

**United States Response to Recommendations in
the International Joint Commission's Eleventh Biennial Report
on Great Lakes Water Quality**



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and
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Chicago, Illinois**

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Chapter 1: The State of the Great Lakes

Recommendations

- 1. Develop reliable data and accessible information to support indicators for the three desired outcomes of Drinkability, Swimmability and Fishability (fish that are safe to eat). This action should have priority status in the indicator process.**

The Parties recognize the overall purpose of the Great Lakes Water Quality Agreement (GLWQA) “. . . to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem.” The suite of Great Lakes indicators developed through SOLEC reflects the importance of assessing the Great Lakes basin ecosystem components, including human health. The issues of “drinkability,” “swimmability,” and “fishability” are addressed through the indicators to evaluate the quality of drinking water, the number and duration of swimming advisories due to elevated bacterial levels in the water, and the concentration of bioaccumulative chemicals in edible fish tissue. Although much of the GLWQA addresses issues of ecosystem integrity, these three issues pertaining to human health are widely recognized and are meaningful to the public.

The Parties will continue to collect information and report on these indicators through the SOLEC process. Reliable data are essential to the assessment and reporting process, and considerable efforts are involved in the collection and evaluation of data to support these three human health indicators. Between SOLEC 2000 and SOLEC 2002, for example, the number of public drinking water facilities surveyed was increased from 22 to 114; additional data were provided for contaminants in edible fish from Lakes Superior and Lake Michigan; and the information on the number and frequency of beach advisories reflects a transition period toward more nearly uniform monitoring and reporting systems across jurisdictions.

Quality assurance and quality control are parts of the process necessary to provide reliable data. The SOLEC process relies on the expertise and professionalism of the contributing authors of the indicator reports to base their assessments on data of good quality. Data frequently are gathered from multiple sources in varying formats, which can present challenges for their evaluation and synthesis into indicator reports. Beginning in 2003, a technical version of the biennial *State of the Great Lakes* report will contain citations, references and/or personal contact information for all of the data presented. The Parties fully cooperate with the Commission, however, to provide the underlying data that are collected to support these indicators, if such information is requested.

- 2. Expand indicator development and reporting on additional desired outcomes only where resources are sufficient to access scientifically valid and reliable data.**

One of the goals of the SOLEC process is to “strengthen decision making and management.” Because the Great Lakes ecosystem is so complex, any one component can be influenced by a variety of management activities. Therefore, a considerable amount of information is required to make better, more informed decisions about potential management interventions. The Parties

are well aware of resource limitations, and we are investing in those indicators which provide the greatest information about Great Lakes ecosystem function, status and trends, and which support informed management decisions.

The Parties do not consider a detailed assessment of only a few environmental components to be sufficient to meet the requirements of the Great Lakes Water Quality Agreement. The Great Lakes indicators were selected under the general criteria of “necessary, sufficient and feasible,” following the organizational framework of indicators that reflect the state of the environment, the pressures being exerted on ecosystem, and the human activities or responses that influence the pressures. Through the SOLEC process of identifying candidate indicators for the major ecosystem components, existing and future data needs can be identified. The Parties can then determine which data needs can be met through existing monitoring programs and which would require new efforts. The Parties agree that the quality of underlying indicator data are important and have a direct bearing on subsequent management decisions that may be made based on those data.

Development and reporting efforts for Great Lakes indicators have attracted the interest of several organizations who are now assisting the Parties. For example, the Great Lakes Forest Alliance has provided leadership to select a subset of extensive forest indicators for reporting through SOLEC. Fostering this type of partnership between the Parties and non-government groups benefits the comprehensive assessment of the Great Lakes by providing information on previously unreported ecosystem components with minimal additional resource expenditures by the Parties.

Several research efforts are also currently in progress for developing or refining effective indicators for selected ecosystem components. For example, the results of research being conducted by the Great Lakes Coastal Wetlands Consortium and the consortium for Great Lakes Environmental Indicators for coastal conditions are expected to lead to more reliable, cost efficient indicators than might otherwise be proposed. Resources currently directed toward these activities are an investment that will provide future benefits.

