HEALTHY LAKES HEALTHY LIVES

HEALTHYLAKES.ORG

Testimony of Chad W. Lord
Policy Director, Healing Our Waters-Great Lakes Coalition
Before the House Committee on Transportation and Infrastructure's
Subcommittee on Water Resources and the Environment
"The Great Lakes Restoration Initiative: A Review of the Progress and Challenges in Restoring the Great Lakes"

September 30, 2015

Chairman Gibbs, Ranking Member Napolitano, members of the subcommittee – thank you for the opportunity to share the views of the Healing Our Waters-Great Lakes Coalition with you on the progress we're seeing and the challenges that remain in restoring the Great Lakes.

As you may know, the Healing Our Waters-Great Lakes Coalition is comprised of more than 120 environmental, conservation, hunting, and fishing organizations; museums, zoos, and aquariums; and businesses representing millions of people whose goal is to restore and protect North America's greatest freshwater resource – our Great Lakes. The Great Lakes are a global resource. Over 30 million people depend on them for their drinking water, and millions more benefit from the business, industry and commerce that is connected to them. Today, the lakes suffer from a legacy of toxic pollution, the introduction and spread of invasive species, and the loss and degradation of habitat. Our Coalition's goal is to continue to implement our region's restoration blueprint[1] to stop sewage contamination that closes beaches and harms recreational opportunities; clean up toxic sediments that threaten the health of people and wildlife; prevent polluted runoff from cities and farms that cause harmful algal blooms which poison drinking water; restore and protect wetlands and wildlife habitat that filter pollutants, provide a home for fish and wildlife, and support the region's outdoor recreation economy; and prevent the introduction of invasive species, such as Asian carp, that threaten the economy and quality of life for millions of people.

I don't think it's too bold to say that the Great Lakes Restoration Initiative is working. Because of the GLRI, the region has been able to undertake one of the world's largest freshwater ecosystem restoration projects. Non-governmental groups, industries, cities, states, and federal agencies are forging public-private partnerships to clean up toxic hot spots, restore fish and wildlife habitat, and combat invasive species—partnerships that may never have come together had it not been for the GLRI. The GLRI's size and scope means it plays a central role in successfully restoring and protecting the Great Lakes. Rather than just accelerating progress, it has actually catalyzed critical restoration action that likely would have never happened otherwise. The GLRI has organized an enormous region of the country to protect one-fifth of the world's surface drinking water on which more than 30 million people depend. It is indeed the "largest investment in the Great Lakes in two decades."[2]

This work is being done because cleaning up the Great Lakes is critical for the health and quality of life of the region. It also drives economic development – and jobs – in communities all around the basin. Investments in Great Lakes restoration are creating jobs and leading to long-term economic benefits for the Great Lakes states and the country. A Brookings Institution report shows that every $1 invested in Great Lakes restoration generates at least $2 in return, making Great Lakes restoration one of the best

[1] GLRC. 2005. "Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes."
[2] Accessed at http://www.glri.us/priorities.html

investments on the dollar in the federal budget.[3] Research from Grand Valley State University shows that the return for some projects is closer to 6-to-1.[4] The University of Michigan has also demonstrated that over 1.5 million jobs are connected to the Great Lakes, accounting for more than $60 billion in wages annually.[5] According to the Great Lakes Commission, more than 37 million people boat, fish, hunt, and view wildlife in the region, generating over $50 billion annually.[6] Great Lakes businesses and individuals account for about 29 percent of the U.S. gross domestic product, according to Bureau of Economic Analysis data.[7]

Jobs are being created by the efforts to clean up the Great Lakes and restore fish and wildlife habitat. These jobs include wetland scientists, electricians, engineers, landscape architects, plumbers, truck drivers, and many others. While we do not know how many jobs have been created to clean up the Great Lakes, it is likely in the thousands. Consider:

- 125 jobs were created for a $10 million project to restore fish and wildlife habitat in Muskegon Lake, a Great Lakes Area of Concern in Michigan.
- 177 people are employed to control the invasive sea lamprey in the Great Lakes, which costs the U.S. government around $20 million annually.
- 174 jobs were created, some of which were filled by at-risk youth, to remove dams and other barriers in a 150-mile stretch of the Milwaukee River system.

