



## **GREAT LAKES PROTECTION FUND - FINAL REPORT**

### **MARKET-BASED APPROACH TO ECOSYSTEM IMPROVEMENT - GRANT #609 -**

The Great Lakes Protection Fund (GLPF) has provided financial assistance to complete a project that seeks to identify in Phase I, and then implement in Phase II, market-based approaches for ecosystem improvements in the Great Lakes. This final report provides a summary of: progress and accomplishments associated with initial project objectives and activities; problems encountered, solutions and related modifications to objectives, and; lessons learned and new perspectives. We conclude this report with final remarks and a forecast of next recommended efforts to move overall project objectives towards a Phase II effort where we anticipate seeking additional support from the Great Lakes Protection Fund and others.

#### **Project Objectives - Progress and Accomplishments**

Phase I of this effort had three primary objectives that included:

- Continued support and functioning of the GLTN (now the Environmental Trading Network--ETN) as a clearinghouse for trading.
- Conducting a feasibility analysis of a multiple environmental markets framework for achieving higher ecosystem improvements than current regulatory and individual market-based schemes can offer.
- Completion of a business plan that incorporates the GLTN as an organization to carry forth the latter objective if the approach is deemed feasible.

Phase II of the project was originally conceived to focus on implementation of pilot demonstration projects to test the success and viability of multiple markets to manage ecosystems using a framework defined in Phase I. Phase III was the long-range vision for a self-sustained network.

Initially, progress and accomplishments were the direct responsibility of the two co-principal investigators: David Batchelor (formerly of the Michigan Department of Environmental Quality--MDEQ), and Mark Kieser of Kieser & Associates. Mr. Batchelor also served as the acting chair of the GLTN at the time of contract signing until he left the MDEQ in November of 2001. At that time, he had to recuse himself of the Chair position and as Co-PI on this project given his new position as Senior Policy Analyst with U.S. EPA's Office of Water in Washington, D.C. Mr. Batchelor was given the assignment under then Assistant Administrator, G. Tracy Mehan, to finalize EPA's water quality trading policy which had languished in draft form since 1996. This responsibility created a potential conflict of interest with the Network and this project. Thus, Mark Kieser assumed all project responsibilities in late 2001 to the present. In 2002, the Great Lakes Trading Network adopted the new name of the Environmental Trading Network to reflect the national and international participation and interests of the organization as it moved to incorporate as a non-profit in November of 2002.

Paid collaborators on this project included Mr. Michael Walsh, Vice President of Environmental Financial Products, LLC, Chicago, IL; Mr. Paul Faeth, Executive Vice President and Managing Director of World Resources Institute, Washington D.C.; and Dr. Donald Hey of the Wetlands Initiative in Chicago. The law firm of Miller, Canfield, Paddock & Stone of Kalamazoo, MI assisted with legal aspects of the project associated with the formalization of the Network as a non-profit organization.

To highlight the key outcomes, progress and accomplishments on this project, we present the following question and answer type responses here for: 1) ETN related development, and; 2) the market analysis.

### ***Environmental Trading Network***

*Has the project successfully achieved objectives for sustaining “clearinghouse and outreach” interests of the Network? Yes* – We have actively maintained monthly or near monthly conference calls from project initiation to the present.

*Have the calls and website tools been useful and effective? Yes* – Conference call participant levels have remained constant or have increased slightly with both new and consistent cross-sector participants (including EPA headquarters staff), while the ETN website is visited between 1,000-2,000 times per months. Website feedback has been received from across the U.S. and as far away as Australia and Japan. These responses confirm the broad interest in the clearinghouse aspects of the ETN.

*Has the ETN effectively engaged interest in water quality trading and other market efforts in the Great Lakes? Partially* – State agency participants or close affiliations are on monthly calls from Michigan, Wisconsin, Pennsylvania, Ohio and Minnesota. No interest has been elicited from Indiana, Illinois or New York. Attachment A provides a summary of “water quality trading status” in each of the Great Lakes states based on ETN feedback and contacts. The outlook for burgeoning water quality trading efforts is not strong for areas within the Great Lakes Basin, although trading opportunities are being examined in portions of some Great Lakes states that lie outside of Basin. A lack of recognition for trading opportunities (unclear market drivers) within the Great Lakes, a proclivity for small pilot trades in the Basin, and significant U.S. EPA/USDA interests (and funding support) in the Chesapeake Bay and Mississippi River Basin, divert local watershed and state agency interest.

*Has the ETN been effective in serving as a resource to those outside of the Great Lakes? Yes* – Many trading programs and interests from beyond the Great Lakes states actively participate in monthly calls and have sought direct feedback from network participants as well as ETN involvement in current or new program development. (See Attachment B for a list of various outreach and communication efforts undertaken by the ETN since Phase I was initiated.)

*Has the ETN successfully completed all proposed elements of its non-profit incorporation? No* – The ETN is incorporated as a non-profit in Michigan, however, not with the IRS. A Board of Directors must be finalized, then the current Articles of Incorporation and Bylaws approved, followed by a filing for IRS 501(c)3 tax exempt status. Reasons for these incomplete efforts are two-fold and relate to: 1) the focus of K&A efforts on establishing ETN partnerships and credibility as a valuable entity with other trading programs (especially since many of these opportunities fall outside of the Great Lakes Basin), and; 2) the unavailability of David Batchelor (the Network originator) to formally serve on this project or on the Board given EPA conflicts. The latter frankly resulted in the lower priority pursuit of the Board by the ETN Incorporator, Mark Kieser.

The need for an official “track record” for the ETN as anything other than the *ad hoc* name and website was deemed critical for building a successful foundation where others will pursue assistance of the Network, and where the Network can be recognized for its accomplishments. The fruits of these efforts have begun to pay dividends as noted from invitations to speak (Attachment B), and new partnering opportunities. Secured funding for ETN assistance outside of this project has been \$53,500. Proposals pending submittal and/or funder responses total about \$0.75M for

direct ETN support. The future operation of the Network as a business entity will need to address the current and less than clear overlap of project support provided by K&A on behalf of the ETN, as the ETN has yet to directly receive or distribute funds. K&A has served a function more as program manager for the ETN both in this GLPF grant and other projects. This program manager strategy is part of the currently proposed Draft Business Plan.

