and that would assist the furtherance of "real" upland reuse alternatives is the development of cost-sharing plans among dredging project sponsors and upland property owners. The concept of a cost-sharing plan should be explored in connection with both Bay Area military base closures and also levee rehabilitation requirements in the Delta, e.g. Bay dredged material could be transported to the Delta for levee maintenance/ restoriation purposes based on a cost-sharing plan between the California Department of Water Resources and/or the CALFED program and Bay local/ federal dredging project sponsors.

12

C. Impact on Shipping and West Coast Trade Due to Increased Costs

The DEIS/EIR did not consider the effect of price increases resulting from alternative disposal requirements on the Bay's competitive advantage. Price increases and dredging regulations have already affected the competitiveness of San Francisco Bay shipping. American President Lines (APL) does not bring its very large ships, the C-10's, into the Bay anymore. APL made an explicit decision to invest in new infrastructure in Southern California over San Francisco Bay. APL has recently developed a 230-acre site in Los Angeles for a new terminal with 12-cranes.

13

The Bay ports cannot really pass the increased costs along to the tenants for fear of driving them elsewhere, and so they have to absorb increased dredging costs. This effects their bottom line showing increased expenses against revenue and may effect their ability to raise capital.

For some dredging project sponsors, the increased costs may be passed onto their

customers in some form or another. There is no assessment in the DEIS/EIR of the competitive disadvantage to which Bay area importers and exporters and distributors and service providers will be subjected when increased dredged disposal costs are passed on to them. Businesses may be forced to shift their cargoes through other ports; some businesses may close up operations, and those operations may be absorbed through other outlets elsewhere in the U. S. If manufacturers and distributors relocate closer to other lower cost ports, local freight forwarders and other service providers would be forced to follow. 13

**III. Environmental impacts, the management of dredged material , and lack of evaluation of additional disposal alternatives**

The title of the project is the Long Term Management Strategy. The environmental impacts associated with various disposal alternatives and the concept of the proper management of dredged material as a mitigation tool were not handled evenhandedly. The agencies have neglected to discuss management based on volume and physical characteristics of the material. Alcatraz could be redredged. There is a need for a confined disposal site such as the Bay Farm Island Borrow Pit. Certain kinds of material should not go to the ocean, such as soft maintenance material. Hard material should not go to Alcatraz. 14

The "anti-degradation" policy of the Water Board in the Delta was not considered. There may be more serious impacts in moving material upland that haven't been addressed, such as the Central Valley Regional Water Board and the Dept. of Water Resources concerns about the salinity of dredged material. 15

Regarding implementation of beneficial reuse for wetland restoration projects, there is a significant debate about what kind of habitat is preferable, which hamstrings implementation of wetland projects. The June, 1996 issue of Estuary describes the various wetlands protection and restoration planning activities being conducted in the Bay region. The role of using dredged material in wetlands restoration should be discussed within the context of these planning activities. Otherwise, we envision many obstacles occurring based on the experience with Sonoma Baylands and the opposition of USFWS which held the project hostage in the agency and environmentalists' debate over habitat requirements. The agencies and the public must agree on habitat goals including how much acreage and for what habitat type is desirable. The LTMS agencies have no program for effectively engaging local government--the cities and counties in which wetland projects are located--to ensure acceptance of beneficial reuse projects and reduce the negative "not in my backyard" attitude. 16

The proposed seasonal fish windows at the Carquinez Disposal Site are not 17

17 scientifically justified. The DEIS/EIR was supposed to provide the scientific evaluation for disposal conditions and until the environmental documentation is provided, we recommend withdrawing this proposal.

18 **IV. Required Deliverables to Increase Practicability of Beneficial Reuse**

—Place the DEIS/EIR on the right track by completing the economic and environmental evluations;
—Identify and evaluate "real", i.e. upland reuse sites which are on-line or near on-line alternatives with comparison to alternative restricted and unrestricted aquatic sites to establish cost effective solutions;
—Adopt agency agreements on habitat creation goals affecting wetland restoration projects;
—Develop costsharing mechanisms (such as WRDA '96) and costsharing plans (DWR/ CALFED Delta levees and Bay Area military base conversion program;
—Adopt a Regional Testing Guidance Manual including a revised PN 93-2 and a Regional Decisionmaking Framework for the evaluation of sediment quality;
—Complete the LTMS Management Plan now; finalize DEIS/EIR subsequently.