Specifically, stories like that of business owner Jim Nichols of Carry Manufacturing are increasingly common. Jim tells of how GLRI projects are adding new orders for his manufacturing business. Carry Manufacturing has manufactured water control equipment since 1987. Their employees are being kept busy building submersible pumps for GLRI projects that flood duck habitat or drain areas to re-establish native habitat for sport fishing and waterfowl hunting. The jobs add up when you begin counting the men and women at other companies who manufacture the pipes for the pumps, the control structures in which the pumps are housed, and the hunters, anglers, and wildlife watchers that benefit from the improved environment the pumps help create.

And these projects aren't just economic drivers. Great Lakes restoration projects are producing results across the region[8]:

- Two Areas of Concern – Deer Lake, Mich. and White Lake, Mich. – were delisted in 2014. Areas of Concern are the most-polluted harbors, rivers, and waterways in the region. The Presque Isle, Pa., Area of Concern was delisted in 2013. The management actions necessary for delisting Waukegan Harbor, Ill., Sheboygan Harbor, Wis., and the Ashtabula River, Ohio, have also been completed. The GLRI has accelerated the cleanup of toxic hotspots by delisting three formerly contaminated sites—in the previous two decades before the GLRI, only one site had been delisted.
- Between 2010 and 2014, 42 beneficial use impairments (BUIs) at 17 AOCs were removed in Illinois, Indiana, Michigan, New York, Pennsylvania, and Wisconsin, more than quadrupling the total number of BUIs removed in the preceding 22 years. BUI's include drinking water restrictions, beach closings, and degradation of fish and wildlife habitat. More BUIs have been removed since the GLRI began than between 1987 and 2009.

[3] Austin, J., et al. 2007. "Healthy Waters, Strong Economy: The Benefits of Restoring the Great Lakes Ecosystem."
[4] Isely, Paul, et al. 2011. "Muskegon Lake Area of Concern Habitat Restoration Project: Socio-Economic Assessment."
[5] Michigan Sea Grant. 2011. "The Great Lakes: Vital to our Nation's Economy and Environment."
[6] Great Lakes Commission. 2007. "Great Lakes Recreational Boating's Economic Punch."
[7] World Business Chicago. 2013. "Great Lakes & St. Lawrence Region: 2013 Economy Profile Update."
[8] Data from EPA's 2015 Congressional Budget Justification and July, 2015, report to Congress.

- From 2004 to 2009, the Great Lakes region was the only area in the country to show a gain in wetland acreage. Now the GLRI is building on that foundation with a goal to restore one million acres in the basin. So far, the FWS, NPS, NRCS, and NOAA (among others) have restored, protected, or enhanced over 150,000 acres of wetlands and other habitat.
- Federal agencies used GLRI support to increase the number of acres of farmland enrolled in Farm Bill conservation programs in priority watersheds by more than 70 percent.
- More than 500 dams and barriers were removed, allowing fish to access more than 3,400 miles of rivers.

These numbers are impressive. The stories behind them illuminate the results and accomplishments we are seeing. The Coalition has documented more than 100 restoration success stories across the region.[9] Among them:

- Duluth, Minn. Removing 200,000 cubic yards of toxic mud from the bottom of Stryker Bay has made the bay safe to swim in once more and fish and wildlife are returning. Six acres adjacent to the bay have also been cleaned up and will be redeveloped into an office park hosting a fabrication shop and a warehouse.
- Duluth, Minn. Removing 11,000 cubic yards of wood waste from the wetland at Grassy Point created wildlife habitat that attracts dozens of bird species every spring. New trails provided public access to the site.
- Marysville, Mich. The city of Marysville replaced a failing seawall with a natural, sloping habitat and wetland area. The sloped shore has reduced the destructive power of the waves in the river while also addressing the loss of shoreline wetlands along the St. Clair River. The project, which provides valuable fish and wildlife habitat, received an award from the American Society of Civil Engineers.
- Near Green Bay, Wis. At the Brickstead Dairy, cover crops have been planted on 100 acres, reducing runoff and sedimentation into waterways and improving water quality. Over three miles of grassed waterways are planted and edge-of-field and in-stream monitoring stations have been installed to measure the water quality improvements.
- Near Green Bay, Wis. Restoring barrier islands in Green Bay is providing fish habitat that has allowed bluegill, largemouth bass, and pumpkinseed fish to return. On the island chain, nesting water birds, shorebirds, and other invertebrates are benefiting from the newly constructed land.
- Ashtabula, Ohio. At the Ashtabula River in Ohio, a sediment cleanup and habitat restoration project has restored the lower two miles of the river and advanced efforts to get it de-listed as a Great Lakes Area of Concern. The project has improved water quality and deepened the river channel, making the lower Ashtabula suitable again for maritime commerce, fishing, and recreation boating.
- Northwest, Indiana. The Grand Calumet River in Indiana, which flows through a heavily industrialized area south of Chicago, was for years considered America's most polluted river. Thanks to a major cleanup, a large wetland was restored and more than 575,000 cubic yards of toxic mud was removed from the Lake Michigan tributary. The restoration project addressed pollution that had led to fish consumption advisories, drinking water restrictions, beach closings, habitat destruction, and an array of other environmental problems.
- Freedom, N.Y. At Clear Creek in Freedom, New York, excess stream erosion and sediment, in-stream barriers, elevated water temperatures, and competition from invasive fish restricted brook trout to a few tributaries in the watershed. A Great Lakes Restoration Initiative project restored 1,200 linear feet of in-stream habitat and re-established fish passage over a sheet-pile grade control structure, reconnecting six miles of prime trout habitat.