*Is the continuation of the ETN merited by the expressed interest of potential project partners and call participants?* Yes – Network participants have: 1) continued to express their desire to maintain the ETN as a recognized and up-to-date resource on market-based programs; 2) have identified interest in new communication approaches, discussion topics and evaluations, and; 3) are looking to the Network to lead the next national trading conference. The U.S. EPA has recognized the ETN as the premier organization on trading with its invitation for the ETN to have an information booth at the July 2003 Water Quality Trading Forum in Chicago, as well as to organize, select panelists and moderate the final interactive panel discussion. The ETN was also invited to post the over thirty questions submitted to the panel that were not addressed on the ETN's electronic discussion board. U.S. EPA also recently invited the ETN to Washington, D.C. to discuss upcoming opportunities for the ETN to host the next national trading conference. Network participant interests on trading program details, quantification protocols and transferable program tools (e.g., permit language) discussed on monthly conference calls (with EPA in attendance), are now being cited as the future conference topics of interest by EPA.

### ***Feasibility Analysis***

*Did the analysis identify a possible framework for Ecosystem Multiple Markets and whether there should be one market or several to accommodate generation and sale of various environmental commodities?* Yes – Given the highly variable characteristics between watersheds (physico-chemical, biological, socioeconomic), water quality trading usually takes on very distinct attributes on a locale-by-locale basis. Wetlands and habitat (conservation) banks will have similar demands for local (or regional) issues. The greenhouse gas (GHG) market is global. Therefore, the opportunity to generate a common credit for water, air, wetland and habitat considerations in one setting will not necessarily address the same needs (i.e., satisfy a market demand) or provide the same environmental equivalence in another watershed. Thus, our analyses suggest that ecosystem restoration projects that seek to capitalize on environmental markets will initially need to rely on separate markets for each commodity. With the exception of greenhouses gases, most other commodities examined here will have a regional, watershed or local basis for demand. The feasibility analysis has outlined important framework considerations for an EMMs project and related market considerations, however, many issues associated with technical uncertainties will need to be addressed within individual markets or within varying programs. We see many of these issues, especially those associated with GHGs, being addressed through a multitude of other studies. Markets should derive the necessary tools from such efforts.

*Are markets now available to sell credits from large-scale ecosystem restoration projects?* Yes and No – With local drivers dictating the demand for water quality, wetlands and habitat credits, markets may not develop in the absence of established trading programs/guidance or policy, and/or without market infrastructure. The Michigan example illustrates this dilemma while Wisconsin sees only small-scale trading opportunities absent consistent banking and quantification tools. Minnesota is currently bound to administratively burdensome trades on a permit by permit basis (Attachment A). Great Lakes states have wetland mitigation banking rules but in some cases, these are so onerous compared to on-site mitigation, that banks are not economically viable. Absent the ability to generate other credits in non-existent water quality markets, potential banking projects may be stymied. Conservation banks, though utilized in several western and southeastern states, are relatively untried in the Great Lakes. The Chicago Climate Exchange remains as the one public exchange for greenhouse gases, though access (as with other voluntary GHG registries) is cumbersome or not immediately accommodating for credit suppliers. Thus, these various environmental markets are immature or yet to evolve. Other market opportunities for flood mitigation credit banking or stormwater (volume)

banking are beginning to evolve in the Basin and may serve as a more tangible driver for instituting large scale projects.

*Did the analysis identify opportunities for overlapping environmental commodities as outlined by the white paper on Ecosystem Multiple Markets? Yes* – Opportunities for Ecosystem Multiple Market projects (EMMs) have been preliminarily identified in the Great Lakes Basin. The ETN has also been receiving active solicitations to participate in new market-based programs from across the country with the advent of new federal funding sources and the interest in ecosystem multiple market strategies. Select Great Lakes opportunities are being actively pursued with new partners. The ETN anticipates seeking additional support from the GLPF for these efforts in a Phase II of this project.

*Are there impediments to EMMs in the Great Lakes? – Yes* Our efforts suggest that a dichotomy exists within (and outside of) the Great Lakes Basin. We see very spotty interest in water quality trading despite numerous regulatory drivers (e.g., TMDLs), yet sometimes stronger inertia for voluntary carbon sequestration initiatives (that inherently rely on large-scale geographic settings for sufficient market supply) developing in the absence of a regulatory driver. Thus, there are often disparate interests in these separate projects such that the rare local champions for water quality trading must inherently focus their energies on trading objectives. The larger projects may more aptly focus on critical technical challenges of carbon sequestration monitoring and verification. Though this phenomenon was anticipated, a lack of knowledge on market potential for water quality trading and other market drivers may be the single largest impediment to realizing the benefits of overlapping markets in the Basin (though the lack of market infrastructure remains as the primary impediment in Michigan.) The institutional inertia associated with the traditional paradigm of separate and compartmentalized management of air, water, wetlands and habitat, also remains a barrier. This is particularly true for state agencies that are experiencing budget constraints and have limited motivation to pursue new programs that would additionally tax their limited resources.

*Has the feasibility study identified what may be necessary to develop opportunities for overlapping environmental markets in the Great Lakes? Yes* – We believe there are two primary approaches to foster market opportunities. One is the originally envisioned strategy for large-scale demonstration/implementation efforts and the other, a comprehensive assessment of specific drivers for markets in the Basin. For demonstration projects, selective opportunities have been identified in the Little Calumet River, Indiana (noted in Attachment A) and possibly, Milwaukee, Wisconsin. The latter would target current large-scale land acquisitions for a multi-million dollar flood reduction effort by the Milwaukee Metropolitan Sewerage District. Land purchases for flood storage would involve ecological restorations and thus, the opportunity to produce other environmental credits. Both of these efforts will be in collaboration with Applied Ecological Services, Inc. who has worked extensively at these locales. Several other opportunities outside for the Great Lakes Basin are also targeted in these regards and discussed in Attachments A and C. These have been incorporated as part of the Draft ETN Business Plan.

