

ENVIRONMENTAL COMMUNITY RESPONSE

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Introduction

My comments today will focus on whether the current environmental regulatory process works for permitting dredging operations and disposal of dredged material. From an environmental perspective the issue is whether the regulatory process adequately protects the marine and coastal environment. The simple answer to that question is that the process does not provide adequate protection.

The Problem of Contaminated Sediments

The problem from an environmental perspective is one of contaminated sediments and what to do about them. In 1989 the National Research Council found that contaminated sediments are widespread in U.S. coastal waters and are documented in 63 waterways. The International Joint Commission has identified sediments as a major problem in 42 Great Lakes ports. EPA has concluded that it is likely that *every* major water body in the nation has moderate to severe sediments contamination.

The environmental community recognizes the nation's economic need to keep American ports competitive in the world market by maintaining navigation channels. However, of equal concern, is the fact that dredging and disposal of contaminated sediments poses serious environmental and human health problems.

It is well recognized by the scientific community that even low-level exposure to some sediments and persistent toxic chemicals like PCBs, Dioxin and mercury:

- Threaten newborn children with premature birth, low birth weights, and impaired learning loss of up to 5 IQ points;
- Cause thousands of cancers in both fishing and non-fishing populations in the Great Lakes Basin;
- Cause birth defects, sterility and population decline in fish and wildlife, including bald eagle, lake trout, cormorants and mink;
- May cause breast cancer in American women and prostate cancer which is on the rise in American men;

- Make lake trout, salmon, and other species unsafe to eat in all of the Great Lakes because they can cause health problems and increase cancer risks;

- Concentrate in the microlayer or "surface skin" of the marine environment, exposing species at the base of the food web to toxic levels orders of magnitude greater than what is measured in other parts of the water column; and

- Persist in marine, coastal and Great Lakes ecosystems, concentrating in and damaging humans and wildlife for decades.

Exposure of marine organisms to contaminated sediments occurs on a continual basis in our harbors and ports. That accounts for the prevalence of "dead zones" in these areas. Such exposure is increased and expanded by dredging operations themselves. Current dredging practices "stir up" sediments so as to increase turbidity. Increased levels of contaminants dissolve in the water where the sediments are stirred up, and predators such as fish and birds feed on contaminated infaunal organisms in suspension in the water column. Similar exposure to contaminants at ocean dumpsites occurs during disposal of the dredged material, as well as in its aftermath.

Clearly, environmental regulation has not worked to prevent contamination of sediments. Nor has it worked to properly manage those sediments once they are created. Too often the regulatory process associated with dredging activities has ignored legitimate public input and necessary environmental protection, resulting in an unacceptable risk to the marine, coastal and Great Lakes environments, and to the wildlife and humans who depend upon them.

Ultimately what is needed is a comprehensive national program to decontaminate toxic sediments in our ports and on our coastlines, and to prevent re-contamination of those areas by ending upstream sources of pollution.

Environmental Safeguards Under the Current Regulatory Regime

The procedure as it currently stands, while admittedly flawed, is intended to ensure that all relevant statutory

mandates are accounted for. Issuance of a dredging permit typically requires issuance of a permit under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA) or Section 404 of the Clean Water Act (CWA). Section 103 of MPRSA regulates the disposal of dredged material into ocean waters. An ocean disposal permit may be issued under the statute only if the disposal will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. Section 404 of the CWA regulates the discharge of dredged or fill material into navigable waters of the United States. A 404 permit may be issued only if such discharge will not have an unacceptable adverse impact on the aquatic environment. Any changes to the regulatory process must not compromise, but rather strengthen these basic principles.

The determinations of environmental acceptability under the CWA and MPRSA require analyses which necessarily take time to complete. Analyses of environmental effects under MPRSA have been somewhat strengthened over the past few years with the introduction of the so-called "Green Book." Recent implementation of Green Book standards has resulted in the rejection of large volumes of dredged material for ocean dumping. We believe the recent dramatic increase of concern about regulatory gridlock in this context is driven, in part, by those who are unhappy with implementation of the Green Book criteria and who wish to institute a procedure which will effectively circumvent the limitations of the Green Book.

Flaws in the Green Book Methodology and Its Application

Indeed, the Green Book methodology—although an improvement on past procedure—provides a weak substitute for a scientifically valid analysis of environmental impact, and, in practice, is routinely distorted or ignored to reach a desired result—i.e., issuance of a dredging and disposal permit.