[9] Found at www.healthylakes.org/successes/.

Even these results may not fully capture what is actually happening on the ground. In just one coastal wetland project in New York, one of our members was able to describe these results: 1) habitat modifications led to a remarkably positive response by fish. Diverse species of fish quickly returned to the restored site; 2) the restored sites led to increased muskrat populations; 3) wetland vegetation showed greater species diversity, richness, and evenness on habitat mounds compared to before; 4) the restored habitat was used by a greater diversity of indicator marsh birds, and observations suggest that marsh birds may have return to the restored sites within two years following restoration; 5) the restored sites supported the greatest diversity of reptiles and amphibians; 6) community, economic, and education outreach efforts were strong components of these projects, which provided opportunities for the local community to gain a better understanding of the Great Lakes system.

How the region is accomplishing all this work is as impressive as what has been done. The GLRI, which President Obama first proposed for fiscal year 2010, is a model for large, landscape-scale restoration. It ensures that the focus remains on the highest regional priorities that were identified through a large stakeholder process in 2005.[10] It could also provide an outlet for the United States to meet its obligations under the new Great Lakes Water Quality Agreement with Canada. The GLRI is a critical component towards ensuring that the goals we set for ourselves in both the agreement and comprehensive plan can be achieved.

Additionally, the GLRI sought to fix problems the Government Accountability Office identified in 2003 when it complained that, in general, there was inadequate coordination among federal agencies and between federal and non-federal stakeholders. Now, the EPA can quickly convert the funding it receives to supplement restoration activities by passing it through to other federal agencies like the Fish and Wildlife Service, NOAA, NRCS, and the National Park Service, so they can direct it through their existing, authorized programs at the region's highest needs. This structure allows for funds to move quickly from EPA through the interagency agreements EPA has with the other agencies and onto the ground to complete important restoration work. This model also ensures accountability through the establishment of an "orchestra leader" (EPA), helps accelerate progress, and avoids potential duplication, all of which help save taxpayers money while focusing efforts on the highest, consensus-based priorities.

The Government Accountability Office seemed to recognize these benefits too in its most recent report.[11] GAO found that the EPA and the other federal agencies had "allocated almost all of the $1.68 billion available for the GLRI" in the reporting period examined.[12] It also highlighted how the GLRI has changed how the federal agencies plan for their work. In the past, each agency identified its own GLRI work. Now, through the use of subgroups, agencies meet and agree on strategies for dealing with restoration issues before identifying the work each agency will undertake to achieve common goals.[13]

Even with the tremendous strides the region has made in addressing many of the issues it faces in implementing an effective and efficient Great Lakes restoration program, we know that there is still work to be done to improve program delivery. No program is perfect. The GLRI should be continuously reviewed and changes made to reflect the changes to the lakes, deficiencies that have arisen or have yet to be addressed, or new threats that have emerged.

---

[10] Great Lakes Regional Collaboration

[11] GAO. 2015. "Great Lakes Restoration Initiative: Improved Data Collection and Reporting Would Enhance Oversight."