While much has been done on estimating opportunities and benefits of generating credits in the emerging water quality trading market and other environmental commodity markets, few studies have examined how to define and generate demand for these credits in the Great Lakes. This second strategy would be to conduct a comprehensive assessment of market elements and market potential for environmental credit trading. It would draw upon opportunities and considerations identified in pilot studies and overlay these in other geographic locales. Absent a recognition and application of these drivers, markets will not soon develop.

*Will the originally envisioned Phase II efforts for this project involve direct ETN oversight and management of large-scale, ecosystem restoration/multiple credit generating opportunities? No* – Based on what we believe is a consistent theme with water quality trading, projects are most often locally driven. Therefore, the geographic reach of the ETN (either within or outside of the Great Lakes) does not currently lend itself as a primary driver for originating such projects in the near-term. Fundamentally, however, ETN participation and interaction with several active trading interests throughout the country has identified more of an intermediary role as its next steps to help facilitate EMMs types of efforts. Other issues may also need to be addressed in the Great Lakes before broader opportunities for overlapping environmental markets are fully realized. Long-range plans will target greater project oversight and

management as these are identified.

It must also be acknowledged here that the lack of a Board of Directors and the concomitant opportunity for contacts with other potentially interested parties and technical expertise, also plays some role in this situation.

*Have anticipated project communications originally outlined in the proposal proceeded as planned?* No – Monthly communications with paid project collaborators were identified as a primary means to develop the feasibility analysis for this project. Early interactions facilitated the preparation of concept papers on various market aspects being considered in Phase I. These were shared amongst partners and eventually integrated into a working draft of the EMMs white paper draft prepared by K&A. Input and feedback by collaborators were solicited on the white paper with limited success. As such, a detailed Executive Summary was prepared and presented to the ETN for broader discussion. Select conference calls were utilized to discuss the EMMs concept, and feedback from participants was integrated into the Executive Summary and working draft of the full paper. With the limited feedback provided by collaborators, the targeted monthly communications approach was abandoned for the broader input expected with website publication. Additional outreach for the EMMs concept has been accomplished via presentations at numerous conferences and workshops (refer to Attachment B).

*Has the white paper been completed?* No – A current draft of the white paper is now posted. It has not been finalized but rather serves as a working document to accommodate new information as it has become available. With the growing U.S. EPA and USDA interests for deriving multiple environmental credits, and burgeoning interest from around the country, we have attempted to periodically update this draft with new information. As we have seen with other publications, the now rapid evolution of trading programs and environmental markets often renders obsolete, publications which serve more as critiques of early program designs that have since changed by the time of press. Such is the interest of the Network to maintain up-to-date information and examples of evolving programs. That said, we recognize that some finality is necessary and appropriate for this document. We therefore envision that this piece will be formally completed following ETN participant review, and in preparation for Phase II efforts to be approved by the ETN Board.

Other successes and specific lessons learned from this project are summarized below according to Work Plan tasks and objectives originally set forth for this project.

### **Task 1. Continue the current functions of the Great Lakes Trading Network (GLTN)**

The GLTN was initially established ad hoc to maximize the regional impact of the Kalamazoo River Water Quality Trading Demonstration Project funded largely in part, by the Great Lakes Protection Fund. Funds have provided for the ongoing Network efforts including monthly conference calls and maintenance of a website serving as a clearinghouse for trading information. Upon discussion with Network participants, the project team identified the need to reflect a broader geographic scope than just the Great Lakes, as such, the GLTN became the Environmental Trading Network in 2002. A new webpage dedicated to the ETN has been established and is now available at <http://www.envtn.org>. The new ETN webpage also features a new user-interface design, a user-server interactive participant directory, updated information on market-based environmental management practices and a discussion board. Figure 1 depicts the number of web site users (site visits) and individual page visits (hits) in the past year.

The ETN is recognized as the clearinghouse for water quality trading information and other environmental markets. The ETN is one of only three organizations (the other two are the National Wildlife Federation and the World Resources Institute) whose webpage is referred and linked by the trading information section of the trading website of EPA's Office of Water (<http://www.epa.gov/owow/watershed/tradelinks.html>).

In 2003, eight conference calls were completed. The majority of these included highlights of several new EPA-sponsored trading projects. Other topics led by call participants included: EPA's January 2003 Trading Policy; wetland mitigation banking and water quality trading parallels; Pennsylvania's Multi-credit Trading Registry;

Illinois American Water Company sediment trading in Illinois; Tar-Pamlico Program discussions; EPA's Trading Forum Agenda and Panel Discussions, and; Phase II Stormwater Permits, TMDLs and Trading.

Call participants have identified future interests for the ETN including:

- Trading conference(s)
- Pass-through funding and facilitation support for other developing/new trading programs
- Research efforts with partners to integrate multiple environmental credit options
- Development of infrastructure and tools to facilitate trading
- A cross-cut analysis on how pilot trading projects got started and where they drew support to first start developing their projects
- Dissemination of information on agricultural practices that are environmentally friendly drawing attention to potential credit buyers to support the implementation of these practices and generate credits

## **Task 2. Conduct a feasibility analysis and determine institutional needs for multiple markets.**

In examining the potential applications of multiple environmental commodities markets to support restoration projects in the Great Lakes, the project team has drafted a white paper which coins the term "Ecosystem Multiple Markets" (EMMs). Specifically, this term refers to a market-based framework that generates multiple environmental commodities from an integrated ecosystem restoration design approach. Credits for greenhouse gas emissions reductions, nutrient or sediment reductions ("water quality" credits), wetlands and habitat creation from such projects are sold in local, regional and/or global environmental markets. The strategy is to identify and sell various ecosystem services produced by one project. This concept of commoditizing such services is thought to have two outcomes. First, restoration design will be more comprehensive to maximize environmental benefit and services. And secondly, there will be additional incentives for creating new projects resulting in environmental improvements that go beyond a minimum threshold or compliance level established by current regulatory schemes. This white paper therefore attempts to:

- Compare and contrast existing market-based frameworks for Great Lakes applications;
- Evaluate the underlying market mechanisms related to deriving multiple market benefits;
- Poll the existing literature and partners to identify potential market interests that will support the project hypothesis;
- Examine the interagency partnerships, policy needs, and regulatory framework necessary to implement multiple market trades;
- Assess the future needs for communications, promotion, information transfer and marketing;
- Identify opportunities to leverage other programs; and
- Define the operational needs of the ETN to pursue future pilot demonstration projects

The paper also recognizes projects that have been initiated in areas other than the Great Lakes but where conceptually, these might apply to the Basin. We highlight here, some of examples used to illustrate the concept and its applicability from the Draft white paper.