The Purpose of the Green Book

The revised Green Book (or Testing Manual for the Evaluation of Dredged Material Proposed for Ocean Disposal) was developed by the Army Corps of Engineers (COE) and the Environmental Protection Agency (EPA) to provide guidance in determining whether dredged sediments proposed for ocean disposal should be granted a permit under MPRSA. The manual

is meant to implement assessments required by the regulations in CFR 220-228, which set the criteria for ocean disposal of dredged materials. The Green Book does not set criteria nor does it lead to permission or rejection of the tested sediments for ocean disposal. It does provide a system of analysis which is meant to provide information that can then be used in the determination of whether a dumping permit should be granted.

While the 1991 revision does represent an improvement over the old Green Book, it falls short of providing testing procedures that will resolve all the critical questions about the likely impacts of the sediments upon the marine environment. The COE and EPA claim that it includes state-of-the-art assessments and that it is not at this time possible to do assessments that will answer all of those questions. In other words, when the procedure outlined in the Green Book has been followed, we will invariably be left with much scientific uncertainty about some of the important potential impacts of dumping the subject sediments.

It is this scientific uncertainty that invariably results in disagreements and confrontations between those who wish the dredging to be done (and done expeditiously) and those who are concerned that the proposed dredging and disposal of sediments will cause additional environmental harm (beyond that already done by contaminated sediments where they lie).

Prior to the revision of the Green Book in 1991, virtually all proposed dredging and disposal projects were granted permits on the grounds that the sediments were determined to be "clean" under the guidance of the old Green Book. Despite the clean bills of health, evidence mounted that contaminated sediments at many sites of dredging and at the disposal sites for the dredged spoils were severely degrading the environment and causing serious damage to the living marine communities in those areas. Fisheries in many of these areas have been threatened by a number of factors including, pollution from land, pollution from dumping, resulting degraded food chains, and overfishing. Even where fish populations may still offer viable fisheries, the contamination levels in the fish tissue threaten to close the fisheries.

As it has become more and more apparent that contaminated sediments were both a symptom and a cause of environmental degradation, there has been a call by national and grassroots citizens organizations for more reliable assessments of contamination in sediments so that better decisions can be made about whether to allow dredging and disposal of the sediments in the marine environment and whether clean up efforts should be implemented. The revision of the Green Book is one

step the government has taken to try to improve the assessments, and the current revision of the regulations is another important step.

Strengths and Weaknesses of the Green Book

The revised Green Book methodology is touted by its authors as being a great improvement over prior methodology because:

1. It incorporates the "tiered approach" so beloved by governmental agencies involved in assessing environmental impacts because of its money-saving attributes;
2. The specifications for the "reference sample" have been changed so that the biological tests must compare the impacts of the test sediments to the impact of clean natural sediments instead of to the dump-site sediments (which may be quite contaminated) used in the preceding manual;
3. More sensitive toxicity bioassays (in particular those using the amphipod species) have been developed and may be (but do not have to be) selected among the bioassays required by the regulations;
4. The bioavailability of contaminants in the sediments is considered;
5. The potential for bioaccumulation is determined by bioassays run for a longer period of time than in the past; and
6. Wherever assumptions are made, the authors feel they have made the most conservative assumptions.

We agree that some of these changes represent improvements to the ability to assess the potential impacts of contaminated sediments upon the environment where they are to be dumped. However, there are still serious deficiencies in the assessments that are made, and there is important information that is not collected in the process. Each of these changes deserves discussion.

Use of the Tiered Approach

The tiered approach is not a problem if those who are making the decision as to whether to approve a dumping permit are indeed motivated to have the most complete information possible to guide a decision which is based upon impact to the environment. However, without that motivation, the tiered approach allows certain data to be ignored or "adjusted," or steps to be skipped entirely, and arbitrary judgements to be made on the basis of

inconclusive information. The direction of error in those judgements may be politically or economically motivated, which is not the intent of the MPRSA.

EXAMPLE 1: In the case of the permit request for disposal of dredged materials from two Navy facilities in Oakland at a dump site 50 miles offshore of San Francisco Bay, an arbitrary decision was made to ignore existing laboratory evidence that contaminants from dredged materials will concentrate at high levels in the microlayer and not to assess the potential for such concentrations to exceed Water Quality Criteria in the case of the dredged materials in question.

EXAMPLE 2: In the case of a permit request for disposal of dredged material from Newark Harbor at the Mud Dump Site, 6 miles offshore of New York, the applicable dioxin standards were arbitrarily changed several times. Eventually it was decided that dioxin from the sediments would not exceed the standards, and a permit was granted.

