

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

US EPA Request for Proposals – Due January 29, 2009

Total Projects from Ohio: 116 - Projects Listed Below: 72

A.1 – Coordinated Implementation of RAP Plans Programs & Processes

Onsite Sewage Treatment System GIS Management - Toledo Metropolitan Area Council of Governments - \$882,571 - Many streams in the Maumee Area of Concern and Portage River watershed fail bacterial standards. This project will convert old records of onsite sewage treatment (septic) systems for Health Departments of 3 counties impacting Western Basin Lake Erie coastal areas into geographic information systems. These data will be correlated with existing data, including sewers, parcels, soils, and housing. The correlations will identify structures with sewage systems where sewers are available; and septic systems in unsewered areas that are likely to have failed. Health Departments will require systems to tap into sewers, verify potentially failed systems, and require replacement/repair as needed. Kurt Erichsen - 419-241-9155 - kurt@tmacog.org

A.2 – Enhanced State/Tribe Fish Consumption Advisory Support

A.3 – Health Care Provider Organization Outreach

Healthcare Provider Project - Fish Consumption Risk/Benefits - Ohio Department of Health - \$2,000,000 – This goal of this project is to protect consumers of fish from Lake Erie from the harmful effects of environmental chemicals. The project will increase environmental health education to health care providers and will foster new practices within health care provider associations or organizations regarding the benefits/risks of fish consumption. This will be achieved through collaboration of stakeholders to determine effective and evidence-based projects and methods. ODH will facilitate and oversee sub grants to develop and implement projects recommended by stakeholder workgroup.

A.4 – Great Lakes Fish Monitoring & Surveillance Program

A.5 – Integrated Atmospheric Deposition Network

A.6 – Great Lakes Sediment Core Surveillance

A.7 – Screen for Chemicals of Emerging Concern

A.8 – Assess Ecological Exposure and Effects

A.9 – Pollution Prevention and Toxics Reduction in the Great Lakes

Pesticide Clean Sweep in Ohio's Lake Erie Watershed - Ohio Department of Agriculture - \$500,000 - Improper disposal of pesticides can be a threat to both aquatic and terrestrial organisms and ecosystems, including threatened and endangered species within the Lake Erie Watershed (LEW). This project proposal is intended to protect the Lake Erie Watershed and avoid contamination of perennial and intermittent streams, aquifers, riparian areas and other land of hazardous pesticides including persistent bioaccumulative toxics (PBT's). Many public drinking water systems within the watershed utilize surface water as raw water supplies which are one of the most vulnerable resources affected by improper use or disposal of pesticides. Effective pesticide disposal procedures

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eliminate environmental and safety risks to the public and Ohio's watershed system. As a result of funding this project, hazardous pesticides will be properly disposed of in the 21 county Lake Erie Watershed region.

Pharmaceuticals and Mercury Containing Devices Collection - Ohio Department of Natural Resources -Division of Recycling & Litter Prevention - \$300,000 - The proposal will address residential collection of pharmaceuticals and mercury in Ohio. The program's intent is to initiate, through a one time grant award, a sustainable collection program that can be replicated throughout the Great Lakes Region. The Division of Recycling & Litter Prevention (DRLP) will use the award to develop a grant for residential collection of pharmaceuticals and mercury containing Devices. This supports goals and objectives in the Lake Erie Protection Plan, Lake Erie Lake wide Management Plan, Great Lakes Regional Collaboration, Great Lakes Restoration Initiative Action Plan and the US EPA's Strategic Plan.

Mercury Reduction and Treatment / Cost Update - Ohio Environmental Protection Agency - \$410,154 - The Ohio EPA proposes to review and update the 1997 cost study used as the basis for variances from Great Lakes Initiative mercury water quality standards. Review one or more emerging technologies that may allow dischargers to meet the limit at reasonable cost. Determine the amount of mercury reduction in Ohio's Lake Erie Basin that has been achieved through Pollutant Minimization Programs (PMPs) since the 1997 Great Lakes rules were approved.

Reducing Toxic Substances in Five Lake Erie Areas of Concern - City of Toledo, Division of Environmental Services - \$1,598,033.80 - The proposed project is an Elemental Mercury and Pharmaceutical Collection Program that will provide an option for sustainability once awarded grant money becomes exhausted. The program will include collection events in forty-four counties, along the central and western basin of Lake Erie. The purpose of the project is to reduce the amount of toxic contaminants entering the Great Lake's ecosystem, improve the water quality in areas of concern, and provide public education to improve practices of Great Lakes citizens regarding environmentally safe recycling of these wastes. Carrie H. Johnson - 419-936-3940 - carrie.johnson@toledo.oh.gov

Ottawa River Watershed Scrap Yard Pollution Prevention Program (SYP3) - City of Toledo - \$270,600 - Sediments of the Ottawa River in Toledo Ohio are contaminated by chemicals that include PAHs and metals and is listed as part of the Maumee River Area of Concern (AOC). Sediment remediation depends on eliminating sources through pollution prevention. Fourteen known scrap yards in the watershed are believed to be significant sources of sediment. The City of Toledo will conduct site reviews for best pollution prevention practices; work with the yards to improve practices; and publicly recognize yards that implement effective controls. A consultant will sample stream sediments upstream and downstream of scrap yards to determine impacts and prepare reports. Marc Gerdeman - 419-936-3771 - marc.gerdeman@toledo.oh.gov

Prevention of Surface Water Contamination from Biosolids Application - University of Toledo - \$500,000 - From the results of our USDA sewage sludge grants, we have found that bacteria, pharmaceuticals and personal care products and contaminants leave biosolids applied farm fields through tile drains. This potentially adds to water quality problems in ditches and streams connected to Lake Erie as well as beaches on the lake. Through this project, we will test techniques of blocking the tile drain outlet and determine if this improves the water quality leaving the drains. Kevin Czajkowski - 419-530-4274 - kevin.czajkowski@utoledo.edu

A.10 – Toxicant Total Maximum Daily Load (TMDL) Development in the Great Lakes Basin

B.1 – Great Lakes Ballast Water Technology Grant Program

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B.2 – Invasive Species Prevention & Control Grant Program

Gypsy Moth Monitoring and Suppression in the Lake Erie Watershed - Ohio Department of Agriculture - \$187,200 - To identify and monitor, through placement of pheromone traps, the development of gypsy moth populations within the Lake Erie watershed area not currently being monitored by the USDA / Forestry Division / Slow the Spread Program. Implement educational strategies to the public to reduce introduction and spread of the gypsy moth. Provide, at the request of the property owners, cost shared suppression treatments to reduce populations that pose a threat for heavy defoliation and/or tree mortality.