### The EMMs Concept

Existing market-based frameworks, which focus singularly on the sale of one commodity, fall short of achieving the best possible environmental outcome, i.e., optimized ecosystem benefits. Best management practices (BMPs), stormwater treatment designs, conservation measures, and other land use practices often do not consider a range for functional ecosystem management issues. This leads to:

- Ecologically fragmented markets that prevent the capture of multiple environmental benefits available from the synergies among various ecosystem management efforts;
- Thin markets and high transaction costs;

- High compliance costs and diminishing returns from environmental investment; and
- Lack of funds and other resources.

In the EMMs framework examined in the white paper, these issues are conceptually addressed by the markets' abilities to foster ecologically integrated environmental designs. Compared to the individual environmental commodities markets, EMMs would conceptually transform environmental protection activities from reactive measures to proactive undertakings.

A beneficial consequence of ecologically integrated markets is the increased market size for environmental commodities. One restoration project may generate multiple environmental commodities for markets of various sizes where commodities may be sold to pools of buyers and over different geographic ranges. As a result, each commodity market is expanded.

#### Feasibility of Demonstrating EMMs in the Great Lakes Region

The white paper outlines select examples to examine the potential for demonstrating the EMMs framework in the Great Lakes region. The issue is approached from the following perspectives: existing market-based environmental programs and infrastructure, political willingness, public acceptance, and market potential for EMMs.

Under the current regulatory conditions, and through existing and developing market-based programs, four potential environmental commodities were specifically considered in these regards for a pilot program in the Great Lakes region:

- Water quality credits from direct water quality improvement measures
- Ecosystem function mitigation for wetlands
- Greenhouse gases
- Endangered species/wildlife habitat

By examining the potential market value of restoring coastal wetlands in the Great Lakes region, the feasibility analysis suggests, for example, that the annual market value of 1,970 acres of coastal wetlands could reach up to \$168 million for a combination of all four environmental commodities. Whether actual markets would bear out these returns is speculative. However, the need for broader consideration of the potential for multiple market commodities is aptly illustrated by this example.

Funding opportunities for initiating projects to generate environmental commodities are also examined in the paper. Among other sources, provisions in the 2002 Farm Bill create the Conservation Innovation Grants (with a 50% match) as part of the expanded Environmental Quality Incentives Program (EQIP). This newly established grant program awards governmental organizations, non-governmental organizations or individuals that leverage federal funds to implement innovative approaches to conservation including market-based incentives. Up to \$15M are available for these projects in 2004 with proposals due May 28<sup>th</sup>. U.S. EPA recently issued a request for proposals for 2004 Watershed Initiative Grants (\$21M) focusing on market-based incentive programs. EPA has also proposed another \$4M for Targeted Watershed Grants in 2005 that specifically address water quality trading initiatives. The success of the Chicago Climate Exchange to garner significant support and interest in a voluntary greenhouse gas market highlights the potential for private sector interest in these markets. Other private sector interest is growing for overlapping market opportunities with wetlands mitigation and conservation banks, though typically outside of the Great Lakes Basin.

## Steps for the Implementation Phase of a Pilot Project under the EMMs Framework

The white paper examines in detail, the fundamental elements of EMMs in the context of an experimental framework. Demonstrations would serve to identify functional aspects and requirements theoretically leading to operating markets. Carrying out a pilot in the region would involve identifying the supply and demand of environmental commodities for a select geographic area, establishing market institutions or infrastructure to facilitate trading (where none exist), tracking and potentially brokering actual trades. Five simplified process steps are outlined here for a potential pilot project implementation:

1. Project site selection—in this step, a geographic area (likely a watershed) or multiple areas in the Great Lakes region are identified where existing market drivers for improvement (TMDLs, wetland/habitat losses, flooding, regulated entities) are present. Existing organizational infrastructure, robust environmental data, regulatory willingness should be present for these sites.
2. Framework building—in this step, the institutional arrangements for the EMMs strategy are created to facilitate and oversee trading in the framework. This step would include designing market institutions for each environmental commodity as appropriate to meet the local need, with transferable elements to other systems to ensure environmental efficacy and market efficiency. Proposed market structures would utilize and incorporate currently available exchange markets (e.g., the CCX) and trading tools (e.g., the NutrientNet by the WRI).
3. Environmental commodity production—in this step, the design/engineering work is performed to improve or restore ecosystem functions and maximize potential credit generation.
4. Transaction of the environmental commodities—in this step, various commodities generated in the pilot project are traded in the experimental market framework.
5. Research and reporting—in this final step, documentation will be needed to facilitate transferability to other settings.

These steps establish the foundational setting for a potential Great Lakes pilot project.

### **Task 3. Incorporation of the ETN as a Non-profit Organization.**

The status of the ETN incorporation was highlighted previously. The following steps are necessary to complete these organizational objectives:

- Selection of a Board of Directors and officers by the Incorporator
- Approval of Draft Bylaws and Articles of Incorporation
- Filing for tax exempt status
- Finalization of a business plan for Board approval

Articles of Incorporation and Draft Bylaws were reviewed by ETN participants and finalized for submittal to the state of Michigan. A Business Plan has been drafted. A letter of invitation to serve on the Board will be distributed by the end of April 2004 with copies of the Articles, Bylaws and Draft Business Plan. By June 2004, Board selection and amendments to information necessary for IRS filing will be complete. IRS reviews will take six to eight weeks.