3. Improve public information and decision-making by:

- **increasing funding, technology and staff for monitoring, surveillance and information management to support the SOLEC indicator reporting**

The SOLEC process itself is not a monitoring program. To date, all of the information provided for the assessment of Great Lakes indicators has been supplied by existing monitoring programs or other data collection activities that were established for other (though perhaps similar) purposes. The Parties recognize that better coordination of monitoring efforts among the various jurisdictions and agencies could be achieved, implying that conserved resources would then be available to obtain additional information. A concerted effort has already begun to develop a basin-wide monitoring inventory; to identify monitoring drivers and existing coordination mechanisms; and to discuss possible means of improving binational monitoring coordination.

The Parties recognize that issues concerning information management will continue to confront the SOLEC process. As more information is obtained supporting the current indicators, and as

more indicators come into use, the need will increase to define and implement a formal system to obtain, store, analyze and archive data. Additional views of the Parties regarding information management are presented in the following two sections.

- **making the findings from indicators and their supporting databases generally available to decision-makers and the public, and**

The Parties prepare and release a biennial report based on the findings from the indicators. The most recent issue, State of the Great Lakes 2001, provided indicator assessments and lake basin assessments in clear, easy to read, language. The report was widely distributed and remains readily available on line at www.binational.net. The Parties intend to prepare the State of the Great Lakes 2003 in a similar style, and distribute it widely along with simplified highlight reports. The Parties continue to explore additional approaches to communicating the findings to environmental decision makers and managers at all levels of governance and to the broad interested public.

Making the supporting databases generally available will remain problematic at this time. For many of the indicators, the data reside with the cooperating agency or organization, and the indicator reports are prepared by the subject matter experts who have access to the underlying data. The indicator reports acknowledge the report authors and the data sources so that the reader can inquire directly about the underlying data. As part of the process for preparing the State of the Great Lakes 2003 report, a detailed technical reference document will also be assembled and made available. This technical report will provide contact information, data sources, literature citations, and quality assurance references for the indicator data and/or information. The Parties will continue to investigate more satisfactory solutions to providing the underlying data to secondary users.

- **coordinating the databases in both Canada and the U.S. and linking significant Great Lakes databases.**

Information management will continue to be a central issue to the success of reaching the goals of the GLWQA. The Parties agree with the IJC's statement in the 11th Biennial Report that, "(W)e cannot overstate the enormous task of organizing a broad diversity of data and information from an array of organizations into a system that is accessible to and useable by a variety of audiences." Unfortunately, the linking of various databases is not easily undertaken, and issues remain to be resolved concerning the security of computing systems that grant public access and the integrity of the data that are provided. SOLEC organizers will continue to explore means to provide access to indicator data in a timely manner for multiple users.

Chapter 2: Toward Chemical Integrity: The Challenge of Contaminated Sediment and Human Health Impacts

Recommendations

1. Define explicitly the extent of sediment contamination and the goals for restoration so that remediation needs may be understood and publicly supported.

The United States fully supports the intent of this recommendation. Such an undertaking, however, may require time, effort, and resources beyond which are readily available at the present.

The United States Great Lakes Program (comprised of those federal, state, and tribal agencies with significant environmental protection and natural resources management responsibilities) is strongly committed to managing and, where appropriate, remediating contaminated sediments in all Areas of Concern (AOC), and in other priority areas of the Basin which do not have AOC status. Contaminated sediments are a significant problem. They pose concerns from both ecological and human health standpoints. Although discharges of persistent toxic substances to the Great Lakes have been reduced in the last three decades, high concentrations of contaminants remaining in the bottom sediments of many rivers and harbors have raised concerns about risks to aquatic organisms, wildlife and humans. There are economic consequences to contaminated sediments, as well. They can prevent or delay the dredging in navigational channels and recreational ports, require additional costs for removal and management, and impose other costs to waterborne commerce and local economies.

In the United States, much work and substantial progress toward remediating contaminated sediments has taken place. Through the congressionally mandated Assessment and Remediation of Contaminated Sediments (ARCS) Program, EPA developed methods for both assessing and remediating contaminated sediments; EPA's Research Vessel *R/V Mudpuppy* has to date visited 27 of the 31 U.S. AOCs, and provided support to the eight Great Lakes States and various Tribes to better assess and characterize the nature and extent of the contamination at these sites. Many of these locations have been visited more than once, with the ultimate goal of this work to make informed, cost-effective decisions on sediment clean-ups. But even with the most thorough sampling of a contaminated site, an explicit estimate of the size of the remediation project may not be possible because of the need to develop appropriate cleanup objectives for individual sites through coordination with States and other stakeholders.