Reference Samples

The new requirements for the "reference sample" are certainly an improvement over using a reference sample from a potentially highly contaminated dump site. However, there are difficulties with using the prescribed reference sample as the sole reference. While the old method assessed only the difference between the impact of on-site sediments to the impact of the sediments to be dumped (a difference which might be minimal if both sediments are badly contaminated), the new method allows only the assessment of the impact of the dredged sediments upon a pristine and healthy environment. This is certainly one piece of the needed information, but it neglects the need to assess the additive effects that might be expected from adding the dredged sediments to an already degraded ecosystem. Furthermore, the reference sample may affect the growth of test organisms in inexplicable ways, especially if the test organisms are characteristic of a different kind of environment than that in which the reference sample sediments lie. The result may be depression of test organism growth by both the reference sample and the dredged sediments but for entirely different reasons (see Example). This difficulty highlights the deficiencies in using laboratory bioassays on a few species to determine the likely effects of a material upon a whole community of different species in the field.

EXAMPLE: In the Oakland example cited above, the amphipod toxicity bioassay demonstrated a reduction

in amphipod survival in test sediments of 11 to 44% below the control (a majority were depressed by 20% or more), while the survival in the reference sample was depressed by nearly 30%. For those tests, the difference between reference and test sediments was considered significant only if greater than 20% (even though the Green Book specifies 10%), so all but one sampling site was determined to be safe to marine life as represented by the amphipod. Since acute toxicity (i.e. instant death) is a very extreme reaction, a death rate of 30-40% of the population should be cause for concern. It appears that the Green Book guidelines were distorted until the outcome could be said to be trivial so as to achieve the goal of permit *approval*, rather than to protect the environment. In this way the Green Book guidance to ensure environmental protection became ineffective.

Toxicity Tests

The increased sensitivity of some of the toxicity tests is perhaps the most significant change in the revised Green Book. Application of the amphipod test is causing significant obstacles for ports with contaminated sediments. For the first time, many dredged sediments are failing the tests to determine their acceptability for ocean dumping. While some of the larval tests are also indicating that contamination has reached unacceptable levels, it is the amphipod test that is most often yielding unacceptable results.

Instead of accepting the negative results, applicants are undertaking additional testing and retesting of sediments until favorable results are achieved (while all the unfavorable results are rejected without sound scientific explanation). This extensive testing is expensive and time consuming, so naturally the permit applicants are annoyed. Even the Corps, who developed the more sensitive tests, appears to be opposing use of the amphipod tests in many cases. Yet, in our view, the new toxicity tests only reveal the obvious, i.e., the environments where the sediments lie (the port areas) are often dead zones or highly modified ecosystems because of the contaminated sediments, so why should we call them "clean" when we dump them into a new location?

The bioassays that were used prior to the Green Book (and still are extensively used) employ the most insensitive species—those that can survive the rigors of laboratory life and those that can survive most toxicity tests. At last the Corps has found an organism that can survive the lab conditions but is still sensitive to toxins. Perhaps the new bioassays give a glimmer of what

happens when these contaminated sediments are introduced into a new environment.

Bioavailability

The determination of bioavailability is based upon equilibrium partitioning in a static environment. While it gives some idea of the behavior of contaminants in the presence of sediments, it does not simulate the energetic conditions of the natural marine environment where nothing comes to equilibrium. Consequently, the estimates of bioavailability are likely to be significantly low.

Bioaccumulation Tests

The assessment of bioaccumulation prescribed in the Green Book is inadequate. The bioassays, if run at all, are too short to be realistic. Presumably a calculation is made to estimate the maximum "steady-state" bioaccumulation that is expected based on the highest rate of accumulation measured during the test. However, sometimes the 28-day levels are interpreted to be the end-point of bioaccumulation (as in the Newark Port application cited above). Even more important, however, bioaccumulation is only estimated on the basis of external exposure to the sediments or water. The potential for bioaccumulation through the food chain and by direct ingestion of sediments is ignored.

The Green Book suggests that an alternative estimate of bioaccumulation potential can be made from animals living in the sediments at the disposal site, if the sediments proposed for dumping are of the same origin as the sediments that had previously been dumped at the site. While field evidence is far more dependable than lab tests, this situation is so restrictive as to be of marginal use.

It might be more useful to measure contaminants in organisms at the site of dredging. Such an approach at least would be based on reality and should give far more reliable results than the laboratory tests. It can hardly be argued that the animals at the dredging site are not representative because conditions are different at the dump site, since the difference between lab and dump site are even greater. In some cases, it would be difficult or impossible to find the same species at the dredging and reference sites, so a different kind of reference site might have to be prescribed (e. g. a clean site similar to the dredging site). For some reason, however, the Green Book does not recommend this option.

Assumptions

Contrary to claims that all the assumptions made in the test manual are conservative, several critical assumptions do not reflect a conservative approach. First, the assumption that elements of a marine ecosystem are in a state of equilibrium is naive and scientifically invalid. It leads to a gross underestimate of the extent to which organisms will be exposed to and take in contaminants associated with sediments.