Viral Hemorrhagic Septicemia (VHS) in Ohio's Waterways - Ohio Department of Agriculture - \$117,039 - Viral Hemorrhagic Septicemia (VHS) is a destructive pathogen that produces internal hemorrhaging and death in fish. This project will enhance current efforts to detect, monitor, and control the apparent rapid spread of VHS in the Great Lakes region. This project will also enable wide-spread surveillance across Ohio's major waterways in efforts to proactively measure the potential impact on a growing number of fish species. We believe it is imperative that we identify the extent of the problem in Ohio and then develop and implement strategies that will lead to the control of VHS.

ODNR Coastal Invasive Plant Species Control Project - Ohio Department of Natural Resources - \$200,000 - The Ohio Department of Natural Resources, Division of Natural Areas and Preserves owns and manages ten State Nature Preserves within the Lake Erie watershed. Wetland invasive plants have colonized within these preserves and have caused a reduction of plant diversity and narrowed habitat variety. Land management to detect, control, prevent translocation and eradicate these invasive plants is imperative. Early detection of and inventory of invasive plant species is necessary to assess the steps to take toward preventative measures or elimination methods. The extent of infestations will be quantitatively tracked through computerized mapping techniques and managed in a database. Herbicides, hand-pulling, mowing and burning will be used as management tools to achieve the desired results of eradication.

Harpersfield Dam Restoration: A Barrier to Sea Lamprey - Ohio Department of Natural Resources -Division of Wildlife - \$500,000 - The Harpersfield Dam on the Grand River is an effective barrier to the migration of sea lamprey (*Petromyzon marinus*). This dam is in need of maintenance. The loss of this dam would open up miles of sea lamprey spawning habitat which would increase the need for TFM chemical treatments.

Maumee AOC's Sylvan Prairie Park– Invasive Plants Control - Olander Park System - \$159,080 - The Olander Park System plans to control all invasive plants at Sylvan Prairie Park, a 157-acre natural area in the Maumee River Area of Concern. Parks staff will write an adaptive 3-year Integrated Pest Management Plan and map, control, and monitor invasive plants in the Park. Each species will be controlled with the best management practices determined through research for the 3-year plan. Baseline and annual plant community monitoring will be conducted at fixed plots, and invasive plants will be mapped annually to track changes. Invasive species control in this 157-acre protected area will enhance upland, wetland and riparian habitat and reduce the spread of invasive plants in the Ottawa River Watershed. Erika Buri - 419-882-8313 ext.29 - eburi@olanderpark.com

Flocculate Control Technology to Apply Ballast Biocides - Lake Carriers' Association - \$1,000,000 - Jim Weakley - 440-333-9995 - weakley@lcaships.com

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Phragmites Control in Western Lake Erie Coastal Wetlands - The Nature Conservancy - \$497,331 - The Nature Conservancy, along with a spectrum of public and private partners, including Winous Point Marsh Conservancy, USFWS-Private Lands, and Michigan DNR, will collaborate to manage invasive Phragmites australis on approximately 2,000 acres of wetlands within the western Lake Erie basin, from Maumee bay to Sandusky Bay. James Cole - 519-867-1521- jcole@tnc.org.

Invasive Plant Prevention & Control, Grand River Watershed - The Nature Conservancy - \$843,852 - The Nature Conservancy together with the Cleveland Museum of Natural History, Ohio Department of Natural Resources – Division of Wildlife, Geauga Park District, Lake Metroparks, and the Western Reserve Land Conservancy will work to prevent, reduce, and eliminate non-native invasive plants in the Grand River watershed through an integrated approach focused on the Grand River main stem and priority tributaries and wetlands. Strategies will include early detection and rapid response; targeting threats at their source; and aid to on-going partner management projects within the watershed. Karen Adair - 330-687-2134 - kadair@tnc.org.

B.3 – Threat, Distribution, and Early Detection of Invasive Species Program

B.4 – Forecasting & Synthesis of Ecosystem Effects of Invasive Species Program

C.1 – Beach Forecasting Models

C.2 – Beach Sanitary Surveys

Sanitary Surveys to Reduce Pollution at Lake Erie Beaches - Ohio Department of Health - \$250,000 – Comprehensive sanitary surveys will be conducted at every currently monitored public beach along the Ohio Lake Erie shoreline. The sanitary surveys will be conducted using the U.S. EPA’s annual sanitary survey forms and methods. The information from the surveys will be collected and used to determine remediation at the beaches determined to have the most pollution sources and a history of poor water quality as it relates to elevated *E.coli* levels.

Innovative Rapid Identification of Lake Erie Fecal Sources - The Ohio State University, College of Public Health - \$249,512.00 - Ohio’s Lake Erie beaches are among the Nation’s most impaired. Despite investments exceeding two billion dollars in regional wastewater infrastructure, fecal contamination remains a problem. Additionally, improvement efforts at Lake Erie beaches may be getting thwarted by fecal contributions by waterfowl. With a need for data-driven remediation plans to maximize source reductions at Ohio beaches, two rapid molecular tools will be employed to quantify human- and waterfowl-specific fecal indicator densities. Routine sanitary and water quality surveys performed in tandem with molecular methods will elucidate human versus waterfowl impacts on advisory conditions at three Ohio beaches. Jiyoung Lee - 614-292-5546 - lee.3598@osu.edu

C.3 – Communicating Beach Monitoring to the Public

Improving Communication about Beach Water Quality - Ohio Department of Health - \$100,000 - The goal of this project is to improve beach health communication systems for Lake Erie and to improve the public’s knowledge about beach water quality and the potential health effects caused by sanitary and combined sewer overflows. This will be achieved through development of a web-site, a Facebook site and a Smartphone application to be used to convey accurate and timely information regarding beach advisories to beach managers and the general public. A

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school poster contest will also be implemented to increase public awareness of beach issues and provide opportunities for education.