Since most AOCs have been characterized for the nature and extent of contaminated sediment, future efforts will focus primarily on developing remediation plans for projects, with public consultation.

Identifying remediation needs is being addressed by many of the comprehensive sediment goals contained in the U.S. Great Lakes Strategy, including:

By 2004, each State member of the U.S. Policy Committee, working with USEPA, USACE, NOAA, and the U.S. Fish and Wildlife Service (USFWS), will develop an integrated list of sites for remedial and restoration activities, with estimated costs and schedules. These lists will be updated biennially. USEPA will maintain this comprehensive list of known contaminated sediment sites in the Great Lakes, including, but not limited to AOCs, that will help to inform the Great Lakes community on the location and magnitude of remaining sediment contamination that could require remedial and restoration actions.

This assessment will support the stated Strategy Key Objectives for remediating Great Lakes contaminated sediments:

1. Beginning in 2002, initiate three remedial action starts each year;
2. Beginning in 2004, complete three sediment remedial actions per year until all known sites in the Basin are addressed; and
3. Complete the clean up of all known sites in the Basin by 2025.

These actions will address sites contained in a comprehensive listing of sites which require remediation; the list, to be completed by 2004, is another Great Lakes Strategy commitment.

The Strategy also recognizes the need for public outreach so that remedial options can be clearly understood and supported:

Develop and implement a collaborative outreach strategy to promote greater public awareness of contaminated sediments issues and enhance public involvement in the remedial decision-making process early and often.

This Great Lakes Strategy commitment will be developed and implemented, as needed, on a site-by-site basis.

Our primary objective remains to accelerate the pace of contaminated sediment remediation, and continuing to work to overcome barriers to progress identified at each site. This will be achieved by bringing together complementary Federal and State authorities, and/or government and private resources to address the contaminated sediment problem and its source.

One new and welcomed source of resources to support our work is the recently enacted Great Lakes Legacy Act of 2002 which authorizes up to \$50 million a year for five years (beginning in FY2004) for projects to address contaminated sediments at Great Lakes AOCs. Funding under this act, if and when appropriated, will provide EPA with greater financial resources to directly address sediment remediation at Great Lakes AOCs. The Act also authorizes up to one million dollars per year to specifically focus on public information for contaminated sediment projects.

The U.S. Great Lakes Program acknowledges that it can always make progress on better informing the public of the nature and extent of contaminated sediment problems in the AOCs. As we complete our assessments and gather better information on these parameters, we will work more closely with the federal and state RAP coordinators as well as with the AOC-based public

advisory committees to communicate this information in a clear manner and fully explain the options and implications for all potential remedial scenarios.

2. Set priorities and a schedule for contaminated sediment remediation based on the potential for benefits to ecosystem and human health.

As stated in previous responses to similar recommendations from the Commission, given the nature of the federal government budgeting process in the United States, the nature multiple clean-up authorities among a number of federal and state agencies, and potential litigation, it is very difficult to set reliable schedules for remediation (although we have established aggressive clean-up goals in the Great Lakes Strategy as addressed in the previous recommendation, as well as a Strategy commitment that an integrated list of sites be prepared on the U.S. side by 2004). In addition, addressing an historic legacy of pollution which occurred over many years requires a substantial investment of time and effort to remediate. Many of our actions will depend on the regulatory scheme under which a given remedial project is implemented. Timetables might be developed on a site by site basis, but to do this on a large, AOC-wide scale would be very difficult.

Adding another level of complexity is the fact that many AOCs consist of multiple "hot spots" that require remediation. Each hot spot may be potentially addressed through different statutory authorities and programs, and some may not be readily dealt with by current programs. Given this scenario, trying to predict when each and every site might be remediated would be difficult. To further complicate matters, there are many remaining or orphan sites where no potentially responsible parties are readily identifiable; this makes it extremely difficult to schedule/prioritize remedial actions since the source of funding has not been secured. If funding becomes available under the Great Lakes Legacy Act, this will increase our ability to address orphan sites.

Some clean-ups are opportunistic in nature, and can incorporate innovative public-private partnerships. These situations cannot be planned for or scheduled. For example, in some remedial actions such as the recently completed Tannery Bay project in the White Lake, Michigan AOC, private sector funding can play a vital role. It would be difficult at best to incorporate such an important funding source, which may arise on an *ad hoc* basis, into schedules and work plans.