Second, the assumption that four hours of mixing should be allowed in the calculation of any concentrations to which organisms at the disposal site will be exposed is invalid. The organisms at the site do not go into suspended animation while the dumping is occurring, nor do they wait for thorough mixing to occur before they "breathe" or absorb water or eat. Furthermore, the resulting concentrations of contaminants in the water column are calculated on the basis of dumping a single bargeload at the disposal site; whereas, in reality 2, 4 or more bargeloads may be dumped within a 24 hour period and may result in additive concentrations.

Third, and even more important, the subtle assumption that as long as the concentration is kept at a certain level, adding more and more toxin to the environment has no effect is invalid. That dilution-is-the-solution-to-pollution myth was discarded long ago.

Fourth, the initial assumption that the true risk to the environment can be estimated from a handful of sediment assays, laboratory tests, and calculations is far from conservative. It is actually quite foolish and has little scientific validity.

In short, a testing manual such as this is necessarily a dangerous oversimplification of the complex interactions among the myriad of chemical contaminants in the sediments and their combined effects upon a highly complex and poorly understood ecosystem. While it may be an improvement over the former manual, it is not the definitive answer to estimating the risk to the environment. In fact, it serves to emphasize the need for an entirely fresh look at the regulations and the need for incorporating a sensible precautionary approach instead of the impossible risk-assessment approach.

Effectiveness and Efficiency of the Green Book Methodology

Now that the new testing procedures are being followed in the permitting process for ocean dumping of dredged materials, many more dumping permits are being denied or delayed until special dumping procedures can be

designed—or until the parties interested in dredging (e.g. ports) are able to demonstrate through further testing that the sediments are not contaminated after all. It is this situation that has prompted the ports to cry out that the regulatory process is hampering the timely granting of permits to allow for upkeep and for deepening of ports nationwide.

It is important to be aware that much of the delay in the granting of permits is a result of the applicants repeating analyses and tests several times until they get one set of results that, while disregarding all other negative results, will allow them to claim that the sediments will not cause significant harm. Instead of accepting that these are contaminated sediments and trying to find other ways of dealing with them that are more protective of the environment, they persist in challenging the assessments and demanding that ocean disposal be allowed.

Despite their obvious interest in ending the problem of contaminated sediments, which threaten the viability of their activities, they have been unwilling to enter into serious efforts to prevent further contamination of sediments—because they are not the ones at fault. They persistently reject the notion that requirements for source reduction should be part of the permitting process so that in the future dredging and dumping permit applications do not have to contend with the same unacceptable levels of contamination.

If greater effectiveness and efficiency is desired the clear route is to put a rapid end to the pollution of river basins. One of the most important justifications for this is the need to keep ports open. Instead of trying to weaken the criteria for dredging and dumping sediments, federal agencies should be focusing on phasing-out discharge of the most serious environmental contaminants. As long as we continue to rely on regulations and testing manuals based upon acceptable levels of pollution, there will be an argument over what those levels should be. It is difficult to claim and impossible to scientifically support that the levels in most port sediments have not exceeded environmental acceptability when those port areas have severely degraded benthic communities. In many cases, the Green Book procedure has become an exercise in fooling ourselves.

The Need to Develop and Institute Alternatives

In addition to tests to determine ecological effects (whether or not the sediments meet the environmental criteria for ocean disposal), the regulatory process mandates use of environmentally responsible land-based

disposal options. Both MPRSA¹ and the London Convention² require a determination of need as a criteria for allowing dumping activity. MPRSA directs EPA to take into consideration nine factors when it establishes criteria for permits. The Act lists "need for the proposed dumping" as the very first factor upon which EPA's criteria must be based (33 U.S.C. Section 1411(a)). Existing regulations under the Act interpret the needs determination as requiring a comprehensive evaluation of potential reduction, treatment, and disposal options for the waste proposed for dumping (227.14-227.16). Currently, a permit for ocean dumping in the U. S. will be issued only upon demonstration under 40 CFR 227.16(a) (1) and (2) that

There are no practicable improvements which can be made in process technology or in overall waste treatment to reduce the adverse impacts of the waste on the total environment . . ." and "[t]here are no practicable alternative locations and methods of disposal or recycling available, *including without limitation, storage until treatment facilities are completed, which have less adverse environmental impact or potential risk to other parts of the environment than ocean dumping. . .*" (Emphasis added)

The ocean dumping regulations reflect the spirit in which the MPRSA was enacted. The intent is to ensure that the use of ocean dumping will not impede the development of better solutions to hazardous waste management. This goal is achieved by strictly limiting the use of ocean dumping when environmentally acceptable methods for reduction, treatment, and disposal are available on land.³

This same spirit is reflected in the needs determination required under the LC, which states that before any permit for ocean dumping may be issued, the permitting authority must consider "[t]he practical availability of alternative land-based methods of treatment disposal or elimination, or of treatment to render the matter less harmful for dumping at sea." LDC Annex III(c)(4). Thus, like the existing domestic ocean dumping regulations, the LC maintains a presumption against ocean dumping in favor of practicable alternatives.