C.4 – Improving Beach Monitoring for Bacteria

Rapid Analytical Methods in Beach Water Sampling - Ohio Department of Health - \$225,000 - Water samples will be collected at all Ohio Department of Health monitored public beaches along the Ohio Lake Erie shoreline. These water samples will be analyzed using both the qPCR and IMS/ATP analytical methods at laboratories on each side of the Lake Erie basin capable of conducting these analytical methods. The results of these analyses will be compared with traditional analytical techniques to assist the US EPA in developing standards protective of public health using rapid analytical methods.

C.5 – Development of Nearshore indicators and Endpoints

Algal Biotic Index for Nearshore Lake Erie - John Carroll University - \$308,651 - An algal biotic metric for the Lake Erie nearshore will be developed as a potential assessment tool for use by the Ohio Environmental Protection Agency. The concept of using nutrient inference models from the Great Lakes Environmental Indicator project will be extended to phytoplankton and periphyton in nearshore Lake Erie. An expert panel will develop a biologic condition gradient aided by these models and other data including paleolimnologic evidence of reference condition and link the gradient to a biotic metric. Gerald V. Sgro - 216-321-4928 - jsgro@jcu.edu.

Monitoring Nearshore Benthos in Western Lake Erie: Indicator Construction, Interpretation & Experiments, 2010-2011 - Case Western Reserve University - \$350,000 - We propose to update and correlate our two high quality long term benthos datasets, one with higher frequency and intensity of sampling at a few sites and one with greater areal coverage, and from these construct new statistically valid but visually simple indicator maps of benthos status and trends in western Lake Erie. Moreover we will conduct studies to suggest cause-effect interpretations of nutrient loadings and invasive mussel effects on sediment inventories and the feedback of Hexagenia activity on SOD and release of nutrients stored in sediment. Peter McCall - 216-368-3676 - peter.mccall@case.edu

C.6 – Nearshore Waters Impairments and Stressors

Establish and Implement a Lake Erie No Discharge Zone - Ohio Department of Natural Resources - Division of Watercraft - \$800,000 - The Ohio Department of Natural Resources wishes to establish a “No-Discharge” zone for all boats on Lake Erie within a designated distance from the Ohio Shoreline. Currently, both commercial and recreational vessels are permitted to dump treated effluent into the waters of Lake Erie. By establishing a “No Discharge” zone in portions of Ohio waters of Lake Erie, ODNR directly and positively affects water quality in Lake Erie thereby directly addressing the purpose of the GLRI.

Phosphorous Reduction: Variable Rate Technology Program - Ohio Environmental Protection Agency - \$202,000 - The Ohio Lake Erie Phosphorus Task Force has linked the timing of fertilizer application, amount of fertilizer applied and method of soil incorporation to excessive nutrient inputs to the western basin of Lake Erie. Ohio EPA will subcontract with the Conservation Action Project (CAP), a not for profit organization in northwest Ohio, to work with local agricultural dealers in northwest Ohio to implement new approaches using variable rate technology (VRT) for applying phosphorus and nitrogen fertilizer. Variable Rate Technology provides the analysis and field application

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of the proper nutrient blends and rates to prevent over application and nutrient loading. Currently, CAP works with six ag-chemical dealerships that assist 5 key growers to demonstrate environmentally sound timing and rates for fertilizer application. CAP has developed a grant cost-share program with ag-chemical dealerships to develop their capacity to implement this technology with growers. This proposal would expand the cost-share program to include a total of 14 agricultural retailers and 70 growers in the CAP region.

GLIC – Baseline Water Quality along an Agricultural Gradient - National Center for Water Quality Research (Heidelberg University) - \$650,713 - Conduct daily sampling for two years for nutrients and sediment on four GLRI priority watersheds plus two others selected to span the agricultural stressor gradient. Compute annual and monthly loads and average concentrations, determine Minimum Detectable Change, and estimate time to achieve it. Compare load estimates with those from USGS monitoring. Assess the Richards-Baker Flashiness Index as a predictor of watershed loads and sampling requirements. Determine sources of suspended sediment: fields or riverbank, using radioisotopes. Model impact of land use patterns on watershed loads. R. Peter Richards - 419 448-2240 - prichard@heidelberg.edu.

Impacts of Pulsed Nutrient Loads on Nearshore Ecosystems - National Center for Water Quality Research (Heidelberg University) - \$1,029,285 - This project will investigate linkages between storm event pulses of nutrients and sediments that move into Maumee Bay and adjacent portions of Lake Erie from the Maumee watershed and the development of algal biomass in the western basin, including *Microcystis* blooms. A broad suite of chemical, physical and biological parameters will be measured in a 20-station grid at frequent intervals surrounding loading events and wind resuspension events. Data will be interpreted using an innovative Lagrangian analysis, supported by a linked hydrodynamic-water quality model and satellite imagery. David B. Baker - 419-448-2941 - dbaker@heidelberg.edu.

C.7 – Total Maximum Daily Loads (TMDLs) (non-toxicant)

TMDL for Ottawa River (Lima) Watershed - Ohio Environmental Protection Agency - \$250,000 - Ohio EPA will complete a Total Maximum Daily Load study for the Ottawa River watershed near Lima in northwest Ohio. Beginning with a comprehensive water quality survey that incorporates biological, chemical and physical measurement of existing conditions, the project will evaluate appropriate use designations, determine which waters are impaired, and calculate loads for nonpoint and point sources to produce approvable TMDLs. The TMDL report will include actions to restore the impaired waters. Part of the Maumee watershed, the Ottawa River has been among the more polluted streams in Ohio's Lake Erie drainage.

C.8 – Watershed Best Management Practices Planning and Implementation

Phosphorus Reduction: Implementation of Priority Practices - Ohio Department of Natural Resources - \$1,000,000 - This proposal aims to reduce phosphorus loading, including dissolved phosphorus loading, from rural and agricultural landscapes to waters of western Lake Erie, the Maumee River, and its tributaries. Two key management practices (cover crops and drainage water management) known to reduce nutrient loading will be targeted within five local soil and water conservation districts (SWCD), that overlap portions of select sub-basins of the Maumee River. These two practices were chosen by local implementers from a suite of priority practices developed by the Ohio Lake Erie Phosphorus Task Force. The goals of the proposal contribute to reducing nutrient related causes of harmful algal blooms in western Lake Erie and improving local water quality in nutrient impaired

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streams. The proposal supports numerous over arching state and federal plans. Specific objectives include installing 100 drainage control structures and 12,000 acres of cover crops over three years resulting in significant nutrient and sediment load reductions.