### **Lessons Learned**

Across the United States, environmental markets for GHGs and water quality credits are in their early developmental/planning stages or have yet to materialize. These markets are especially immature in the Great Lakes Basin. Wetlands mitigation banks are uncommon in the Great Lakes and conservation banks (endangered species habitat) have yet to be established. As such, the motivation to readily generate and the opportunity to sell credits in these select markets are limited at this time. Other potential markets for water storage (flood

waters/stormwater) or water withdrawals may represent new and additional market opportunities. Collectively, however, these drivers are not well-defined or understood in the Great Lakes, especially in the context of overlapping markets. Consequently, agencies may have limited interest in supporting new, or expanding existing market-based programs. Well-defined and highly capitalized restoration projects will thus need to be targeted and exploited to adequately test these market concepts of this project in the Great Lakes Basin.

The extended schedule of this project since start-up in 2001 has spanned a remarkable period of time in the life of new and emerging market-based environmental programs. New drivers and incentives, along with some old and some new barriers will persist (see Attachment C). Federal policy, the growing success of voluntary GHG markets, broadened interest of mitigation bankers and new sources of funding have, however, provided legitimacy to trading efforts once commonly dubbed as experimental or pilot demonstrations. We gratefully acknowledge here, the pivotal role played by the Great Lakes Protection Fund in providing support for this project and previous efforts to overcome such challenges.

## **Next Steps**

The following two elements outline the broader vision and responsibilities of the future Network.

### *As a Clearinghouse...*

- To continue to serve as the clearinghouse for publicly accessible information on water quality trading and other environmental programs that utilize market-based approaches to improve water quality, air quality and wildlife habitat, as well as support and strengthen existing environmental programs, policies and regulations.
- To disseminate information and facilitate public discussion on existing and proposed state, federal and international regulations and laws related to market-based environmental programs.

### *As a Facilitator and Leader...*

- To conduct, compile and disseminate basic and applied research to identify, evaluate, demonstrate and develop policies, strategies, programs, mechanisms and infrastructure associated with or necessary for the development and implementation of water, wetland, air, endangered species, and other environmental markets, including secondary markets such as flood storage that may be created to insure against risk and uncertainty.

In addition to the ongoing role as a clearinghouse, near-term efforts (next 12 months) of the Network will seek additional funding for the following objectives. These will be associated with currently identified partner projects in the Great Lakes and in settings outside of the Basin.

- Disperse funds for projects that test and analyze public policies and experimental program design elements to create a model for how market-based approaches can improve the environment.
- Receive and administer funds for projects that will result in public benefit and education through experimental demonstrations, environmental improvements, information sharing and innovative programs to improve the environment.
- Develop infrastructure and mechanisms for multiple environmental markets to support emerging U.S. market-based policies intended to provide broad public benefit by addressing a range of environmental problems.

Long-term ETN interests (12-48 months from now) will target some of the initially envisioned Phase II goals which will seek to:

- Conduct scientific research and manage or administer projects which create environmental credits that can be used, sold or traded in existing or emerging environmental markets, locally, nationally and internationally.

- Assist with or administer the investment in and brokering of demonstration trades of environmental credits in existing and emerging markets to publicly disseminate information on new opportunities for environmental improvements.
- Solicit and receive contributions and donations of funding and real property for permanent conservation easements.
- Buy, own, sell, manage, receive, administer and lease real estate, personal property, and other assets for environmental improvements.

## ATTACHMENT A

The following is a narrative synopsis of water quality trading interests by the various Great Lakes states as compiled from ETN monthly conference calls, contacts and other sources available through and compiled in the frequently updated ETN web page ([www.envtn.org](http://www.envtn.org)).

### ***Michigan:***

No trades, or any active trading interests have occurred since state-wide water quality trading rules were promulgated in November of 2002. This relates to two issues: Michigan has yet to develop the electronic trading registry (board of trade) required by the rules that would facilitate trading in watersheds with TMDLs, or other trading opportunities (pre-TMDL, offsets for growth). The second barrier is the loss of institutional inertia at the Department of Environmental Quality due to the departure of David Batchelor (often the sole regulatory advocate), an administration change and the severe financial condition of the state budget. K&A, the ETN and other partners have submitted three separate grants to EPA for support to develop the registry. Two were unsuccessful; a Watershed Initiative Grant for \$1.3M with the Gun Lake Tribe (in Michigan) is under review.

### ***Indiana:***

No specific interest in water quality trading has been broadly expressed by the Indiana Department of Environmental Management. Though Great Lakes waters in this state are limited, the ETN has been exploring options for multiple environmental markets with select organizations in the Little Calumet River basin since early 2003. More recently, the ETN has established a partnering relationship with Applied Ecological Services (AES) of Minnesota to pursue opportunities for establishing watershed-based ecological profit-centers in this basin. Market centers would range from eco-tourism, carbon banking, wetland banking, stormwater banking, conservation banks and water quality trading for nutrients, sediment and bacteria. Mark Kieser of the ETN and Steve Apflbaum of AES are expanding on previous ETN trading proposals linked to other market centers identified by AES for an early May 2004 presentation to area industry and power companies which might finance portions of these efforts.