Serious efforts to determine the availability of land-based options for individual applications are lacking. Ocean dumping is perceived as the most expedient and least costly option and, on that basis, alternatives are not aggressively pursued, and, when identified, are eagerly rejected by regulators and applicants alike.

However, the current regulation under MPRSA (40 CFR 227.16(b)) clearly states that cost is not to be the deciding factor in choosing between land- and ocean-based alternatives:

[W]aste treatment or improvements in processes and alternative methods of disposal are practicable when they are available at reasonable incremental cost and energy expenditures, which *need not be competitive with the costs of ocean dumping . . .* (Emphasis added)

The standard to be applied, therefore, is whether the alternative entails a "reasonable incremental cost."

Amendments to the Water Resources Development Act of 1992 (WRDA) promote the treatment of dredge material to render it less harmful to the environment by providing a program and funding for identifying existing and developing decontamination technologies for use on dredge material and contaminated sediments generally. Given the high level of funding (\$5 million), we expected an aggressive effort to get the program underway. Unfortunately, EPA and the Corps have made little progress in putting the allocated funds to work, and over the past seven months, have done little more than shift the funds to the Department of Energy to supplement its decontamination research. The WRDA funding offers an exceptional opportunity to find a solution to what the agencies perceive as a major obstacle to carrying out their respective mandates, yet they appear to have relinquished that opportunity.

Several successful programs to address the problem of contaminated sediments in the Great Lakes provide a precedent for improved management of sediments, as well as viable decontamination technologies. The Assessment and Remediation of Contaminated Sediments Program (ARCS) and the Great Lakes Critical Programs Act have established key demonstration programs and deadlines to test technologies and complete the Remedial Action Plans. Decontamination alternatives have also been identified under the Superfund Innovative Technologies (SITES) Program. While EPA has bench tested at least five technologies in the Great Lakes, full-scale tests are needed to determine cost and effectiveness before recommendations can be made for large-scale decontamination. The Corps and EPA should use their respective authorities under the ARCS, SITES, and WRDA programs to expedite and expand development of alternative disposal options and should aggressively seek application of these alternatives to specific dredging permits.

Application of the Precautionary Principle

The need to institute land-based disposal options under the existing regulatory regime reflects the view that disposal of contaminants in the marine environment is unacceptable. Over the past decade, we have witnessed a dramatic reduction in the use of the ocean for waste disposal. No longer do we allow disposal in the sea of sewage sludge, industrial waste, or radioactive waste. There is an increasing shift in thinking, both domestically and internationally, away from the view that pollution can be controlled through "allowable" emissions or discharges (the "assimilative capacity" view) to the view that pollution prevention can be achieved only through zero discharge of contaminants, which is reflected in the so-called "precautionary approach" to marine pollution. The four fundamental elements of the precautionary approach are described as follows.

1. Prevention of contaminants entering the marine environment.

The principle of precautionary action is based on prevention and elimination of contaminants at source. As called for by the international community, this may be accomplished, in part, through clean production substitution. Zero input levels for designated substances should be a firm objective. To be truly precautionary, this approach should be applied to all persistent unnatural substances, as well as all naturally occurring substances which are toxic and persistent.

2. Action before damage - before conclusive scientific proof.

The principle of precautionary action is universally viewed as requiring preventative action before waiting for conclusive scientific proof regarding the cause-effect relationship between contaminants and resulting ecosystem damage. All too often, such proof (even when attainable) comes after the fact; after the damage has already been done and is irreversible. This requirement for timely action acknowledges the uncertainties that are inevitably associated with scientific predictions.

The existing body of scientific literature makes it clear that even the most sophisticated environmental impact assessment models contain substantial inherent uncertainty due to the overwhelming diversity and complexity of biological species, ecosystems, and chemical compounds entering the marine environment. What were once considered perfectly safe levels of particular inputs into the environment subsequently have been determined to be unsafe. The legacy of environmental degradation attests to this fact.

3. Shift in the burden of proof.

Traditionally, those who engage in (or propose) an activity which risks harm to the environment take the position that others who question the activity must prove that it is harmful. As a general principle, such an approach is inappropriate, because all too often it is the proponent of the activity who is in a position to perform the necessary studies and assessments. Moreover, it is especially inappropriate when the activity at issue involves toxic and persistent substances, where common sense would dictate the prohibition of such activity.