Western Lake Erie Basin Planning (3 Watershed Coordinators) - Ohio Department of Natural Resources - Division of Soil and Water Resources/Division of Recycling and Litter Prevention - \$315,000 - This Proposal will fund three full-time watershed coordinators for three years to develop state endorsed local watershed action plans in the Blanchard River, St. Mary's River and Upper Maumee River Watersheds. The comprehensive watershed action plans will identify the causes, sources and solutions of nonpoint source pollution and water quality impairment on a 14 digit or 12 digit Hydrologic Unit Code (HUC) scale. This proposal will be implemented as part of the Ohio Watershed Coordinator Grant Program.

Cuyahoga County Surface Water Improvement Grants Program - Ohio Environmental Protection Agency - \$1,000,000 - This project will enhance nonpoint source management; stream and wetland restoration; innovative stormwater management and green demonstration projects on Lake Erie tributaries in the targeted geographic area of Cuyahoga County, Ohio. This project proposes to leverage \$1 million in GLRI funding with \$1.5 million in state Surface Water Improvement Fund (SWIF) grant funds to accelerate local implementation of approved TMDL studies and 9 element watershed action plans.

Swan Creek & Chagrin River Balanced Growth Implementation - Ohio Lake Erie Commission - \$831,500 - Project will install best local land use practice demonstration projects that will assist local communities with implementation of state endorsed Balanced Growth Watershed Plans and state endorsed 9 element Watershed Action Plans. Project deliverables include planning and design assistance to local communities, restoration of environmental resources, and retrofit of stormwater management practices in the Chagrin River watershed in northeast Ohio and the Swan Creek watershed in northwest Ohio. Specific project objectives have been identified in each watershed to meet local needs.

WLEB: Maumee State Scenic River Corridor Management Plan - Ohio Department of Natural Resources - Scenic Rivers Program - Division of Watercraft - \$500,000 - The Maumee River is the largest Ohio sub-watershed of Lake Erie draining over 5,000 square miles of rich farmland. It is also the largest contributor of sediment delivering approximately 37% of the lake's sediment load annually. Many pollutants are delivered to the lake via sediment particles, including phosphorous, nitrogen, heavy metals, and pesticides. The focus of this project will be to reduce this sediment loading and the subsequent pollutant loadings through the development of a Corridor Management Plan for the Maumee River.

Swan Creek Stormwater Retrofit Initiative - Lucas Soil & Water Conservation District - \$458,779 - This proposal is designed to inventory, assess, and retrofit areas with stormwater improvements. In particular, our focus will be on existing stormwater ponds and implementing two-stage or over wide ditch designs. We anticipate that these practices will improve both water quality and downstream channel stability. Jeffrey D. Grabarkiewicz - 419-893-1966 - jgrabarkiewicz@co.lucas.oh.us

Onsite Sewage Treatment System GIS Management - Toledo Metropolitan Area Council of Governments - \$882,571 - Many streams in the Maumee Area of Concern and Portage River watershed fail bacterial standards. This project will convert old records of onsite sewage treatment (septic) systems for Health Departments of 3

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counties impacting Western Basin Lake Erie coastal areas into geographic information systems. These data will be correlated with existing data, including sewers, parcels, soils, and housing. The correlations will identify structures with sewage systems where sewers are available; and septic systems in unsewered areas that are likely to have failed. Health Departments will require systems to tap into sewers, verify potentially failed systems, and require replacement/repair as needed. Kurt Erichsen - 419-241-9155 - kurt@tmacog.org

Two-Stage Ditch: Knowledge, Tools and Services - The Ohio State University; Food, Agricultural and Biological Engineering Department - \$643,533 - The project will provide tools, knowledge, technical services and education on two-stage ditches and approaches to better manage agricultural ditches in the Great Lakes Region. Outcomes will be better informed decisions on the maintenance, management, and enhancement of agricultural ditches and modified headwater streams; and a significant reduction in nitrate-nitrogen and total phosphorus loads to the Great Lakes in watershed where reduced maintenance retains benches and/or where ditches are modified to a two-stage geometry. The project will help to optimize resource use associated with strategies to establish floodplains for the purpose of improving water quality in the Great Lakes and its tributaries and reducing flooding and adverse environmental impacts on the ecology of these systems. Andy Ward - 614-292-9354 - ward.2@osu.edu.

The Digital Chagrin: a tool for effective management and communication - Case Western Reserve University Department of Geological Sciences - \$933,658 - This project will collaboratively enhance an existing geographical information system database for the Chagrin River watershed, in part with additional high-resolution hydrology and water quality data and in part with models, to create the Digital Chagrin. The Digital Chagrin will provide a framework such that potential solutions to critical watershed management issues can be addressed scientifically, communicated effectively, and implemented successfully to protect the Chagrin River and Lake Erie. Dr. Peter Whiting - 216-368-3989 - peter.whiting@cwru.edu.

Phosphorus Reduction in the Sandusky River Watershed - WSOS Community Action Commission, Inc./Sandusky River Watershed Coalition - \$2,999,922 - Brief Project Summary (ie 595 character summary) This 3-year project will focus on corrective actions utilizing implementation of Best Management Practices to reduce nonpoint source pollutants specifically dissolved reactive phosphorus and sediment from entering the watershed, Sandusky Bay and Lake Erie. This project will further develop partnerships of the Sandusky River Watershed Coalition involving Soil and Water Conservation Districts, Fertilizer Dealerships and watershed farmers to all collaborate on protecting and preserving the natural resources within the Sandusky Watershed, Sandusky Bay and Lake Erie. Cindy Brookes - 419-334-5016 - cabrookes@wsos.org.