[12] GAO report. 2015. Pg. 18. GAO used an obligation benchmark versus an outlay benchmark. It is important to note the reasons GAO highlighted for why federal agencies may not have expended all their GLRI funds: 1) Many projects take several years to complete; 2) GLRI funds are available for obligation two fiscal years (the year the appropriation was made and the following year); 3) GLRI funds can be used for 7 additional years to liquidate and adjust those obligations; 4) final payments are made from the agencies to recipients after projects are completed; 5) lastly, weather events caused some GLRI projects to be completed later than planned.

[13] GAO report. 2015. See page 34.

Making these adjustments is important because the health of the Great Lakes continues to be seriously threatened by problems such as sewage overflows that close beaches, toxic pollution that poses a threat to the health of people and wildlife, algal blooms that harm local drinking water supplies, and invasive species that hurt fish and wildlife populations and our outdoor recreation economy. While we have cleaned up four AOCs, there are still 27 more to go. Algal blooms in Lake Erie and other lakes still result in cancelled charter boat tours and closed beaches. Communities are still dealing with legacy pollutants that have led to drinking water restrictions, beach closings, and fish consumption advisories. Our work is not done. Maintaining federal support is needed.

The Coalition's scientific advisers also point to emerging concerns that we are just now beginning to understand. These concerns join a long list of multiple stresses that the Great Lakes continue to face, even though the GLRI is working to protect the lakes:

- Habitat loss, including loss of coastal wetlands
- Nutrient loadings (both point and nonpoint source) and impacts, such as harmful algal blooms and hypoxia or dead zones
- Toxic chemical loadings (both point and nonpoint source) and impacts, including chronic exposures and potential effects in certain fish and wildlife
- Hydrological changes such as hardening of shorelines, damming of tributaries, and lake level regulation
- Fishery pressures, including overfishing
- Nonnative species introductions, including inadvertent introductions of species such as zebra and quagga mussels with significant ecological implications
- Land use changes, including from forest or grassland to silviculture and agriculture, and resulting impacts due to changes to flow regimes, nutrients and sediment loads
- Coastal development, which cuts across several aforementioned stresses, including habitat loss, land use changes, and hydrological changes.[14]

Perhaps no other emerging issue is as serious as climate change. There is already evidence of climate change impacts in the region, including surface water temperatures and changes in the frequency and intensity of storm events. Ongoing, human-induced climatic changes will only bring additional changes to the lakes with implications for existing stresses. Increased storm intensity and frequency can lead to increased loads of nutrients and other contaminants such as sediment, pathogens, and chemicals of emerging concern. This pollution can come from both nonpoint sources like agricultural fields and point sources like combined and sanitary sewer overflows in urban areas. These changes will challenge infrastructure in both rural and urban areas. The general warming of waters due to climate change also has implications for both new aquatic invasive species threats (e.g. *Hydrilla*, water lettuce) as well as existing aquatic invasive species that will have new potential to expand their range northward. Species already present in the lower lakes such as water chestnut, European frog-bit, and flowering rush all are poised to spread northward. Other climate impacts include alterations to lake stratification with implications for hypoxia/anoxia, organismal health/behavior, and internal nutrient cycling. Finally, climate change has implications for water levels and supplies with ongoing questions about likely overall impacts decades in the future (e.g., generally greater or lesser basin supplies throughout the basin and implications for lake levels and system connectivity). How these changes impact the people living in the basin is of great concern.

The Great Lakes are also facing a new host of chemicals little understood just a decade ago. Nanoparticles, pharmaceuticals, personal care products, and brominated flame retardants are being

[14] See for example Bails et al. 2005. "."Allan et al. 2013. Joint Analysis of Stressors and Ecosystem Services to Enhance Restoration Effectiveness. "Proceedings of the National Academy of Sciences of the United States of America." 110: 372-377.

detected with increasing frequency. There are ongoing questions that remain unanswered about these new pollutants like their sources, cycling (including levels in different media), and exposures and effects, including potential implications of multiple chemical exposures.[15]

So, what changes should be made to the GLRI so the people in Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin can continue to protect and restore the Great Lakes?

To begin with, this Congress should remove all doubt that the region is on the right path and pass H.R. 223, the Great Lakes Restoration Initiative Act. Currently, EPA uses its existing authority and the legislative language provided by appropriators as the basis for its coordinating role. Passing legislation creates greater certainty for the program and allows us to see the job through to the end.

In particular, without an authorization, Great Lakes restoration efforts are at risk from changing administrative and congressional priorities. Congress has not passed legislation to make the Great Lakes Restoration Initiative and other Great Lakes programs a long-term priority. Authorizing legislation will provide a legislative vehicle for Congress to make the necessary investments in the Great Lakes annually for years to come.