### ***Ohio:***

Ohio EPA has been interacting with a watershed organization in southern Ohio (the Miami Conservancy District) that is seeking to develop a point/non-point source trading program in the Great Miami River, a tributary to the Ohio River. Ohio EPA is supportive of this active basin effort but has expressed to project partners that their trading interest and support will be limited to a basin-wide, rather than a state-wide framework. K&A, through its recognized affiliation as maintaining the ETN, is under contract with the Miami Conservancy District to conduct a preliminary water quality trading market feasibility analysis for the basin. Despite the more than 200 point source dischargers, agriculture is the predominant source of nutrients (90%) to this system. State-wide nutrient standards expected in 2007 (phosphorus) and 2008 (nitrogen) will be the primary driver for trading credit purchases. (Effluent standards of 1 mg/L phosphorus and 10 mg/L nitrogen are anticipated.) Agriculture will be the primary source of credit generation. A unique banking and credit escrowing system will be an integral part of the trading framework. The ETN has been invited to be a partner on a May 2004 Conservation Innovation Grant proposal that will also focus on carbon sequestration opportunities associated with agricultural BMPs to reduce nutrient loading. This is the only active trading effort in the Ohio River Basin; the target of

U.S. EPA and USDA interests for a basin-wide program to address local phosphorus issues and nitrogen loading to the Mississippi River as related to Gulf of Mexico Hypoxia issues.

***Illinois:***

The state of Illinois was not pursuing trading until a singular opportunity for the use of trading arose in 2000. Illinois-American Water Company (IL-AWC) constructed a new 16.0 million gallon per day (mgd) water treatment facility in Alton, Illinois to replace a 100-year old facility that was subject to flooding. The old Alton Water Treatment Facility had a Site-Specific Exemption from the Illinois Pollution Control Board allowing the direct discharge of residual solids and backwash water to the Mississippi River. The NPDES permit exempted the facility's discharges from the effluent standards of Total Suspended Solids (TSS) and Total Iron. Illinois EPA determined that the exemption did not apply to the new facility and that a new application was required. Ninety-one percent (91%) of the TSS in the waste stream from the new facility is silt removed from the raw water, and the other nine percent (9%) is inert residual coagulants utilized in the treatment process. IL-AWC pursued the Adjusted Standard application because a direct discharge would eliminate the need for residuals lagoons, mechanical dewatering equipment and hauling the dewatered solids to a landfill. In addition to increased capital (\$7.4 million) and O&M costs (\$0.42 million/year) associated with dewatering, it was estimated that three to seventeen trucks per day would be required to haul the dewatered solids from the facility along the Great River Road to a landfill site. Local residents, government officials and environmental groups were opposed to the lagoons and the hauling of de-watered solids along this roadway, which was recently established as a National Scenic Byway.

IL-AWC developed a unique partnership with the Great Rivers Land Trust (GRLT) to fund a watershed project, which alternatively provides a sustainable reduction in overall sediment loading to the Mississippi River. IL-AWC is contributing \$4.15 million over a ten-year period to fund the Piasa Creek Watershed Project. The project is expected to obtain a 2:1 reduction in sediment loading to the Mississippi River as compared to the direct discharge load (9.2 dry tons/day) from the new Alton Water Treatment Facility. The Illinois Pollution Control Board and IEPA supported the amended Adjusted Standard application for trading.

***Minnesota:***

MPCA has been working with NPDES dischargers in the Lower Minnesota River (Mississippi River basin) to develop a point source/point source trading scheme to address low flow/low dissolved oxygen conditions in summer months. These would be trades on a permit by permit basis similar to the point/non-point source trades for Rahr Malting Company and the Southern Minnesota Beet Sugar Cooperative discharges to the Minnesota River. The ETN has been interacting directly with MPCA since February 2003 to examine broader collaborative opportunities to develop state-wide trading rules allowing point source/point source, point source/non-point source and non-point source/non-point source trading by rule vs. by permit. MPCA has identified the significant administrative costs associated with permit development for the existing trading scheme. The agency, however, has been described as being organizationally horizontal whereby more than a dozen managers must all agree to new policy initiatives. As such, the ETN is continuing to pursue grant opportunities that rather would examine options and approaches for alternative trading schemes in conjunction with large-scale agricultural interests in the Blue Earth River watershed (2.4 million acres draining to the Lower Minnesota River with 2.2 million acres in agriculture). Currently, opportunities to pursue a Conservation Innovation Grant are being explored with the Blue Earth River Basin Initiative, a 2002 EPA Watershed Initiative Grant recipient. Though these waters do not discharge to the Great Lakes, significant overlapping environmental market opportunities exist for agriculture to generate phosphorus, nitrogen and

sediment credits in water quality markets as well as GHGe credits for nitrogen fertilizer management. To date, multiple funding avenues have been explored including start-up grants through the McKnight Foundation and another U.S. EPA 2004 Watershed Initiative Grant.

#### ***New York:***

No current or pending trading initiatives or interests have been identified in New York through the ETN. Recently, however, Michigan Technological University (MTU) (Houghton, MI) has approached the ETN about partnering on a three-year grant through USDA to examine point/non-point source trading conditions in upstate New York drinking water reservoirs. With the 1990s revisions of the Safe Drinking Water Act, New York City faced the decision of a \$10B investment in drinking water treatment facilities or \$4B in watershed management and protection of drinking water reservoirs. These highly monitored and modeled systems are still facing eutrophication pressures, and point sources to these systems will reach the limits of technology without benefits to the reservoirs. Thus, the opportunity for point/non-point trading with agriculture (a primary nutrient loading source) may exist. The MTU effort focuses on barriers to point/non-point source trading such as uncertainty associated with trading ratios, and effective trading mechanisms (such as banking) that may impede development of successful markets. Dr. Barry Solomon of MTU (formerly of U.S. EPA) will lead this effort. The Cannonsville Reservoir in New York, the Kalamazoo River in Michigan, and the Great Miami River in Ohio will be the three case studies proposed for this grant. The ETN has been asked to assist with data acquisition, case study interviews, framework development with partners and national outreach. The National Association of Conservation Districts is a partner on the proposal and will address outreach to the agricultural community.