Validation of the Ohio P Risk Assessment Procedures using Field Scale Agricultural Phosphorus Runoff Monitoring - The Ohio State University - \$1,000,000 - In Ohio, the risk of P transport from agricultural land into surface water is assessed using the Ohio P Index and the Ohio Soil Test Risk Assessment Procedure. Using edge of field and simulated rainfall agricultural runoff water monitoring this project will evaluate (validate) and if necessary revise the P source terms used in the Ohio P Index and the Ohio Soil Test Risk Assessment Procedure. Ohio needs scientifically sound agricultural P management systems that accurately predict risk of P transport and are sufficiently protective of surface water quality. Elizabeth Dayton - 614-688-5917 - dayton.15@osu.edu.

Two Stage Ditch a Water Quality BMP: Tri Sate Applications - The Nature Conservancy - \$800,000 - The proposed project would construct twelve segments of TWO STAGE DITCH within the Maumee River Watershed. This project

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would reduce the amount of SEDIMENT and NUTRIENTS reaching Lake Erie, which helps to meet numerous goals established by the Environmental Protection Agency and other groups. The water quality impacts of the project would be monitored by the University of Notre Dame. The Conservation Technology Information Center would promote the TWO STAGE DITCH technology, in order to increase the impact of this project. The project will take place within the Maumee River Watershed which covers portions of northwest Ohio, northeast Indiana, and southeast MI. The Project will be based from The Nature Conservancy's Angola, Indiana office. Joe Draper - 260-665-9141 - jdraper@tnc.org.

Sediment Reduction in Old Woman Creek Watershed - Erie Soil and Water Conservation District - \$206,172 - Old Woman Creek is a Lake Erie coastal tributary, predominately in agricultural landuse. Excessive sediment loading resulting in impairments through the basin including impacts to an estuary included in the National Estuarine Research Reserve System. Conventional drainage methods have channelized streams which increase storm flow and erosion resulting in downstream impacts. Streambank stabilization and over-wide ditch techniques will be used to reduce sediment loading from the headwater region and to promote the use of these practices by regional drainage professionals. Breann Hohman - 419-626-5211 - bhohman@erie-county-ohio.net.

Two-Stage Ditch: Construction and Technology Transfer - The Nature Conservancy - \$997,846 - The proposed shovel ready project would construct eight segments of TWO-STAGE DITCH within the Maumee watershed. This project would reduce the amount of SEDIMENT reaching Lake Erie by an estimated 1.2 million pounds per year, as well as reducing NUTRIENTS. All reductions will be monitored by the University of Notre Dame. This helps to meet numerous goals established by the Environmental Protection Agency and other groups. The project will also establish and promote this technology in the watershed, and seek to provide additional funding sources for further TWO-STAGE construction. Matthew J. Williams - 574-946-7491 - mwilliams@tnc.org

Protected Lands Database - Ducks Unlimited - \$400,000 - Complete a geographic database of private and public protected lands to inform watershed management planning decisions throughout the Great Lakes Basin Robb Macleod - 734-623-2000 - rmacleod@ducks.org,

C.9 – Innovative Environmental Approaches

Toledo Harbor Sediment Management and Reuse - Ohio Lake Erie Commission - \$250,000 - Near its mouth the Maumee River widens into a federally maintained shipping channel and eventually empties into Maumee Bay. A watershed dominated by agricultural uses, Toledo Harbor receives more sediment than any other Great Lakes Harbor. Average annual dredging in Toledo Harbor in recent years (635,000 cubic yards) is equivalent to the average annual load of sediment from the Maumee River. Yet this amount is not enough to maintain the shipping channel at its designated depth. The Harbor is severely threatened by shoaling in the navigational channels due to the backlog of dredging that grows every year.

Phosphorous Reduction: Cover Crop Seeding - Ohio Environmental Protection Agency - \$483,300 - The Ohio Lake Erie Phosphorus Task Force has linked the timing of fertilizer application, amount of fertilizer applied and method of soil incorporation to excessive nutrient inputs to the western basin of Lake Erie. The Task Force developed a list of Priority Practices that are best suited for nutrient runoff reduction. Cover crop seeding is one of the key nutrient management practices on the list. Cover crop seeding reduces nutrient runoff by storing nutrients in plant matter over the critical fall and winter seasons. Used in concert with conservation crop rotation, cover crops aid in building

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soil organic matter which can hold water and reduce runoff volume. The potential for nutrient runoff is particularly significant in fall and winter due to trends of less snowfall resulting in more rainfall over frozen ground. Consequently, a moderate winter rain can generate significant nutrient runoff peaks. Analysis of agricultural trends by the Task Force identified a trend of reduced fall planting of cover crops because of the increased costs for growers.

City of Cleveland Innovative Environmental Debris Harvester - City of Cleveland - \$345,400 - The City of Cleveland - Innovative Environmental Debris Harvester project benefits the River, community and stakeholders by removing the beneficial use impairment for aesthetics in The Cuyahoga River Areas of Concern (AOC) through floating debris management. This clean up system benefits the North Coast Harbor (NCH) and Cuyahoga River Ship Channel Aesthetics and the related nuisance factor associated with floating debris is a listed impairment to the Cuyahoga River Area of Concern. Cuyahoga River Area of Concern Ship Channel Issues the "Ship Channel" in the lower 5.6 miles of the Cuyahoga River is currently maintained as Federal Navigation Channel with a dredged depth of 23 feet. The Corps of Engineers maintains the depth of the ship channel as part of their federally mandated mission to maintain the commercially navigable waters of the United States. Sandra Ambris – 216-664-5020 - sambris@clevelandairport.com .

D.1 – Blueprints for Biodiversity Protection & Restoration

D.2 – Habitat Restoration in Great Lakes Areas of Concern

Ashtabula River Area of Concern Habitat Restoration - Ohio Environmental Protection Agency - \$1,500,000 - Approximately 1400 ft. of fish habitat shelves will be installed along the east bank of the Ashtabula River Lake Erie Area of Concern. The Ashtabula River habitat restoration and enhancement plan identified this 0.5 mile area in the middle of the Area of Concern as the highest priority area for successful habitat restoration. Since contaminated sediment has been remediated, habitat restoration is now the focus to restore and delist the Area of Concern. Combined with several other complementary habitat projects in the same area, this effort will lead directly to delisting three beneficial use impairments: degraded fish populations; degraded benthos; and loss of fish habitat.