The GLRI Act helps ensure future success by targeting resources efficiently and effectively to improve water quality, protect the health of people and wildlife, create jobs, and uphold the region's quality of life. It helps invest resources in the right areas and the right places. It facilitates continued regional collaboration. It helps better monitor restoration progress and ensure that restoration efforts are guided by science so that efforts can be adjusted to make them as effective as possible. It ensures that restoration efforts are transparent and allow for citizen input.

While H.R. 223 authorizes the GLRI for five years at current funding levels, it does not cover a few key priority areas that were in past bills and this difference should not be ignored by Congress. For example, the Great Lakes National Program Office (GLNPO) needs reauthorization. GLNPO is the primary office within EPA for handling Great Lakes matters, including the GLRI, the Great Lakes Water Quality Agreement (GLWQA), the Great Lakes Legacy Program, Remedial Action Plans for Areas of Concern and Lakewide Management Plans. The Great Lakes Legacy Program also needs to be reauthorized. The Great Lakes Legacy program was first authorized in 2002 and has been extremely successful at removing contaminated sediment from U.S. Areas of Concern (AOC). The Legacy program was last reauthorized through 2010; however, appropriators have continued to fund the program, currently as a subset of the GLRI. We believe the authorization of the Legacy program should be extended.

Lastly, while these don't necessarily demand congressional action, we want to highlight both the Federal Great Lakes Interagency Task Force and the Great Lakes Advisory Board. The Great Lakes Interagency Task Force (IATF) brings together eleven U.S. Cabinet and federal agency heads to coordinate restoration of the Great Lakes among the different agencies. The IATF was created by President George W. Bush under Executive Order 13340 in 2004 and is unique in that it asks the federal agencies to coordinate more regularly on Great Lakes matters. The advisory board was put together in order to represent a broad range of interests to provide EPA and the other federal agencies with stakeholder input on Great Lakes protection and restoration priorities.

The administration can also take important steps in addressing deficiencies.

[15] Further research on these issues (including more systematic monitoring for numerous CECs, potential human health and ecological impacts, and potential for green chemistry-type approaches to address the issue in a more proactive manner) is needed in the basin.

First, we believe that the investments of the GLRI must not be undermined by poor policy choices made as part of any regulatory process. Congress has graciously provided more than $1.9 billion for over 2,500 projects to clean up toxic hot spots, restore wildlife habitat, and keep beaches open, among many other important activities. Poor policy choices on a range of activities – either new or ongoing – can undercut restoration activities, delay results, and lead to inefficient uses of the limited resources entrusted to the region. For example, continuing to dispose of dredge material in the open waters of Lake Erie can undermine attempts to end algal blooms there. Unchecked energy development can lead to water impairments that reverse water quality or habitat improvements. Inadequate ballast water regulations could lead to new aquatic invasive species, dealing a blow to the ongoing work of managing and controlling impacts from existing invasive species throughout the region. We view policy setting to be a part of the restoration agenda and affects the success or failure of us reaching our goals.

Second, we have supported the GLRI Action Plan's consolidation of the Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes' eight priorities into the current Action Plan's five focus areas: cleaning up toxics and Areas of Concern, combating invasive species, promoting nearshore health, restoring wetlands and other habitat, and tracking progress.

We also supported the federal Task Force's further refinement of the focus areas into three key priorities under them: accelerating the cleanup of Areas of Concern, reducing harmful algae in three priority watersheds, and preventing the introduction of new invasive species.

We support the new Action Plan continuing its focus on these three priority areas. These areas continue to be the biggest sources of stress for the lakes contributing to what scientists have described as "ecosystem breakdown…where intensifying levels of stress from a combination of sources have overwhelmed the natural processes that normally stabilize and buffer the [Great Lakes] system from permanent change."[16] The three priority areas reflect the causes of this ecosystem breakdown because they either represent the severe historic damage caused to the lakes nearshore (AOCs) or the new stresses from human-induced sources (invasive species or nutrient pollution). We believe that it is appropriate for the GLRI to continue prioritizing them in the next plan, especially since the problems they represent took decades to develop and will take decades more of focused attention to solve.