The contemporary approach, in light of the principle of precautionary action and currently available clean production methods, is to shift the burden on to the proponent of the activity to demonstrate that it is highly unlikely to harm the environment or human health.

4. Implementation through clean production methods.

Virtually all international fora which have addressed the implementation of the principle of precautionary action, have appealed for eliminating and minimizing hazardous wastes and products through the application of clean production methods.

Many of these fora recognize that it is essential to require a waste prevention audit of all individual plants and companies in order to, 1) identify substances targeted for phase out programs, and 2) identify the corresponding clean production methods to achieve the phase out. In this context, all stages of production processes are subjected to objective analysis of available clean production methods.

In sum, adoption of a precautionary approach represents:

"movement away from the principles of assimilative capacity, which assert the capacity of the environment to assimilate wastes and convert them to harmless or ecologically useful products, towards the principle of precaution which calls for action to be taken to reduce environmental inputs even before the onset of damage, if damage is considered likely."⁴

The United States has embraced the precautionary approach in a number of international agreements, including a resolution adopted under the London Convention, as well as the text agreed by Governments at UNCED under Agenda 21 with regard to the prevention, reduction and control of sea-based sources of pollution. The UNCED agreement highlights a

precautionary approach as fundamental to the basis for action and objectives of the agreement. It is stated (17.21 of Agenda 21):

A precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment. This requires, *inter alia*, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and/or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water.

States are called upon in 17.22 of Agenda 21 to commit themselves to the following:

- (a) Apply preventive, precautionary and anticipatory approaches so as to avoid degradation of the marine environment, as well as to reduce the risk of long-term or irreversible adverse effects upon it;
- (b) Ensure prior assessment of activities that may have significant adverse impacts upon the marine environment;
- (c) Integrate protection of the marine environment into relevant general environmental, social and economic development policies;
- (d) Develop economic incentives, where appropriate, to apply clean technologies and other means consistent with the internalization of environmental costs, such as the polluter pays principle, so as to avoid degradation of the marine environment; and
- (e) Improve the living standards of coastal populations, particularly in developing countries, so as to contribute to reducing the degradation of the coastal and marine environment.

Application of the precautionary approach to dredged material permits requires a prohibition, under any circumstances, on ocean dumping of contaminated sediments—even absent scientific proof that harm will occur, if such harm is likely. Given the toxicity and persistence of many of the contaminants present in dredged material, damage is at least likely, if not guaranteed.

As the world community moves from a failed assimilative capacity approach to a precautionary approach to pollution prevention, the development and institution of innovative dredging and disposal practices is critical. The precautionary approach should be reflected in any regulatory changes.

It is evident that the Corps and EPA have not yet assimilated the precautionary approach. The EPA/Corps Steering Committee on Management of Dioxin-Contaminated Dredged Material is preparing a "guidance document" for use by permit issuers that will supposedly describe what is now known about dioxin, but will in no way recommend any specific limitations on disposal of dioxin contaminated sediments. It will be up to individual regulators to apply that information as they see fit. Such "guidance" is expected to be available in the Spring. It appears that the guidance document is a misnomer. A more descriptive characterization would be a "license" document since it will do little more than provide license for regulators to make subjective determinations to issue permits for disposal of dioxin contaminated sediments.

In the meantime, EPA's Dioxin Reassessment continues and its completion is expected in about 12 months from the time the EPA/Corps dioxin guidance is published. It would seem more prudent for EPA and the Corps to await the results of the dioxin reassessment—which has been ongoing for over a decade—before proceeding with preparation of guidance.

Application of the precautionary approach to management of dioxin contaminated sediments is clear. The marine pollution and public health hazards associated with dioxin contaminated sediments are known. What has not yet been determined is an "acceptable" level of dioxin in sediments. The knowledge that damage is likely, even in the absence of scientific proof of the extent of that damage is sufficient to trigger a prohibition on ocean dumping of dioxin contaminated sediments under the precautionary approach. EPA and the Corps have chosen to ignore this basic principle.

The environmental community will continue to assess all regulatory initiatives in light of the precautionary principle and we encourage the regulators to do the same.

The Economic Consequences of Contaminated Sediments in the Marine Environment

The dredging issue is not simply one of maintaining the economic viability of the ports versus environmental protection. There is another economic concern which is

largely ignored when considering effects of dredging and dumping operations—that is the economic needs of the fishing and coastal communities which depend on a clean environment for their success and welfare. Commercial and recreational fisheries pump 11 billion dollars into this nation's economy each year. Given that significant economic interest, the Atlantic Fisheries Council recently passed a resolution calling for an immediate end to ocean dumping of contaminated dredge material.