In conclusion, our comments have attempted to highlight a few of the many issues with the DEIS/EIR that require factfinding and resolution in discussion and collaboration with the users and businesses. We want to work together with the LTMS agencies to promote and implement beneficial reuse of dredged material, but we must complete the proper economic and environmental analyses, including a testing interpretative framework for disposal decisionmaking. prior to even
19 considering these policy matters. Ports and industry must be reinvited to participate in the completion of these tasks in order to produce an implementable LTMS. There is no justified rationale for changing policy direction from the well conceived goals and objectives that form the basis for the current LTMS program.

Sincerely yours,

Ellen Johnck

Ellen Johnck
Executive Director

Enclosures

# COMMENTS ON THE LONG TERM MANAGEMENT STRATEGY (LTMS) FOR THE PLACEMENT OF DREDGED MATERIAL IN THE SAN FRANCISCO BAY REGION

## *DRAFT POLICY ENVIRONMETNAL IMPACT STATEMENT/ PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT*


I. LETTER TO THE LTMS AGENCIES

II. SEDIMENT QUALITY TESTING: ISSUES RELATED TO THE TESTING GUIDELINES FOR DREDGED MATERIAL DISPOSAL AT SAN FRANCISCO BAY (SF) SITES

III. EXHIBITS 1 & 2



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R-233

# SEDIMENT QUALITY TESTING: ISSUES RELATED TO THE TESTING GUIDELINES FOR DREDGED MATERIAL DISPOSAL AT SAN FRANCISCO BAY (SF) SITES

## INTRODUCTION

As a prerequisite of government approval to dispose of dredged material in waters of the U.S.[1] , dredging project applicants are required to evaluate the dredged material to be disposed using a suite of chemical, physical and biological tests.

The purpose of the tests is to assess the potential for environmental effects on the aquatic ecosystem and its beneficial uses. Discharges of contaminants such as mercury, cadmium, oil, grease, PAH's and PCB's contained in dredged material disposed into "waters of the U.S." are regulated under Section 404 of the Clean Water Act of 1977 (CWA), Public Law 95-217.

Among the more than sixty federal laws and executive orders, including the National Environmental Policy Act (NEPA), associated with the regulation of dredging and disposal activities (not including state laws), the primary legal basis for dredged material evaluation is defined in the CWA Section 404 (b)(1), and the regulations at 40 CFR Part 230, which were issued in 1975, still apply today. Section 230.10 a-d, in sum, requires that the permitting

[1] There are also testing requirements for disposal and beneficial reuse of material in wetlands and uplands, such as in landfills and for levee maintenance, which are similar in concept. However, this paper is primarily oriented to a discussion of testing issues related to traditional aquatic site disposal, other than ocean, which is governed by the federal law, Marine Protection Resource Sanctuary Act (MPRSA)

AGENCY, in order to grant a permit for disposal in waters of the U.S., MUST DEMONSTRATE that there will be no "unacceptable adverse impact" on human health, welfare or the environment (fish and wildlife resources) at the disposal site.

The Corps of Engineers (CE) and the Environmental Protection Agency (EPA) share the Federal regulatory responsibility for the discharge of dredged material. Regulatory responsibility is delegated to the State in California. The state's water quality certifying agency, which derives its authority from Section 401 of the CWA, has jurisdiction and must certify that discharges comply with applicable state water quality standards (40 CFR 230.10(b) (1).

EPA has proposed two revisions to the 1975 40 CFR Part 230 regulation; one, in 1980, revising the procedures for contaminant evaluations and the other, in 1994, revising the procedures to be used as a point of comparison between dredged sediments and reference sediments. However, neither has been adopted as a final rule. Thus, the 1975 regulation still is in force for dredging projects nationwide.

The first Inland Testing Manual (ITM) was published in 1976 to provide regulatory guidance for the implementation of 40 CFR Part 230 regarding contaminant evaluations. After almost twenty years of collaborative discussion between the CE and the EPA on the subject of the appropriate science for contaminant evaluation and related testing issues, in 1994, a new and revised ITM was published. It has been circulated for public review

and comment, but to date a notice of the final version has not been published in the Federal Register. Thus, it is still a draft and not in official use.