Specifically, for these priority areas:

AOCs. We believe that the implementation of the current Action Plan has generally struck the right balance between focusing on completing all management actions in some AOCs to delist them while at the same time investing in others that may not be taken off the cleanup list for several years. We need to take advantage of getting work done in targeted AOCs where it is possible to move quickly in taking all the actions necessary to delist. However, we must get ready in future years to take similar action in other AOCs. Supporting some projects in all AOCs helps ensure we are lining up future progress.

Nutrients. We support greater targeting of priority watersheds for nutrient reduction work with GLRI and other conservation funds. Our Coalition's Technical Advisory Committee identified five areas that are particularly important because they represent areas that suffer from multiple assaults.[17] Our own work demonstrates our willingness to invest in targeting priority areas for restoration and protection and we continue to believe in that approach. We believe that given how long it will take to have an impact on the problem we need to continue prioritizing areas to make meaningful progress. Importantly, how we measure progress in these areas will be critical. We would like to see a tighter link to water quality

[16] Bails, et.al. 2005. "Prescription for Great Lakes Ecosystem Protection and Restoration." P. 1

[17] The five focus areas the Coalition identified are St. Louis Bay and St. Louis River; Chicagoland (which includes Northwest Indiana; Saginaw Bay; Western Lake Erie; Eastern Lake Ontario. Accessed on June 27, 2013: http://healthylakes.org/press-releases/coalition-targets-5-great-lakes-restoration-priority-areas-2/

indicators as measures of progress in this focus area. We also want to see the best practices used in these priority areas identified and shared with the wider region so everyone can take advantage of the best methods to reduce nutrient runoff. Recent research suggests that the current suite of best management practices may not be sufficient for tackling the current drivers of dissolved phosphorus loads, so an investment in on-the-ground testing and modeling of new approaches will be key.

We would also like to see clear agreement between U.S. EPA and the U.S. Department of Agriculture toward the achievement of a common set of water quality objectives in priority watersheds. This must include a clear understanding of anticipated timeframes for achieving these objectives.

Invasive Species. We believe that this priority should focus on the control and management of invasive species within the region. Prevention should be addressed through robust regulatory action, which is outside the purview of the Action Plan, but, as is highlighted above, must be coordinated with the goals and actions being identified over the next five years so as to not undermine the GLRI's investments. We also acknowledge that funding for prevention activities is available through other agency programs and does not have to be funded out of the GLRI. This is particularly true for Asian carp activities where prevention funds have been provided in the Army Corps and Fish and Wildlife Service's budgets. We believe that future carp prevention activities should increasingly be funded through the base budgets of the federal agencies leaving the GLRI to focus on other priorities.

However, while focusing on the three priorities is important, they are not the only problems or stresses facing the lakes. We expect the GLRI to also continue investing in all five focus areas and to fund activities in all these areas as a prescription for recovery[18] and are glad that the Interagency Task Force will be creating additional subgroups to discuss and agree on scope and funding for agency work in the other focus areas.

Third, the selection and prioritization process within the GLRI for projects outside of AOCs is well rounded and has functioned well. In particular, HOW supports project selection criteria that emphasize projects that are able to advance applicable ecological priorities of existing plans. Such comprehensive planning has been done throughout the Great Lakes ecosystem that linking the goals of the new GLRI Action Plan to those of existing plans is a smart and efficient use of federal dollars and will ensure sufficient coordination between efforts.

We also continue to believe that project selection criteria should include a project's ability to adequately incorporate climate smart practices. Projects that accomplish goals from multiple focus or priority areas should be prioritized. Selection criteria should also favor projects that include approaches to monitor and assess outputs and outcomes and when working in under-served communities, project selection criteria should include a project's ability to adequately address environmental justice and human health issues as well as a description of how the local community will be meaningfully engaged. We have seen progress in the integration of these criteria for some request for proposals (most notably in monitoring requirements from NOAA and the National Fish and Wildlife Foundation). The new action plan also calls for incorporating climate resiliency criteria for GLRI projects.

In addition, the GLRI should prioritize a portion of funding for new and innovative projects that have the ability to translate to other locations throughout the basin if successful. There are many restoration problems we know how to solve, but there are many we do not. We must be willing to invest in innovative approaches that have the potential to greatly benefit the system in the future. We must also be willing to assess the success of these new approaches through coupled research and monitoring and be equally willing for them to fail and learn lessons from that failure.

[18] Bails. Pp. 11-15

Lastly, to the extent possible, we'd like to see more consistency when request for proposals are released each year. A consistent, annual date will assist non-governmental organizations and their partners with their long-term planning.