Cuyahoga AOC Habitat and Fish Restoration Opportunities - Ohio Department of Natural Resources - Division of Wildlife - \$500,000 - This project characterizes fish habitat, usage and spawning movements and water quality parameters in the Cuyahoga River and Harbor Area of Concern. Habitat will be mapped using hydroacoustics, drop cameras, and substrate samples, and described using geo-referencing software. Acoustics will track fish densities by season and fish sampling will ground-truth sonar readings. Water quality tests will capture seasonal changes in depth, flow, temperature, dissolved oxygen, pH, and turbidity. Water samples will be taken to define unique elemental concentrations for stock analyses by otolith microchemistry. Project will supply key habitat and fish data to stakeholders and researchers.

Restoring Ottawa River Wetlands & Habitat in the Maumee AOC - Partners for Clean Streams, Inc. - \$1,365,684 - Partners for Clean Streams, the Maumee RAP's non-profit, will restore at least 10 acres of wetland, 30 acres of associated upland habitat and 1200 linear feet of sediment erosion bank stabilization along the Ottawa River, at a 157 acre Boy Scout Camp in the Oak Openings Region of the Maumee AOC, directly improving Lake Erie's Western Basin. The Army Corp of Engineers is working with PCS on a Habitat Restoration Master Plan. Concept plans are complete with the surveying and final design to be completed by the fall of 2010, accelerating the planning and

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positioning the project for timely implementation. Kris Patterson - 419.874.0727 - Executive.Director@PartnersForCleanStreams.org

Wet Prairie Restoration in the Maumee AOC - The Nature Conservancy in Ohio - \$1,452,419 - The Oak Openings, with more biodiversity than any area its size in Ohio, lies within the Maumee Area of Concern. The hydrological connectivity of Oak Openings wetlands has been altered by ditching, wildfire suppression, and invasive plants that disrupt groundwater flow, displace native plants, and fragment habitat. The Nature Conservancy will work with partners to restore habitat in the Oak Openings by removing invasive plants, applying herbicide, and implementing prescribed fire. Changes in groundwater and other biological indicators will be monitored to evaluate success. Steven Woods - (419) 867-1521 - swoods@tnc.org

Habitat Restoration: Maumee River Watershed Area of Concern - The Nature Conservancy - \$930,558 - The Nature Conservancy will restore or enhance 332 acres of habitat on Ottawa National Wildlife Refuge. The project will reconnect hydrology, re-establish native species, and improve infrastructure, following plans created for the refuge to reduce fragmentation and enhance coastal habitat for threatened fish and wildlife species and migratory birds. The project will contribute to delisting BUIs in the Maumee River Area of Concern and achieve goals of the Great Lakes Collaborative, Lake Erie LaMP, and non-governmental organizations. James Cole - 519-867-1521 - jcole@tnc.org.

Catawba Peninsula Wetlands Restoration - Ducks Unlimited - \$436,961 - Restore hydrologic exchange, fish access and 350 acres of wetland habitat in an extremely significant location on the Catawba Peninsula of Lake Erie. Roy Kroll – 734-623-2000 - rkroll@ducks.org.

D.3 – Monitoring Great Lakes Coastal Wetlands

Accurate Monitoring of Wetland Extent and Water Quality - The Ohio State University - \$600,000 - The aim of this research is to develop an innovative approach for monitoring coastal wetland extent and water quality as well as their changes in the Great Lakes region using hyperspectral imagery and dynamic multidimensional coastal data. Innovative methods will be developed to extract reliable coastal wetland classes and to acquire accurate geometric information (e.g., extent, boundaries) of these dynamic coastal wetlands. A new retrieval model will be developed for high-precision derivation of water-quality parameters to support water-quality monitoring. Rongxing (Ron) Li - 614-292-6946 - lee.282@osu.edu.

Monitoring coastal wetlands with multisensor remote sensing - University of Toledo - \$600,000 - We will assess coastal wetlands biological quality and monitor invasive plant infestation expansion using fused hyperspectral, Lidar, and synthetic aperture radar. This proposal addresses the goals of the Great Lakes Research Initiative by monitoring coastal wetland regions in Maumee Bay and Saginaw Bay, assessing invasive plant infestation, forecast vulnerable habitat communities, support LaMPS and ongoing projects. Kevin Czajkowski - 419-530-4274 - kevin.czajkowski@utoledo.edu

Coastal Wetlands Assessment - Ducks Unlimited - \$150,000 - Ducks Unlimited has updated the original National Wetlands Inventory data (circa 1970–80s) to current (2005–2008) conditions for much of this area. This project will build upon this existing information by providing a detailed assessment of coastal wetlands. Robb Macleod - 734-623-2000 - rmacleod@ducks.org,

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

D.4 – Restoring Great Lakes Habitats

North Bass Island Habitat Restoration - Ohio Department of Natural Resources - Division of Parks and Recreation - \$125,000 - Through the implementation of this habitat restoration through reforestation project, the upland vegetative habitat on North Bass Island will be greatly improved, resulting in a range of benefits, not the least of which will be improved wildlife habitat. North Bass Island is located in Ohio's western basin of Lake Erie. In 2004, the Ohio Department of Natural Resources acquired 87 % (593 acres) of this island with the goal of preserving the island's natural features. North Bass Island is Lake Erie's largest *undeveloped* island.

Sheldon Marsh Wetland/Barrier Beach Restoration Project - Ohio Department of Natural Resources - \$2,500,000 - Sheldon Marsh is a 463 acre wetland with a 1.8 km barrier beach near Huron, Ohio. It is one of few coastal wetlands not subject to man-made water level control. A Category 3 wetland, the highest level using Ohio EPA's Rapid Assessment, it is an important warm water fish nursery, has an active Bald Eagle nest, supports 300 bird species, & is critical habitat for Great Lakes' populations of Piping Plover. The wetland is in jeopardy due to erosion of the barrier beach. A beach/dune nourishment and protection effort including native plantings and rock structures will be implemented to protect the wetlands.

Reforestation of Maumee Bay & Mary Jane Thurston State Parks - Ohio Department of Natural Resources - Division of Parks and Recreation - \$168,000 - Maumee Bay & Mary Jane Thurston State Parks have sustained extensive losses of Ash trees due to the Emerald Ash Borer (EAB). Both parks were planted predominantly with Ash, a poor land management practice in retrospect. Damaged trees are being removed at Maumee Bay S.P. and 500 replacement trees are needed. At Mary Jane Thurston S. P., 159 trees are EAB infested. Replacements trees are critically needed to restore the shady environment, prevent soil erosion, restore CO2 sequestration capacity and maintain good riparian forest habitat.