Any attempt to prioritize sites requires accurate and timely information. As explained in the response to the first recommendation above, complete assessments of all sediment sites in the AOCs are necessary to do any prioritization. This will take funding which may be made available in part by the Great Lakes Legacy Act and programmatic funds from Superfund and other EPA programs, as well as via Natural Resource Damage Assessments. Once these assessments are completed and analyzed, we may have some ability to prioritize, but this would not necessarily mean that the highest priority sites are the first to be remediated. This remains dependent on which program implements the remediation and their statutorily mandated procedures for setting priorities, as well as securing community acceptance. There is no one sediment clean-up program within EPA or within the U.S. government; hence, it is nearly impossible to implement clean-ups following a predetermined sequence across these various programs. Within particular programs, risk assessment is part of prioritizing and setting cleanup goals under remedial

programs; these programs have and will continue to consider the benefits to the ecosystem and human health as they decide on remedial actions.

Another complicating factor in trying to set priorities and schedules is that contaminated sediments are also present in Great Lakes areas that do not carry the AOC designation. EPA programs and offices focus their efforts on the highest priority contaminated sediment sites, which may not be within AOCs. Prioritization factors include contribution of substantial risks to human health and the environment, location within Great Lakes AOCs, location where delay could result in the spread of toxic chemicals into areas where remediation is no longer feasible, and adverse impacts on resources.

Given all these impediments, we do recognize the importance of setting schedules and priorities for remediation. Given the varying nature of the environmental problems occurring at the 31 U.S. AOCs, the setting of these schedules is best accomplished on a site by site basis as each works to define remediation goals with local stakeholders and those federal and state agencies which implement the remedial activities. It should also be noted that there is the possibility that some RAPs may determine that sediment remediation is not practicable and that natural processes should be allowed to remedy the problem once pollution sources are controlled. We anticipate that future timetables will continue to be developed on a site by site and project-specific basis, and will be buttressed by the Great Lakes Strategy sediment assessment goals as discussed in the response to the previous recommendation. For the remaining U.S. AOCs where sediment contamination is being assessed, those U.S. federal and state agencies with the legal authorities to develop plans and take action in remediating these sites are working in close cooperation with the RAP processes to develop the detailed work plans, schedules and benchmarks needed to complete sediment remediation and other important projects. The U.S. will make every effort to ensure that RAPs articulate schedules and deadlines when they are established.

We would enjoy the predictability of a priority scheme and are predisposed to prioritize certain sites based on factors including those expressed by the IJC, but realistically there are competing factors (as noted above) which can shift our view of what is a priority, such as the recognition that clean-up may be impractical, due to various factors such as cost and technological limitations. But rather than being stymied by the complex nature of the work, we intend to be entrepreneurial and seize upon opportunities that arise and enable more and better clean-ups. Thus, priorities need not imply schedules and workplans.

3. Develop a long-term strategy for the remediation of contaminated sediment; ensure that it is adequately funded; and report on progress.

The Great Lakes Strategy contains the beginnings of a long-term strategy for the remediation of contaminated sediments. Some of the mechanics of activities in the Strategy for the remediation of contaminated sediments has been described in our response to the previous recommendations. But at present, given the situation of multiple authorities spread over multiple agencies, there is no one U.S. contaminated sediments strategy for the Great Lakes. Having said that, there are a number of ongoing complementary activities, outlined below, which will aid in developing and implementing such a strategy.

At the national level, EPA published a document entitled, EPA's Contaminated Sediment Management Strategy in April 1998 (EPA-823-R-98-001), describing goals, policies, and how we intend to accomplish these goals for managing the problem of contaminated sediment and actions that EPA intends to take to accomplish those goals. This EPA nationwide strategy specifically notes the importance of meeting the goals of the Lakewide Management Plans (LaMPs) and RAPs (page 56). The stated goal for active remediation and natural attenuation projects, outlined in this strategy is, "...to achieve sediments that pose no acute or chronic toxicity to aquatic life and wildlife, and no significant risk to human health and the environment". In the U.S., the specific framework utilized to achieve this goal will vary, depending on the governmental program used to achieve it.