In the S.F. Bay Area prior to 1993, the four dredging regulatory agencies, the CE, the EPA, the S.F. Bay Regional Water Quality Control Board (RWQCB) (which is the state water quality certifying agency), and the S.F. Bay Conservation and Development Commission (BCDC) followed the testing guidance in Public Notice 87-1 which was based on the 1975 federal regulation. As this regulation has not been changed, it would appear that the agencies do not have the authority to modify, abrogate, or otherwise change their operational procedures pending final rulemaking on the proposed EPA revisions. However, the agencies had begun a joint collaborative program known as the Long Term Management Strategy for Dredged Material Disposal (LTMS) which had been spawned by a near mudlock in S.F. Bay on dredging. The agencies' desire, to provide a consistent dredged material testing protocol for the local Bay Area, led to their adoption of a joint-sediment testing protocol in 1993, entitled *Testing Guidelines for Dredged Material Disposal at San Francisco Bay Sites,* Public Notice (PN) 93-2. 20a

Ostensibly, this was to be an interim measure until more definitive guidance in the form of a new federal Inland Testing Manual (ITM) became available and/or was superseded by final guidance under future development within the LTMS program. PN 93-2 developed as a hybrid of federal and state guidance, some of which was based on the 1976 ITM, and some from the

1994 draft ITM, including some particular interests of the local regulators. At the time, PN 93-2 was thought to be an appropriate decisionmaking tool by the regulatory agencies.

During the public hearings and workshops on the PN, dredging permit applicants had many questions and voiced several concerns regarding the approach adopted in PN 93-2, many of which continue to be issues today and which prompted this paper. This PN was extensively reviewed by the CE Waterways Experiment Station, and we submit its review for information (Exhibit 1).

Ports, industrial and commercial facilities, and recreational marinas in San Francisco Bay who need to perform navigational dredging frequently experience uncertainty, delays and substantial expense in securing permits because of the problems encountered with sediment quality evaluation. The most recent frustrations stem from the regulatory interpretation of PN 93-2 (prescribed testing) results.

Applicants really do not have a clear picture of how the agencies make decisions using the testing results. There appears to be a lack of uniform and consistently-applied criteria and an undue presence of agency subjectivity to determine the environmental "effects" of aquatic dredged material disposal. Recent examples of dredging projects which demonstrate testing interpretative issues are the Port of Oakland and the Port of Richmond's channel deepening and the Port of Redwood City's maintenance dredging projects. The procedures for regulatory interpretation

of test data, which ultimately result in major economic decisions regarding dredged material disposal, have had the effect of eliminating or severely restricting navigation and commerce movement. The whole process is highly questionable given the complexities and vagaries of the testing process. 20c

While there are general issues about testing (and the interpretation of the results) nationwide and the draft ITM that could be discussed, this paper will discuss the issues related to dredging permit applicants' experience specifically with the agency utilization of PN 93-2 in two areas: 1) whether its requirements are valid according to Federal law at 40 CFR 230.60 and 230.61 concerning use of testing to determine environmental effects; and 2) the lack of a consistent and justifiable decisionmaking framework for interpreting the test data which makes the link from the numbers to a determination of demonstrated environmental effect, i.e. how much is too much bioaccumulation and what to do with false-positive and inconclusive chemical and biological test results.

It is important to note that it is not the idea of testing per se that is at issue. Applicants generally do not object to the concept of testing for environmental protection purposes, as the law requires it. Although there are some issues related to how testing is conducted and the use of certain types of tests, such as the selection of one amphipod over another and the appropriate use of a reference site for sediment comparison purposes, the basic problems are with the agencies' administration of PN 93-2 in the areas of: how many tests should be done, how often the tests should be done, and how should the

numbers--the test data-- be interpreted . Rhetorically speaking, is the lab measured toxicity of 10, 20, or 30% truly environmentally significant or just statistically significant? What is the basis for determining an environmental "effect" when a chemical concentration is not an effect, bioaccumulation is not an effect, and turbidity is not an effect. Is there any relevance to a percentage-based species survival requirement and how do we account for aquatic dispersion and dilution? We need to settle the basic issue of what evidence should be used to define sediment test failure and hence to evaluate the acceptability of sediment for open water disposal.