Erosion & Rehabilitation Study at East Harbor State Park - Ohio Department of Natural Resources -Division of Parks and Recreation - \$1,140,174 - The proposed project is a necessary second step towards the restoration and preservation of this natural barrier island and the continued protection of the East and Middle Harbors' ecosystem. Analysis and engineering will identify the design and construction of the beach restoration pilot project that is the second aspect of this proposal. Ohio has 53 public beaches lining 7.3 miles of Lake Erie shoreline from Ashtabula west through Cleveland to Ottawa County. Ultimate restoration of this beach area would increase public accessible beach systems in Ohio by 27%.

E.1 – Assessing Indicators for the Great Lakes

Green Areas Conversion Metric for Ohio's Lake Erie Watershed - Ohio Lake Erie Commission - \$82,500 - This two-part project will assess SOLEC Indicator #7002: Land Cover/Land Conversion and the Green Area Conversion Metric, from Ohio's Lake Erie Quality Index. Funding will be sub-awarded via the Lake Erie Protection Fund. The researcher selected will analyze land use conversion for Ohio's Lake Erie watershed using the 1996-2001-2006 C-CAP data series. They will also create a work plan for future digitizing of historic land use (pre-1970) for the Cleveland and Toledo metropolitan areas. This project will illustrate the timing, rate, and extent of land use conversion in the watershed.

E.2 - Coordinated Implementation of Lakewide Management Plans (LaMPs), Programs, and Projects

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

Independence Dam State Park Erosion Control - Ohio Department of Natural Resources - Division of Parks and Recreation - \$100,000 - Certain shoreline areas at Independence Dam State Park are subject to erosion during periodic Maumee River high water events. If funded, this proposed project will result in the implementation of corrective measures that will protect these areas from further erosion, thus reducing the input of additional soils into the river from these locations, as well as protecting a state park parking area where visitors stop to enjoy the scenic Maumee River and gain access to the shoreline.

Lake Erie Synthesis and Coordination Team - Ohio Lake Erie Commission - \$200,000 - Ohio's Lake Erie Commission will work with the Lake Erie Millennium Network and Ohio Sea Grant College Program to implement a multi-year coordination and synthesis project for Lake Erie research projects that are part of the Lake Erie Millennium Collaboration and GLRI funded implementation and management projects in Ohio. This effort will focus on linking management & research projects to enhance the value & impact of research, improve management decisions, & clearly & concisely synthesize/summarize the results of both for managers, decision makers, elected officials & the general public. Forty-six projects valued at over \$32,000,000 have agreed to participate in this effort if funded.

Lake Erie initiative for LaMP – Community Engagement - The Ohio Environmental Council - \$553,272 - This initiative will leverage and build upon the work that the Ohio Environmental Council (OEC) is undertaking to expand and reinvigorate the Lake Erie Lakewide Management Plan (LaMP) Public Forum by integrating traditional and non-traditional collaborators into a coordinated, basin-wide network that will educate key stakeholders, develop a volunteer monitoring program, and secure credible data. The collaborators will be linked by an interactive, user friendly, GIS based information system that will offer easy access to information and a place for input of credible data. Joe Logan – 614- 487-7506 - joe@theoec.org

Ohio Credible Data Collection in the Maumee AOC – Toledo Metropolitan Area Council of Governments - \$292,005 - Project will provide annual, state of Ohio certified benchmarks of water chemistry, macroinvertebrates and qualitative habitat evaluation index (QHEI) in Maumee AOC streams. Teachers will be certified by Ohio as credible data collectors. Annual data collection will assist with the implementation of the Stage 2 Restoration Plan and evaluation of BMP projects. Matthew Horvat – 419-241-9155 - horvat@tmacog.org

Erie Watersheds Partner on Human Health Risks of Home Sewage - Toledo Metropolitan Area Council of Governments - \$2,441,054 - Three Ohio Lake Erie watersheds will partner to improve human health and safety of recreational waters impacted from nutrient and pathogen pollution. The Cedar-Portage, Sandusky and direct lake tributaries of the Huron-Vermilion watersheds show water quality impairments from failed home sewage treatment systems. A collaboration of local government and non-profit agencies will identify, and resolve faulty home sewage systems by providing financial assistance for replacement or municipal tap-ins, and raise awareness for the Lake Erie Lakewide Management Plan. Elaine Moebius – 419-241-9155 - moebius@tmacog.org

GLRRIN support for LaMP - The Ohio State University, Ohio Sea Grant College Program - \$1,800,000.00 - The Great Lakes Regional Research Information Network wishes to support the region's Lakewide Management Plans, Cooperative Science and Monitoring Initiative, and the Great Lakes Restoration Initiative. With collaborators from over 20 binational agencies and universities, we will aid in priority planning and synthesis of research results to make them more useful to managers. We will increase involvement of scientists and stakeholders in the process, and create links between research scientists and managers yielding more useful research and more research focused on management needs. Jeffrey M. Reutter - 614-292-8949 - reutter.1@osu.edu

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

E.3 – Nearshore and Open Water Monitoring Prediction

Sources, Movement and Fate of Phosphorus in Lake Erie - Cleveland State University - \$1,000,000 - We will conduct an integrated isotopic and geochemical analysis on waters and surface sediments from Lake Erie to partition sources of bioavailable phosphorus and elucidate mechanisms controlling phosphorus transport and transformations in the lake. Coupled with remotely sensed data and existing data from tributary loading stations, we will update water and phosphorus budget of the lake and develop a process-based hydrologic model to simulate variability in total phosphorus and bioavailable phosphorus on different scales. This project will also help foster partnerships with watershed managers and research collaboration across the United States and Canada. Key Terms: Bioavailable Phosphorus, Isotopic Analysis, Remote Sensing, Hydrologic Modeling, and Lake Erie. Fasong Yuan - 216-687-3508 - fyuan06@csuohio.edu

E.4 – Annual Comprehensive Nearshore Monitoring Program

Ohio Lake Erie Comprehensive Nearshore Monitoring Program - Ohio Environmental Protection Agency - \$1,195,000 - A comprehensive monitoring program will be developed to assess the condition of the nearshore areas of Lake Erie in Ohio. The program is designed to function over a three-year cycle to define environmental conditions in these dynamic areas. Experience and data gathered in the first cycle will serve as the baseline to integrate annual Lake Erie monitoring into the State of Ohio's Water Quality Monitoring Strategy. The project will initially build on the 2010 National Coastal Assessment framework by adding ambient sites, plankton, and additional parameters. Subsequent years will focus on harbors, bays, and estuaries as well as evaluation of biological communities at various trophic levels.