EPA is also developing an Agency-wide Contaminated Sediment Science Plan (CSSP) to develop and coordinate science activities. The anticipated results of the CSSP will be improved environmental decision-making which conserves both human and financial resources.

EPA's also issued Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (February 12, 2002) which helps EPA site managers make scientifically sound and nationally consistent risk management decisions at contaminated sediment sites. It presents eleven risk management principles that Remedial Project Managers, On-Scene Coordinators, and RCRA Corrective Action project managers should carefully consider when planning and conducting site investigations, involving the affected parties, and selecting and implementing a response. It recommends that EPA site managers make risk-based site decisions using an iterative decision process, as appropriate, that evaluates the short-term and long-term risks of all potential cleanup alternatives consistent with the National Oil and Hazardous Substances Pollution Contingency Plan's (NCP's) nine remedy selection criteria (40 CFR Part 300.430). EPA site managers are also encouraged to consider the societal and cultural impacts of existing sediment contamination and of potential remedies through meaningful involvement of affected stakeholders.

Until all detailed sediment assessment work is completed, the pockets of sediments that need to be remediated are delineated, and the disposal/treatment methods are developed, coming up with costs on a large-scale basis will be tenuous. As a specific site moves towards remediation and after feasibility studies are conducted, realistic cost estimates can be developed. Therefore, we favor compiling high quality cost information as it becomes available, and including such information in progress reports.

Although comprehensive magnitude and cost estimates are not presently available, it should be noted that the Superfund Program routinely develops cost estimates and timetables (made available to the public) to address remediation of sites, including contaminated sediment sites.

The U.S. is committed to regular and comprehensive reporting on our progress in remediating contaminated sediments. We are employing a variety of reporting mechanisms to ensure that this occurs, including:

- annual reporting on progress toward implementing the Great Lakes Strategy;
- annual GLBTS progress reports on sediment remediation which are prepared by the U.S. and Canada, beginning in the year 2000;

- GLNPO's sediment program has produced two reports on successful remediations and the number of sediment assessments planned or completed: "Realizing Remediation," a summary of 33 past or current sediment remediation projects, led by either EPA or by a state environmental agency, and "Realizing Remediation 2," a 2002 update to the first report;
- U.S. Great Lakes Ecosystem Report which is submitted to Congress and the IJC which reports on progress under Annex 2 of the Agreement;
- EPA's First Report to Congress on the Extent and Severity of Contaminated Sediment, and the Second Report to Congress, published in 2001;
- Progress concerning Natural Resource Damage Claims located on the U.S. Fish and Wildlife Service's website at: <http://midwest.fws.gov/nrda/nrda.html> and highlighting notable sediment activities through website postings and other technology transfer venues in order to promote successful cleanup actions within and outside of the Basin.

We will continue to examine our reporting mechanisms to improve the quality of information reported.

2. Provide dedicated U.S. and Canadian funding and programs focused on contaminated sediment remediation of Areas of Concern in the Great Lakes.

The U.S. agrees with the intent of this recommendation. There is no doubt that more resources would quicken the pace of sediment remediation in the Great Lakes and elsewhere as it has been estimated that the total cost of remediating Great Lakes sediments range from \$2 billion to \$6 billion. But as we have explained in our responses to previous recommendations, dedicated funding and programs focused on this issue are limited.

We are hopeful that the Great Lakes Legacy Act could supply a substantial source of funding for remediating contaminated sediments via appropriations beginning in FY2004. But this source of funding is not guaranteed; it would depend on Congressional appropriations. The President's budget request for fiscal year 2004 includes \$15 million for Legacy Act projects.

There are some federal agencies that have dedicated resources for some remedial activities (GLNPO's sediment grants and the USACE's funding for environmental dredging under section 312 of the Water Resources Development Act), but the amount of funding available through these programs are by no means sufficient to address all the sites in the basin.

Some States have passed innovative bond issues to try and fund some of the needed work. Of particular note is the State of Michigan's \$650M Clean Michigan Initiative (CMI) which targets \$25M for contaminated sediment cleanups (particularly those contaminated with PCBs, DDT, and mercury), many of which have occurred in AOCs (Detroit River, Muskegon Lake, White Lake,

Deer Lake, River Raisin, and Rouge River); the CMI also includes \$5M to provide funding to local units of government and non profit entities to implement water quality protection or improvement recommendations in LaMPs and RAPs, other than the recommendations that involve remediation of contaminated sediments. Such state funding could be used to amass the 35% non-Federal cost-share required by the Great Lakes Legacy Act.