Although the thrust of the draft ITM is to recommend MORE tests (which is quite unsettling from a cost-effectiveness standpoint), at least the draft ITM is a starting point for the purpose of revisiting the premises of PN 93-2 because the ITM should be the primary Federal guidance implementing the 40 CFR Part 230 regulation in the S.F. Bay Region.

Since the proposed ITM is guidance, and non-regulatory, the CE and the EPA allow for the development of regional manuals to adapt the ITM to local environmental and regulatory conditions. Thus, we are amenable to incorporating appropriate elements of the ITM into regional guidance, pending final publication, but we think that regional guidance on contaminant testing and evaluation SHOULD NOT deviate from the extant regulation, 40 CFR Part 30.

20d

Additionally, it is important to note that while the bulk of the draft ITM is guidance and non-regulatory, one portion of it pertaining to the substitution

of a reference site for the disposal site as a point of comparison was published as proposed rule-making in 1994. As of this date, the rule, as with the ITM, has not been finalized. The reference site issue will be discussed later, and while it is appropriate to adopt the draft ITM for local use, it is not appropriate to substitute a reference site for the disposal site until such time as final rule-making has occurred.

Therefore, a minimum goal is to encourage that the draft ITM become final and, concurrently in the interim, use it to revisit the premises of PN 93-2, discuss the testing problems identified on the next page such as species selection- reference site issues and work towards forming federal, state agency and applicant consensus on the basis for a regional guidance manual. Most importantly the manual should include a regional decisionmaking framework covering test result interpretation. Also, flexibility should be built into the tiered testing procedure so that an applicant can elect to conduct less tests and dispose of the dredged material in a nonaquatic disposal site. 20e

**Summary of PN 93-2 Issues:**

PN 93-2 follows the format of the tiered testing procedure first initiated in the 1991 revision of the Ocean Dumping manual and later adopted in the 1994 draft ITM. However, PN 93-2 adopts some additional requirements which appear to be inconsistent with the draft ITM and 40 CFR 230.60 and .61.

According to the draft ITM tiered testing procedures, applicants move from

tier to tier conducting different types of tests based upon a principle commonly known and subscribed to by the Federal regulatory agencies as "reason to believe" that the sediments are contaminated and could potentially cause an unacceptable adverse effect. It is only necessary to proceed through the tiers until the regulatory agencies believe there is sufficient information to make a decision on acceptability/unacceptability for disposal.

In the draft ITM, Tier 1 involves a determination that there is or is not contamination and is based on existing information. This tier is also referred to as the "exclusion" from testing, and if the material meets the exclusionary criteria at 40 CFR 230.60, there is no need to test. One of the exclusion criteria provided at 40 CFR Section 230.60 (a) is that a minimum basis for exclusion is if the dredged material is composed primarily of sand, gravel or other naturally occurring inert material.

Another aspect of the exclusion criteria and the next level of evaluation in Tier 1 is that additional testing may not be necessary in a particular case if adequate data are available to establish that the material is unlikely to result in an unacceptable adverse effect on the aquatic ecosystem (e.g. where several years of past testing data show that the material has always met current suitability guidelines), and there is no reason to believe conditions have changed. Assuming there is "reason to believe" that contaminants are present and have the potential to cause unacceptable adverse effects, Tier II is used to identify contaminants and the estimation of theoretical bioaccumulation potential of certain contaminants. Tier III consists of acute

toxicity bioassays and bioaccumulation tests.

In the interpretation of bioassay tests results, there are species survival criteria, and the potential benthic effects are evaluated in terms of differential in response of the test species placed in the dredged material and the reference material at the disposal site. A mortality greater than 10% (20% for amphipods) and that is statistically significantly greater than the test results for the reference sediment indicates a presumed potential for unacceptable adverse effects according to the regulatory agencies.

Similarly bioaccumulation in the dredged material is evaluated in comparison to the reference sediment. If open water disposal of the tested material is considered unacceptable, then the applicant must find an upland disposal site usually at a higher cost or provide "higher resolution" testing. If no suitable disposal site is identified, then dredging is not authorized.