Characterization of Fish Community Use of Maumee Bay, Ohio - ODNR - \$91,588 - An intensive monitoring program will be developed to assess the extent, distribution, and use of Maumee Bay, Ohio as fish spawning and nursery habitat. This data will then be used to track changes in fish habitat use in the bay associated with the implementation of GLRI projects, as well as guide other ecosystem rehabilitation projects being proposed in the bay. The program is designed as a two-year cycle and will assess and define the extent of spawning and nursery habitat used by all species in the bay. The project will complement other existing ongoing projects including the 2010 National Coastal Assessment, the proposed Ohio Lake Erie Comprehensive Nearshore Monitoring Project and other ongoing projects. Jeff Tyson - 419-625-8062 - jeff.tyson@dnr.state.oh.us

E.5 – Predicting Ecosystem Changes

E.6 – Cooperative Science and Monitoring Initiative (CSMI)

GLRRIN support for CSMI - The Ohio State University, Ohio Sea Grant College Program - \$1,500,000.00 - The Great Lakes Regional Research Information Network wishes to support the Cooperative Science and Monitoring Initiative, the region's Lakewide Management Plans, and the Great Lakes Restoration Initiative. With collaborators from over 20 binational agencies and universities we will aid in the processes of planning to enhance the value of field work for the Cooperative Science and Monitoring Initiative and synthesis of results to make them more usable by the region's managers. We will aid in getting more scientists and stakeholders involved in the process. Jeffrey M. Reutter - 614-292-8949 - reutter.1@osu.edu

E.7 – Observing Systems

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

Monitoring western Lake Erie's nearshore with AUV technology - The Ohio State University, Ohio Sea Grant College Program - \$535,939.00 - Ohio State University's Stone Laboratory will initiate a monitoring program of Lake Erie's nearshore waters. This three-year project will focus on, but not be limited to, monitoring and mapping dissolved oxygen and areas of anoxia, harmful algal blooms, and heavy sediment loading from both tributaries and open-lake sources. Data collected from this project will be maintained and made quickly available via Ohio Sea Grant's website for use by decision makers, managers, elected officials, and the general public. Data will also support our extensive outreach program. Jeffrey M. Reutter - 614-292-8949 - reutter.1@osu.edu

E.8 – Innovative Environmental Approaches

Project SQM for Total 21st Century Watershed Outreach - Ohio Department of Natural Resources - Division of Watercraft - \$500,000 - As part of the GLRI, The Ohio Scenic Rivers Program would like to propose "Project SQM for Total 21st Century Watershed Outreach" an effort to establish a connection with three high-quality state scenic rivers and Ohio's public and private middle school (Grades 5-8) teachers. By 'taking the river' to science educators through workshops utilizing revolutionary interactive displays and accompanying curriculum materials, we will involve teachers and students in watershed stewardship. This outreach includes efforts to engage previously untapped urban and economically-challenged audiences.

Lake Erie Zoobenthic Biomass, Distribution and Composition - National Center for Water Quality Research (Heidelberg University) - \$251,397 - Lake Erie's food web has changed often and dramatically in response to changing in nutrient loads and arrival of new taxa. Invasions by dreissenid mussels, particularly, have altered the flow of energy and nutrients through the ecosystem. Up-to-date lakewide zoobenthic data are urgently needed to support scientific hypotheses and inform management decisions. We will collect benthic samples in 2010, map and report distribution & abundance, and calculate total biomass of major taxa by habitat, basin and lakewide, comparing results with comparable data from previous intensive surveys. Kenneth Krieger - 419-448-2226 - kkrieger@heidelberg.edu.

Known Projects Without Details (9)

Conservation Program assistance/Sediment Reduction Huron River Watershed (or North Central Ohio Sediment Reduction Project?)- Huron SWCD

Wiki-Map Proposal for Contaminant listings in Erie County Watersheds - Haag Insight

Toxics Clean up on 11 ac along Cuyahoga River Shipping Channel – Cuyahoga County Engineer

Public Official Outreach & Education on Local Ordinances – Cuyahoga River Community Planning Organization

Dredge Spoils Project – Euclid Creek Watershed

Stormwater Project along Rail Road – Park Works

Projects from US EPA List – Potentially Ohio Projects (18)

Rapid Method Data Comparison at Bathing Beaches in Ohio - ?

Coal Tar Source Removal in Sandusky, Ohio -?

Projects Submitted to the Great Lakes Restoration Initiative from Ohio Organizations

TCE Source Removal in Sandusky, Ohio - ?

Cumulative impacts of BMP Implementation: Maumee River Basin - ?

Improving Water Quality with FGD Gypsum in the Maumee Basin - ?

Control of Invasive Plants in the Lower Black River Corridor - ?

Richfield OH Storm Water Improvement Demonstration Project - ?

Restoring hydrology and coastal marsh at Middle Harbor, OH - ?

Cuyahoga AOC Urban Riparian Habitat Restoration Phase 1 - ?

Lacustrine Refuge in Cuyahoga AOC - ?

Cuyahoga AOC Urban Riparian Habitat Restoration Phase 2 - ?

Grand and Cuyahoga River Larval Fish Study - ?

Hydrologic Improvement in Ag Watersheds of W Lake Erie Basin - ?

A Blueprint for Lake Erie Biodiversity Conservation - ?

Monitoring Lake Erie Coastal Wetlands - ?

The Lake Erie Nearshore and Offshore Nutrient Study (LENONS) - ?

Benthos Status, Trends, and Feedback Processes in Lake Erie - ?

Reducing Toxic Substances in Five Lake Erie Areas of Concern - ?