Fourth, improving how we report on success is vital. Generally, coalition groups appreciate and support the integration of monitoring requirements for projects that are being undertaken. Successful monitoring at the local project scale has assisted HOW groups in documenting short- and long-term successes of their projects (see discussion about New York project above). It allowed them to evaluate the lessons learned and then apply those lessons to other projects. However, while monitoring exists at a very local level, and some evaluation is occurring, it's far from clear how comprehensive this system is and how these local efforts add up to a well-monitored, scientifically-assessed system. In other words, we remain worried that we aren't as effective on larger lake-wide scales at monitoring, scientific assessment, and project evaluation.

Indeed, monitoring projects is a key element of tracking success. To target federal dollars effectively, we must know how existing projects are impacting the system. We do not believe that every project must be monitored, but more monitoring and scientifically evaluating a careful subset of them will help ensure we understand whether we are achieving the ecological outputs (e.g., number of acres restored or toxic sediment remediated) and outcomes (e.g., water quality improvements), and allow us to learn as we restore. Even with appropriate monitoring and evaluation at the project (short term) scale, there remains a critical gap between these efforts and the long-term, lake-wide indicators. There needs to be greater support for scientific monitoring and assessment at sub-basin (medium term) scales (i.e. smaller than entire lakes). These assessments should be able to tell us if the collection of projects in that region are improving ecological conditions on time scales appropriate for adaptive management.

This work requires additional GLRI resources. It also requires, to the extent possible, a stronger commitment that funds for monitoring will be available beyond just a couple of years. This work must also not be driven completely be the federal agencies. The region is rich in institutions of higher learning and strong non-governmental partners with incredible science capability. Federal agencies must demonstrate that they value this expertise and consult more deliberatively with these partners in accomplishing related science-based and research goals.

Our bottom line: we want to see the incorporation of a robust science-based restoration framework that involves all stakeholders in GLRI implementation. Our Coalition has called for this since 2010 when we said:

> Although we believe that the majority of GLRI funds should be targeted towards restoration work, we acknowledge that some GLRI funds must be used for basic research and monitoring to ensure the Initiative is successful. However, GLRI-funded research should be part of a detailed research agenda that illustrates a direct connection to improving the health of the Great Lakes ecosystem. This knowledge must also be applied to future projects and programs.[19]

In 2011, we wrote the following:

> Although the bulk of Federal GLRI investments should continue to be focused on the highest priority on-the-ground, in-the-water activities that produce the greatest measurable restoration results, some funding should be set aside for basic science, research, and monitoring. Investments in these areas are important because they tell us how to adapt plans. They make sure

[19] Healing Our Waters-Great Lakes Coalition. August 30, 2010. Written communication to Cameron Davis and Gary Gulezian.

> we are continuing to prioritize the most needed projects and are using the most effective implementation methods. Because research and on-the-ground work go hand in hand, it is important that both receive resources. It is also important that funding for grants goes to colleges, universities, and other groups that are also doing important research and does not just stay at Federal agencies.[20]

This research and monitoring agenda can be accomplished through a strategy that addresses two efforts: first, integrate science support for adaptive management through comprehensive project assessment and evaluation; and second, provide scientific support that guides and improves restoration efforts. Any adaptive management framework must:

- Help the region understand and assess the cumulative impacts of the hundreds of restoration projects funded by the GLRI at sub-basin, individual lake, and basin-wide scales.
- Increase the efficiency and cost-effectiveness of restoration activities.
- Lead to understanding the actions necessary to facilitate implementation of effective adaptive management approaches in future years.
- Maximize the success of restoration projects by implementing science-guided corrective actions.
- Advance restoration science by improving techniques and methods.
- Identify key knowledge gaps associated with each focus area.
- Provide a single clearinghouse that integrates project results and enables resource managers to better analyze and prioritize subsequent restoration actions.
- Include every stakeholder with an interest in the entire program to maximize buy in and to help shape monitoring and modeling choices around the framework.