It has become more and more evident that many of the most complex remedial actions will have to take place under the authorities of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, or Superfund) Program. In the three EPA Regions that border on the Great Lakes (Regions 2, 3, and 5), for the years covering FY1987 - FY2002, the Superfund Program has spent over \$530M on remedial activities, including sediment cleanups, in the Great Lakes AOCs.

CERCLA also provides for the use of Natural Resource Damage Assessments (NRDAs) by the federal trustees. The federal trustees (as outlined in 40 CFR 300.600), led by the U.S. Fish and Wildlife Service, along with State and Tribal co-trustees, are responsible under the NRDA provisions of CERCLA and the Clean Water Act for the assessment of damages for injuries to natural resources which result from hazardous substances. Damages recovered from responsible parties based on these assessments are used to restore, enhance or replace natural resources and the services they provide. The federal trustees, working with State and Tribal co-trustees, are committed to pursuing NRD claims in the Great Lakes basin and nationally. NRDAs are taking place in many of the AOCs, including Saginaw River and Bay, Michigan, Kalamazoo River, Michigan, Fox River/Green Bay, Wisconsin, and Grand Calumet River/Indiana Harbor Canal, Indiana. Through these efforts, there has been progress towards restoring natural resources, along with their beneficial uses.

Another authority that has been used to address contaminated sediments sites in the Great Lakes (such as an arsenic-contaminated site in the Menominee River AOC) is the Resource Conservation and Recovery Act (RCRA). Additional sites will likely be addressed in the future using this authority.

Given the uncertainty of guaranteed funding, the U.S. Great Lakes Program will continue to look for opportunities to create unique partnerships, design innovative funding plans, and leverage additional resources to build upon our progress to date.

3. Strengthen leadership for Remedial Action Plan implementation with the focus on the restoration of beneficial uses.

The U.S. agrees that there is a need for renewed and strengthened leadership in implementing the RAP Program. Such a need was made clear in the General Accounting Office (GAO) May 2002 report on the U.S. AOC program.

EPA responded to the GAO report by telling Congress that the RAP Program would undergo a thorough review and assessment to determine what resources are needed to make substantial progress in restoring beneficial uses. The first step to achieve this will be to give the lead for the RAP program to GLNPO, which was completed in October 2002.

EPA also recognizes that we must address the restoration of beneficial uses for several compelling reasons:

- ▶ we are committed to restoring all U.S. AOCs;
- ▶ the AOCs are, in many cases, sources of impairments to the open lake waters; and
- ▶ we cannot complete work on the LaMPs until we clean up and delist the AOCs.

We intend to identify the resources needed to re-energize the AOC program and to better define what needs to be done to move the AOCs towards delisting. At a minimum, we want to secure a federal RAP liaison for each U.S. AOC, secure the active involvement of the Superfund Program in accelerating clean-ups, provide adequate support for state and local level RAP practitioners, and create an atmosphere which promotes a “bias for action” through renewed partnerships with our state partners, where we can openly and honestly assess the needs and barriers in each AOC.

It is important to recognize that several states have remained strongly committed to the RAP program throughout its existence. The State of Indiana, for example, has always supported a RAP coordinator position. This has been the case, to varying degrees, in all eight of the Great Lakes States.

Chapter 3: Toward Biological Integrity: The Challenge of Alien Invasive Species

Recommendations

The U.S. welcomes the IJC's continued attention to the very real threat of future introductions and movements of alien species and remains open to any suggestions on how these threats can be reduced and eventually eliminated.

The U.S. Coast Guard (USCG) is the lead agency for the development and implementation of a federal ballast water management (BWM) regime and is guided in its efforts by domestic legislation (Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA) as amended by the National Invasive Species Act of 1996 (NISA). The IJC's recommendations will be taken into account in their programmatic actions and it is anticipated that the majority of the recommendations will be addressed.

1. Immediately make existing voluntary guidelines for ballast water management practice mandatory and provide for measures of enforcement and compliance for all ships capable of carrying ballast water, including those currently not carrying ballast water.