#### ***Wisconsin:***

A 1997 state statute allowed pilot demonstration trades in three Wisconsin watersheds: the Fox-Wolf Drainage Basin, the Red Cedar Watershed and the Rock River Basin. A September 2000 update was issued by the Wisconsin Department of Natural Resources (DNR) that provided limited updates on these projects. Of note is the statement that the DNR continued to “track progress of trading through the Great Lakes Trading Network” in this 2000 update. A September 2003 update suggests, however, that trading opportunities may actually be limited in Wisconsin citing:

- Most wastewater treatment plants can more economically meet an effluent limit of 1 mg/l phosphorus through plant upgrades than through trading. For trading to be effective, a broker, should assume the administrative costs. The broker will need a source of funds to function in this capacity.
- Trading is more likely to be economical if the phosphorus load to be traded is relatively small.
- The effluent limit of 1 mg/l phosphorus is not an adequate driver to support trading in most instances. A TMDL, performance standard or water quality based limit is needed to elicit interest based primarily on cost considerations.
- An agreed-upon set of tools is needed to quantify phosphorus reduction loads from nonpoint sources.

ETN conference call comments have suggested that non-point source performance standards established for agriculture may also undermine trading opportunities as the baseline for agriculture may eliminate opportunities for inexpensive credit generation.

***Pennsylvania:***

A Conestoga River Nutrient Trading Pilot Project was initiated in 2002 to improve environmental quality by establishing a voluntary pollution credit-trading program on the Conestoga River watershed in Lancaster County, Pennsylvania. The pilot provides incentives for voluntary reductions in nitrogen and phosphorus, two key components of stream impairment.

Market forces will be harnessed to shape the values of the pollution credits and the method in which they are traded. The program works within the existing federal and state regulatory framework and be integrated into the Chesapeake Bay Program. This project also examines overlapping market opportunities for GHG emissions reductions, one of the first trading efforts to pursue this overlap. The State more recently issued a Request for Interest regarding the development of a state-wide trading registry that would allow trading of nutrient credits and GHGs. A 2004 EPA Watershed Initiative Grant submittal is pursuing this for the Chesapeake Bay.

## **ATTACHMENT B**

### **ETN Outreach for Trading at International/National/Regional Conferences (via invitation)**

“Water Quality Trading: Restoration Methods at Banks to Enhance Water Quality Benefits,” 7<sup>th</sup> National Mitigation & Conservation Banking Conference, New Orleans, LA March 3-5, 2004.

“Economic and Environmental Benefits of Water Quality Trading,” Urban Renaissance and Watershed Management Conference, Tokyo and Otsu, Japan, January 28 & February 3, 2004.

“Ecosystem Multiple Markets: The Next Generation of Ecological Restoration and Management,” 6<sup>th</sup> National Mitigation & Conservation Banking Conference, San Diego, CA, April 23-25, 2003.

“Markets to Achieve Environmental Improvements: Controversy or Common Sense,” invited presentation at the World Watershed Summit, America’s Clean Water Foundation, Washington, D.C., October 30 - November 1, 2002.

“Water Quality Trading: Another Tool for the Watershed Tool Box,” invited presentation (and proceedings) for the 2002 Illinois Environmental Law Conference, Chicago, IL, August 15-16, 2002.

“Developing Markets to Manage Ecosystems,” invited presentation at the 5<sup>th</sup> National Wetlands Mitigation Banking Conference, Washington, D.C., February 27 - March 1, 2002.

“Transitioning to Statewide Trading Rules and a Phosphorus TMDL: The Kalamazoo River Trading Experience,” presented in the Workshop on Incentives for Watershed Action: Environmental Credit Trading Before, During and After TMDLs, Water Environmental Federation, Watershed 2002 Conference, Fort Lauderdale, FL, February 24-27, 2002.

“Water Quality as a Commodity? The Shift to Market-based Incentives for Environmental Improvements,” presented at the Conference on Working Landscapes in the Midwest: Creating Sustainable Futures for Agriculture, Forestry and Communities, Delevan, WI, November 8-9, 2001.

### **Outreach Efforts at Workshops/Forums/Other Gatherings (via invitation)**

“Market-based Environmental Approaches for Agriculture,” presented by Mark S. Kieser (ETN) to the Potomac Highlands Environmental Markets Workshop Steering Committee (to discuss carbon, nutrient and other market opportunities and what is possible for WV agriculture in the Potomac Basin); Invited by the Friends of the Potomac, Moorefield WV, March 29, 2004.

“Innovative Cropping Systems Incentive Program and a pilot Environmental Trading Program in the Lower James River Watershed,” Presentation to EPA Headquarters Staff, (Offices of Water, Wetlands and Oceans; and Water Permits Division) with the Colonial Soil & Water Conservation District Partners, Richmond VA, March 30, 2004.

ETN Organization of, and accompaniment to meetings for Japan’s Water Quality Trading U.S. Study Team with trading programs/ETN partners (U.S. EPA Offices of Water, Wetlands and Oceans; and Water Permits Division; Charles River Watershed Association, Boston, MA; Connecticut DEP/Long Island Sound; Metropolitan Washington Sanitation

Commission/Maryland & Chesapeake Trading Programs) with funding from the Ministry of Land, Infrastructure and Transport, Tokyo, Japan, February 22-March 23, 2004.

“Market Approaches for Environmental Improvements: *Opportunities* in the Great Lakes Region and Beyond,” Friends of the Potomac, Environmental Markets in the Potomac Basin Working Forum, September 16-17, 2003, Rockwood Manor Park in Potomac, Maryland.

“Looking Ahead: Trading Opportunities and Next Steps,” Mark S. Kieser (ETN) Panel organization and moderation for Interactive Dialogue with Expert Panel: Next Steps in Trading Implementation, USEPA Sponsored Forum on Water Quality Trading, July 22-23, 2003.

ETN Invited Exhibitor at EPA’s National Forum on Water Quality Trading (other invited exhibitors included EPA, USDA, WERF, ASWIPCA), July 22 and 23, 2003

“Market Opportunities to Achieve Water Quality Goals through Watershed Commodities,” Presented to the Colonial Soil & Water Conservation District Stakeholder Workshop, Williamsburg, VA, April 30, 2003.

“Water Quality Trading...from the local level to the broader ecosystem: A tool to achieve environmental improvements,” Presented at the World Resources Institute Press Conference for Release of “Awakening the ‘Dead Zone’: An investment for agriculture, water quality, and climate change.” Minneapolis, MN, March 6, 2003.