There are several examples of this science integration that can serve as models. Some are external and focused at the program scale, such as those associated with restoration efforts in the Chesapeake Bay, Everglades, and Puget Sound. Others can be found within the region at the project scale, such as the multi-sector effort to restore native fish spawning habitat in the Lake Huron to Lake Erie Corridor connecting channels. The key features of these efforts are:

- Science and action that are coupled, iterative, and incorporated directly into restoration
- Successive projects that build on knowledge developed from previous projects
- Projects consider multiple stressors (i.e., wetland loss and climate change)
- Projects are based on existing restoration plans and considers impacts beyond the individual project site
- Successive projects are both more cost-efficient and effective
- Project teams are comprised of federal, state, tribal, academic, private sector and non-governmental partners, all as appropriate, with each contributing their expertise

Fifth, accountability has been a major theme of the GLRI since its inception. The original action plan clearly stated:

> The Initiative is an unprecedented opportunity to heal the ecosystem. With this unprecedented opportunity comes unprecedented responsibility, however, for *all of us* to demonstrate we are achieving the results intended in the Action Plan. We will use transparent means of demonstrating how public dollars are being invested as directed by the best available science.[21] (Emphasis in original.)

[20] Healing Our Waters-Great Lakes Coalition. August 12, 2011. Written communication to Cameron Davis and Susan Hedman.
[21] White House Council on Environmental Quality, et.al. "Great Lakes Restoration Initiative Action Plan: FY2010-FY2014." P. 5

Congress also instructed EPA to "Establish a mechanism for monitoring and reporting on progress."[22] Originally, EPA created the Great Lakes Accountability System (GLAS) to fulfill this responsibility. GLAS was designed to be the "primary mechanism for collecting information to monitor and report on GLRI progress" and present the "'big picture' of who is receiving GLRI funds and what they are doing with the money."[23] For a long time GLAS did not effectively track how the GLRI was being invested in the region. GLAS was subsequently updated to reflect the breadth of funded projects from all government sources. It also included a useful map detailing the location of where the project is taking or has taken place. However, as the July 2015 GAO report pointed out, GLAS still had problems. Some information was inaccurate and there weren't sufficient data controls. A new system was recently inaugurated to take the place of GLAS. We haven't evaluated the new system, but we will be looking at it critically to see if it adequately tracks project data to ensure that we are measuring project outcomes that can tell us what impact Great Lakes restoration efforts are having on the lakes. We will also look to see if the data being collected is such that it can be used by all restoration stakeholders in planning future projects.

Lastly, although we believe that having consistent priorities to invest in over time is critical to realizing tangible progress, buy-in from the Great Lakes community is also critical to the overall success of the GLRI program. Therefore, the federal agencies – in the spirit of the Great Lakes Regional Collaboration that brought 1,500 people together to produce our restoration blueprint – must consistently engage the public on an annual basis to understand what progress has been made the previous year and whether the restoration priorities of the Great Lakes community, and therefore the GLRI, should change based on those assessments. It's doubtful that significant modifications will be required on such a short time scale. However, it's important to fully engage the non-federal stakeholder community on a regular basis to ensure that not only federal agencies but state, local, non-governmental, tribal, agricultural, and commercial interests subscribe to restoration priorities as well. This will assist in aligning resources at all levels of government and ensuring well-coordinated implementation. It will also ensure that the federal agencies stay open to better ways of doing things. There are different ways to achieve this goal, such as creating coordinating committees for each focus area modeled on the existing Asian Carp Coordinating Committee, or leveraging the work of the Great Lakes Water Quality Lakewide Management Plans (LaMPs). The federal agencies do not have all the answers, and the best way for the region to feel invested in the implementation of Great Lakes agenda is for all stakeholders – Tribes, states, cities, NGOs, etc. – to assist in developing the GLRI work plan each year.

The Great Lakes Restoration Initiative is working, and with ongoing adjustments it will stay focused on the most pressing problems facing the Great Lakes today. This simple initiative has given the region an opportunity to protect and restore the world's largest freshwater ecosystems. It has spurred public-private partnerships between non-governmental groups, industries, cities, states, and federal agencies. Their work is resulting in cleaned up toxic hot spots, restored fish and wildlife habitat, and prevented fertilizer runoff. The GLRI's size and scope gives it a central, albeit not the only, role in our region's success for restoring and protecting the Great Lakes. It's a good program for which this subcommittee should be proud. We hope you will join us in our work, if only because the longer we wait the more difficult and expensive the work becomes.

Thank you again for inviting me to share the HOW Coalition's views with you.

[22] H.Rpt. 111-180. P. 102
[23] U.S. EPA. "Great Lakes Restoration Initiative Accountability System User Guide." V. 1.11. P. 2