The U.S. partially agrees with this recommendation. As it continues to carry out its responsibilities and authorities under NISA, the USCG intends to establish a national mandatory BWM program. This will include the application of best management practices to all vessels entering U.S. waters. However, due to the need for public consultation and comment, it cannot be established immediately. The Coast Guard anticipates transitioning to a mandatory national BWM program with a Notice of Propose Rulemaking ready for Departmental and Interdepartmental review by Fall of 2003 and a Final Rule in Summer of 2004.

2. Develop uniform protocols for performance testing of ballast water:

- **develop best practices and any improvements for ballast management operations**
- **establish by the end of 2003 enforceable interim biological standards concurrently, establish biological standards for ballast water discharges from all ships and for new technologies for ballast water treatment.**

The U.S. conditionally agrees with this recommendation. The development and implementation of "best management practices" will be part of the national BWM program mentioned in the response to the previous recommendation. The USCG's effort to develop treatment standards and

technologies is described below. There is a substantial amount of debate regarding whether an interim standard is an advisable approach. While an interim standard is included in legislation being considered by Congress at this time (H.R. 1080 and S. 525), implementation of this recommendation is conditional upon its passage and the publication of implementing regulations.

Concurrently, the USCG is leading a coordinated effort involving a wide range of stakeholders to develop a ballast water treatment standard. A notice requesting public comment on four possible approaches to setting standards for ballast water treatment, as well as answers to several specific questions related to setting, implementing, and enforcing such standards was published in the Federal Register on May 1, 2001 and the comment period closed on July 2, 2001. An Advance Notice of Proposed Rulemaking for a treatment standard, which incorporates the public comments, as well as domestic and international developments over the past 2 years, was published in the Federal Register on March 4, 2002, and the public comment period closed on June 3, 2002. The USCG anticipates that it will have a Notice of Proposed Rulemaking ready for Departmental and Interdepartmental review by Winter of 2003 and a Final Rule in the Fall of 2004.

The USCG has established a formal engineering test program with the U.S. Environmental Protection Agency (EPA) Environmental Technology Verification (ETV) program. This alliance is designed to accelerate the development and commercialization of ballast water treatment technologies through third party verification and reporting of performance. Some of the anticipated products of this collaboration are protocols for testing, verifying and reporting on ballast water treatment technologies. The Ballast Water Stakeholder Advisory Group assists in identifying the direction of the ETV efforts, and serves as conduits between the organizations they represent and the ETV program. A separate technical panel has been formed to develop the protocols, drafts of which should be available for distribution in early.

NSF International of Ann Arbor, MI, is the ETV partner organization for this effort, which currently is part of the Source Water Protection Technologies Pilot. More information on ETV, the pilot and NSF International is available at the ETV website:

www.epa.gov/etv

To support future enforcement efforts, the USCG R&D Center is also coordinating the development of an improved method for verifying that ballast water in a vessel was in fact taken on in mid-ocean. To establish the proof of concept, the Smithsonian Environmental Research Center convened a panel of experts on the physical, chemical, and biological characteristics of seawater. This group identified a set of parameters (e.g. trace metals, fluorescence of dissolved organic material and radium isotopes), that taken together, may be able to discriminate better between mid-ocean and coastal water than the salinity measurement currently used by port state control officers. Follow on testing of these parameters is being done by Smithsonian scientists, as well as researchers at Portland State University as part of the Columbia River ANS Initiative. The USCG is exploring opportunities for additional testing of the verification method in conjunction with other ballast water management research by scientists in New Zealand and Singapore.

3. Ensure all ships built after a certain date have a treatment technology incorporated in their construction as a condition for entry into the Great Lakes.

The U.S. conditionally agrees with this recommendation. The position of the U.S. delegation to the International Maritime Organization is that a biologically effective performance standard should be implemented by a date certain. This would ultimately be more effective than merely mandating incorporation of treatment technology without regard for its biological effectiveness. The requirement for treatment technology to be mandatory in new ships constructed after a date certain [2006] is included in legislation recently introduced in the current session of Congress (H.R. 1080 and S. 525), and the implementation of this recommendation is conditional upon its passage and publication of implementing regulations.

4. Design and implement economic incentives to encourage shippers to continuously improve (ISO 14000) Ballast Management Practices.