In a recent study, entitled *Clean Lakes, Clean Jobs*, the Sierra Club estimated the jobs and money at risk upon failure to "clean-up" toxic sediments in every Great Lakes harbor. Billions of dollars and thousands of jobs are at risk if toxics are not eliminated.

Great Lakes Jobs at Risk

	<u>Number of Jobs</u>	<u>Cost (Billions of US \$)</u>
Health	*	18. 47
Fishing	89,000	4. 0
Shipping	44,000	3. 5
Tourism	2,760,000**	69. 0
Total	2,893,000	94. 97

*Complete data unavailable

** Assumes \$25,000/direct job

While the cost of "clean-up" in the Great Lakes is estimated at \$10 billion, the savings of almost 3 million jobs and 94 billion dollars is well justified. In addition, it has been estimated that clean-up would create an additional 400,000 jobs in the Great Lakes area.

If you extrapolate these risks to the country at large and three other coasts, the potential job risk could be near 10 million and the commerce at risk could be near \$400 billion. Such a risk justifies a substantial investment of money and resources to prevent continued pollution and to facilitate an aggressive program of decontamination.

The problem of how to properly manage contaminated sediments is more technical than it is procedural. Under MPRSA, a needs assessment, if properly conducted, would identify available land-based options for disposal and those would be implemented in lieu of ocean dumping. The procedural mechanism exists

to make this happen. The obstacle to making this work is the lack of available options and the unwillingness of the regulatory agencies and the applicants to accept the additional costs of the available options. If the technology to manage contaminated sediments were widely available and inexpensive, the regulatory process as it currently exists would more effectively safeguard marine and coastal resources, and, in most instances, would not suffer from delays and obstacles in permitting.

Changes to the regulatory process which simply expedite review, while addressing the economic needs of the port, are likely to compromise the economic viability of fishing and coastal communities and the health and well being of precious marine and coastal resources. *The real key to streamlining permitting of dredging and disposal practices is to institute more environmentally protective dredging practices and disposal options.*

Additional changes in the regulatory process which are needed to effectively protect the marine, coastal and Great Lakes environments include the following:

1. Development and implementation of an upstream pollution prevention plan should be a condition for receipt of a permit for disposal of contaminated sediments; and in conjunction with the implementation of such plans, there should be progressively decreasing allowances for contamination in sediments permitted for disposal.

2. EPA should expedite efforts to develop effective numerical sediment quality criteria for major environmental contaminants by setting interim pollution reduction goals, establishing specified intervals for further strengthening of criteria, with the ultimate goal of zero discharge (through implementation of clean production technologies).

3. Revision of dredging and disposal regulations under MPRSA should reflect the new U. S. commitment to the precautionary approach and clean production and should move away from the outmoded risk analyses that are based on assumptions of "assimilative capacity" clouded by so much scientific uncertainty; and in so doing, the regulations should link the disposal of dredged materials to a variety of clean-up and prevention measures.

4. Once sediment quality criteria are established, the Green Book should be revised to become a guide to the application of numerical criteria in clean-up, dredging, and disposal activities and to identifying safe alternatives to the ocean disposal of contaminated sediments and beneficial uses for clean or decontaminated sediments. Absent sediment quality criteria, the guidance of the

current Green Book should be strictly followed, and permitting decisions should be based on all the information generated by the analyses and should reflect the requirements of the MPRSA.

5. Currently permitted ocean dumpsites that "may affect" resources protected by National Marine Sanctuaries should be closed to any further dumping until numerical sediment quality criteria are in place along with guarantees against the disposal of any contaminated material.

6. Currently permitted ocean dumpsites used by species listed as endangered, threatened or protected under the Endangered Species Act or the Marine Mammal Protection Act should be closed to any further dumping of contaminated sediments as defined by numerical criteria, and no new ocean dumpsites used by these species should be designated.⁵

7. Currently permitted ocean dumpsites used by commercially or recreationally important fish species, including migratory species and those regulated under the Magnuson Fishery Conservation and Management Act and by state marine fisheries agencies, should be closed to any further dumping of contaminated sediments as defined by numerical criteria, and no new ocean dumpsites used by these species should be designated until such time as valid assessments to determine clean sediments have been established.

8. Ocean dumping of contaminated sediments (Class 3 materials in some Corps districts) should not be permitted under any circumstances, including mitigation by capping—a technique that should be reserved only for mitigating the effects of contaminated sediments in situ.

9. In the absence of immediate implementation of source elimination and decontamination programs, an assessment should be made of port siting and development, to evaluate, on a national level, the need for deepwater draft ports, with a view toward maximizing the use of natural deepwater ports and minimizing creation of new deepwater draft ports.

10. The "needs" requirements of MPRSA and the CWA should be strictly applied to require application of existing and emerging decontamination technologies—if only to a portion of the sediments proposed for dredging—to facilitate technology development.