March 4, 2003 Press Release announcing that the Great Lakes Trading Network had changed its name to the Environmental Trading Network and was incorporating as a non-profit organization.

ETN (Mark Kieser) attendance at EPA Administrator, Christine Todd Whitman’s Press conference unveiling the new Water Quality Trading Policy, by written invitation from Assistant Administrator of the Office of Water, Mr. G. Tracy Mehan, January 13, 2003.

“Developing Markets to Manage Ecosystems: A Regional and National Perspective,” Mark S. Kieser (ETN) presentation to Wildlands, Inc. and National Mitigation Banking Association Board Representatives, Sacramento, CA, August 14, 2002.

“Water Quality Trading...from the local level to the broader ecosystem: A tool to achieve environmental improvements,” Presented by Mark S. Kieser (ETN) to Minnesota Pollution Control Agency, Minneapolis, MN, March 6, 2003.

“Markets to Achieve Environmental Improvements: Successful Applications and Opportunities for Agriculture,” Invited presentation to USDA-NRCS and U.S.EPA Office of Water, Washington, D.C., December 20, 2002.

“Watershed-based trading in the Midwest,” invited presentation to the Department of Agricultural and Resource Economics, and the Regional Research Institute, West Virginia University, Morgantown, WV, October 18, 2002.

Cheat River Trading Applications Meeting with West Virginia Trading Partners, Mark Kieser (ETN) invited guest, West Virginia University, Morgantown, WV, October 18, 2002.

## **ETN Publications/Articles**

“Ecosystem Multiple Markets – A White Paper,” DRAFT, In Preparation, by Mark S. Kieser (ETN/K&A) and “Andrew Feng Fang (K&A), with support from the Great Lakes Protection Fund, 2004.

Watershed-Based Trading: A Guide for the Wastewater Community, Chapter 8: *Gaining Public Acceptance*. In Review. Authored by Mark Kieser (ETN), with Cy Jones (Metropolitan Washington Sanitation Commission) and Lisa Bacon (CH2MHill), with funding from the Water Environment Research Foundation.

“Economic and Environmental Benefits of Water Quality Trading - An Overview of U.S. Trading Programs,” by Mark S. Kieser (ETN) and “Andrew” Feng Fang (K&A), Proceedings of the Workshop on Urban Renaissance and Watershed Management, Ministry of Land, Infrastructure and Transport, Tokyo, Japan, February 3, 2004.

Great Lakes Commission, March/April 2003 Adviser Point-Counterpoint: *Will EPA’s new trading policy improve water quality?* Mark Kieser (ETN) Point and Andy Buchsbaum (National Wildlife Federation) Counterpoint.

“Water Quality Trading: Another Tool for the Watershed Tool Box,” by Mark S. Kieser and “Andrew” Feng Fang; 2002 Illinois Environmental Law Conference, Chicago, IL, August 15-16, 2002.

## ATTACHMENT C

### Drivers for Trading in the Great Lakes Basin and U.S. (momentum building milestones)

- EPA's 2003 Water Quality Trading policy
- EPA supported 2003 Water Quality Trading demonstration projects
- EPA's July 2003 Water Quality Trading Forum/Conference in Chicago, IL
- EPA's Watershed-based permitting guidance issued in 2004
- TMDL development for more than 45,000 U.S. water quality impairments
- EPA's 2002 inclusion of Phase II Stormwater Permittees as point sources for TMDL Waste Load Allocations
- Pending nutrient criteria/standards to be adopted by states
- U.S. Fish and Wildlife Service issuing their 2003 Conservation Banking policy
- Wetland mitigation banking interests
- Growth of greenhouse gas markets such as the Chicago Climate Exchange
- USDA/2002 Farm Bill recognition and emphasis on water quality and greenhouse gas trading with funding support (e.g., Conservation Innovation Grants)
- EPA's 2004 Watershed Initiative Grants emphasizing market based incentives
- EPA's 2005 Targeted Watershed Grants with \$4M allocated to trading
- EPA Region 10 guidance on water quality trading (2003)
- Water Environment Research Foundation grant to develop "how to trade" tools (2003)
- Stormwater and flood storage initiatives in the upper Midwest
- Enabling legislation/policy for trading in Louisiana, Florida, Virginia, Wisconsin

### Barriers to Trading (which also identify "Next steps")

#### *Water Quality Trading*

- State and local acceptance of water quality trading is still evolving
- This is a lack of "How to trade" tools for beginners interested in trading
- Project funding is scarce and competition for broad scope funding is difficult
- Inability to readily identify self-sustaining program support mechanisms for administration, permit writers and technical staffing discourages agency interests
- Local champions/advocates are still necessary for trading
- Applications for basin-wide trading programs are restrained by varying objectives of state agencies, objectives and funding
- Uncertainty associated with market supply and demand (and therefore with cost benefits, program costs, and drivers) quickly dissipates trading interests
- Successful program implementation at the watershed level (vs. "demonstration projects") requires infrastructure (marketplace tools including registries, banks, permit language)
- Dissemination of information on costs, approaches, successes, technical details is needed

#### *Greenhouse Gas Markets*

- Regulatory drivers are lacking; markets are voluntary
- Baseline accounting and verification is difficult for terrestrial credit generating activities
- Ready access to greenhouse gas markets for agriculture is limited and isolated to select projects typically associated with voluntary markets

#### *Wetland Mitigation Banking*

- Bank approvals require significant time and costs; bankers do not wish to divert attention towards other commodities

- Few bank projects monitor environmental conditions necessary to establish water quality or other baseline accounting issues (for GHGs)
- Uncertainty exists regarding market demand for other environmental commodities
- No regulatory barriers exist for water quality credit generation through banks, but few bankers are willing to “test” the regulatory interest

*Conservation Banking*

- Surplus environmental commodities are not produced when land/habitat preservation is the conservation bank objective
- “Double dipping” issues and absence of market regulations make agencies and bankers uncomfortable with generation of other environmental commodities