The U.S. agrees with the intent of this recommendation. The USCG is in the process of developing a program that it hopes will provide the necessary incentives for ship owners and operators to actively participate in projects testing ballast water treatment technologies. The details are being worked out, but are expected to include the conditional advance approval of experimentally installed systems with respect to future treatment standards. The USCG remains open to suggestions on other actions it can take that would serve as incentives. To prevent misuse of this approval, the program will contain safeguards to insure that the proposed studies have a reasonable chance of being as effective as ballast water exchange and are conducted according to well-established principles of experimental design and analysis.

A notice requesting public comment on how such a program might be structured was published in the May 22, 2001 edition of the Federal Register and the comment period closed on July 23, 2001. The Coast Guard anticipates that it will have an Interim Rule ready for Departmental and Interdepartmental review by Spring of 2003.

5. Fund research recommended by expert regional, national and binational panels, task forces and committees, especially focused on:

- **Research (including research for biological standards, criteria and indicators) for ballast water treatment necessary to drive technology, product development, and ship design**
- **Research to develop alternative technologies including biocides to achieve new standards and criteria for the elimination of Alien Invasive Species in ballast water**
- **Research and technology development to reduce entrained and accumulated sediment in ship ballast water and tanks, and**
- **Research to develop analytical tools and procedures to permit the identification of new invasive species and to link these species to their possible points of origin and vessels of introduction**

The U.S. agrees with the intent of this recommendation.

Effective policies and control programs are founded upon a scientific understanding of the potentially invading species and the mechanism or vector for its introduction. A complete catalog of all U.S. research activities is beyond the scope of this report; however, the following brief summary is provided to convey the scope of funded initiatives, through Federal, State, academic, and private research institutions, that continue to investigate methods for addressing the commercial shipping vector.

Previous sections have described the Coast Guard's efforts to develop treatment standards and verify on-board treatment technology performance. The cooperative project between NOAA, USEPA, USCG, and the Great Lakes shipping industry, is investigating the potential threat of "no ballast on board" (NOBOB) vessels and will prioritize actions to address this issue.

Additional funding is targeted through such competitive processes as the 2002 Department of Commerce (NOAA), Department of the Interior (USFWS) and Department of Transportation (Maritime Administration) Ballast Water Treatment Technology Demonstration Program, 2003 NOAA-Sea Grant Aquatic Nuisance Species Research Competition, and EPA Great Lakes National Program's annual funding program.

Great Lakes States also contribute to our understanding of commercial shipping treatment technologies, including the work of Michigan Department of Environmental Quality's ballast water treatment project in which hypochlorite and copper ion were evaluated as potential ballast water biocides. A follow-up study to address the issues identified in the first investigation will be completed in September 2003.

In addition, the provision for expanding research into the pathways and taxonomy of invasive species, as well as the further development of control technologies, is included in legislation being considered by Congress at this time (H.R. 1080 and S. 525).

6. Issue the Commission a reference to coordinate and harmonize binational efforts for action to stop this ongoing threat to the economy and the biological integrity of the Great Lakes.

The U.S. supports further discussions with the IJC and our Canadian partners to identify the potential scope of such an effort.

The U.S. values the IJC's recent efforts to identify and communicate the threat posed by invasive species in the Great Lakes basin ecosystem. The U.S. Government responded rapidly to the IJC's July 2002 letter requesting immediate action to address the potential spread of Asian Carp to the Great Lakes. We have also taken note of the IJC's letter of October 10, 2002, raising concern about the potential linkage between changes in Lake Erie and a possible increased threat of aquatic invasive alien species introductions.

We agree that a coordinated binational approach is essential to address invasive species, and we recognize the IJC's unique role as an impartial advisor to the GLWQA Parties. The U.S. believes that additional consultation with the Government of Canada and the IJC is essential in order to

identify how a reference to the IJC could help facilitate more effective prevention policies and programs.

Such consultation would be timely given language included in recently introduced legislation (H.R. 1080 and S. 525) during the current session of Congress that would authorize the U.S. Department of State to enter into negotiations with Canada on an invasive species reference to the IJC. It should be noted that the language in the legislation allows for a reference that goes beyond the subject of ballast water.

The U.S. believes that the scope of a potential reference must be carefully considered to ensure that it would advance the many ongoing programs to address invasive species and would not be duplicative of binational discussions and work occurring in existing forums. We believe that our efforts would benefit from additional input and support from the IJC, and we look forward to continuing this dialog.