11. The dredging permit process should place more emphasis on the potential effects of the dredging upon marine life in the area to be dredged and on restricting dredging or implementing alternative technologies that would reduce the disturbance (i.e. the potential impacts of increased turbidity, increased levels of contaminants dissolved in the water where the sediments are stirred up, and the suspension of contaminated infaunal

organisms where predators such as fish and birds would feed upon them).

12. Permits to dredge and dispose of dredged material must be subject to adequate public review and comment, including, but not limited to formal and informal public comment periods, public hearings, meetings and other information gathering symposia.

Interagency Working Group on Dredging

As regards the Interagency Working Group on the Dredging Process recently convened by the Maritime Administration, we in the environmental community are deeply concerned about the apparent focus of this effort to "streamline" and "expedite" the dredging permit process. This concern was expressed in a letter of December 14, 1993 to Secretary Peña, prepared by the Coast Alliance and signed by 28 organizations representing thousands of conservationists, fishermen, and citizen leaders across the country. The existing procedure is not optimal to those who wish to dredge because of the lengthy timeframe for obtaining a permit — nor is it optimal from the environmental perspective, as too often environmental concerns are completely ignored or poorly addressed. Expediting the procedure will address the concerns of dredging applicants. However, a more streamlined process is likely to further undermine environmental protection. There is already too little time and effort expended on seriously addressing the effects of dredging on the marine and coastal environment. An expedited process will further curtail efforts to appropriately address environmental concerns.

Any major changes in procedure will necessarily require substantial revision of existing regulations. Efforts to "streamline" the regulations which will in any way weaken consideration of environmental concerns will be met with strong public opposition.

The environmental community is also concerned about the apparent haste with which the Maritime Administration is pursuing its review and the absence of dialogue in meeting the objectives of the review. The issues have been debated exhaustively in the past without satisfactory resolution. The MARAD "quick fix" approach does not constructively contribute to progress toward resolution, but will only further polarize views of the varied interest groups concerned.

The series of public "listening sessions" scheduled over the next two months, present a superficial and, in our view, wasteful expenditure of everyone's time and resources. These meetings simply provide a forum for

the public to "talk at" agency representatives. What is needed is true *dialogue* among all the interested parties to come to grips with the competing interests and complex issues associated with dredging activities. Public participation in its true sense is more than simply being heard. We are hopeful that the new Administration is serious about its desire to forge partnerships between government and the public to address serious public policy issues. The procedure established by MARAD to conduct its review of dredging activities falls far short of establishing a partnership and does little more than polarize interests.

Ocean Advocates supports establishment of a true dialogue process that would involve equal participation by all interested parties and which would be facilitated by independent conflict resolution professionals. Such an effort could result in a series of consensus-based recommendations which could be used as a basis for the Interagency Review and recommendations for statutory and regulatory amendments. Establishment of such a dialogue holds greater promise for satisfactorily resolving the difficult issues associated with dredging.

Conclusion

In conclusion, while the process for regulating dredging activities has not adequately protected the marine environment, the problem is not so much the process itself, but rather, the lack of political will to find practical solutions to the problem of contaminated sediments, both in terms of prevention through upstream restriction of discharges, as well as the development and implementation of decontamination technologies. Solving the problem of contaminated sediments will remove fundamental obstacles to the issuance of dredging permits and will, in turn, benefit, shippers, ports, fishing interests, coastal communities and the public concerned about the protection of our precious marine and coastal resources. We believe the solution to the problem is at

hand. We are eager to join with other interested parties in an open dialogue to find constructive solutions that will meet our mutual concerns of economic viability and environmental protection.

¹ Marine Protection, Research and Sanctuaries Act of 1972, 33 USC 1402 *et seq.*

² Convention on the Prevention of Pollution by Dumping of Wastes and Other Matter at Sea, 26 U.S.T. 2403, TIAS 8165 (1972).

³ Section 2 (b) of the Ocean Dumping Act, Public Law 92-532, October 23, 1972, states:

The Congress declares that it is the policy of the United States to regulate the dumping of all types of materials into ocean waters and to *prevent or strictly limit* the dumping into ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. (Emphasis added).

⁴ Jackson, Dr. Tim and Peter J. Taylor, "The Precautionary Principle and the Prevention of Marine Pollution," 1991, Stockholm Environment Institute, Box 2142, S-103 14 Stockholm; and Centre for Study of Environmental Change, Lancaster University, LA1 4YF.

⁵ By "use" we mean used for breeding, feeding or migratory purposes. While areas used as migratory pathways are not typically accorded protection under these statutes, we believe the precautionary principle mandates protection of species within migratory pathways because the opportunity for significant and damaging exposure exists in these areas.