The tiered testing approach then, is intended to provide progressive amounts of information. *"Decisions on the suitability of the material for unrestricted, restricted, or no open water disposal are to be made upon sufficient information rather than a pass-fail basis, recognizing that bioassay results are not absolute indications of environmental effects and allowing for flexible interpretation."* (Wright and Saunders, 1990)

The S.F. Bay agencies are not consistent in following the tiered testing procedures. Frequently, both Tier II and III tests are required initially. 20f

A salient feature of PN 93-2 is the use of a reference site, rather than the disposal site as specified in 40 CFR 230.60, as a point of comparison for determining the suitability for disposal at the S.F. Bay Alcatraz disposal site (SF 11). 40 CFR 230.60 allows a comparison of contaminants in the dredged material with those at the disposal site and allow open-water disposal where contaminants at the two sites are "substantially similar" or where it can be shown that unacceptable concentrations of contaminants will not be transported beyond the boundaries of the disposal site.

20g Applicants are now required to use a set of standardized test results from a new reference area, the Alcatraz environs instead of the Alcatraz disposal site itself. As described in PN 93-2, the regulatory agencies justify this on the basis that "this approach is intended to reduce the variability in reference site data caused by ongoing disposal operations..." As noted previously, this approach is not in accord with 40 CFR 230.60.

20h However, the problem with this particular reference site approach is that the Alcatraz Environs sediment is primarily sand, whereas most material dredged in the Bay consists mostly of finer grain materials. The amphipod required for testing is sensitive to grain size, and thus, test organism mortality in fine-grained sediment may be interpreted as indicating chemical toxicity; yet, it may only be an effect of grain size. This grain size difference renders the validity of the Environs a questionable reference choice.

20i Further, the draft ITM's (pages 39-40) comments on the use of the"periodic reference approach" strongly discourages its use. If it is going to continue to be used, it must be shown that it meets the technical requirements as

described in Exhibit 2 of this paper. 20i

Other PN 93-2 requirements are that certain tests species are mandatory, even though questions have been raised about the appropriateness of using non-native species. PN 93-2 adopts a maximum 20% mortality percentage between reference and dredged material survival for all test species to indicate whether test species pass or fail, and this number is often used on a strict pass-fail basis, without allowing for non-test factors and conditions. Further, it appears that the regulatory agencies neglect consideration of interferences or external influences which may confound test results, such as the presence and effect of ammonia, sulfides, salinity and grain size on mortality; elemental facts related to the physics of sediment, e.g. sediments are in a constant state of resuspension and mixing and interactions that occur between the origin and current health of the species and laboratory conditions. Recently, two different laboratories tested the same sample of dredged material and got very different results in a particular contaminant's levels. This may be because two different extraction methods and calibrations were used. 20j

These external influences are not consistently factored into the process of test result interpretation and subsequent disposal decisionmaking. They should be included as part of a proper reference site comparison using a justifiable and mandatory decisionmaking framework.

Another issue is that the required mixing (LPC calculation) following disposal is not accepted by some regulators. This is probably because the 20k

mixing considerations required at 40 CFR 230.10 (b) (1) the amount, if any, is left to the discretion of the state 401 certifying agency.

Other than the traditional exclusion for material composed primarily of sand and gravel, the Tier I exclusion from testing based on a preponderance of existing data is usually disallowed. The regulatory agencies, which have apparently adopted an overcautious policy regarding the exclusions and the adequacy of existing data to make decisions, thereby require that applicants conduct the full suite of tests. This flies in the face of and defeats the intent of tiered testing, as well as the intent of 40 CFR 230.60. As noted above, the tiers as constituted in PN 93-2 are, in themselves, flawed and deviate from the regulation. This begs for remedy. Conducting the entire suite of tests for each dredging cycle, when previous information should be entirely adequate, constitutes a colossal waste of both public and private funds. In fact, the statistic most often cited is that approximately 95% of the Bay's dredged sediment is deemed suitable for aquatic disposal. The question really becomes how much testing is needed to provide further information and is such information really needed.

There is the occurrence of false-positive, and therefore, inconclusive test results. The test results of the chemical evaluations do not always indicate toxicity in bioassays. The question then becomes which test (chemical criteria/standards or bioassays) should be considered definitive in the evaluation of the toxicity of dredged material. The results of the water column acute toxicity bioassays should be definitive and should override numeric standards because they indicate effects. Thus, there should be no