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IN THIS ISSUE

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PROJECT SPOTLIGHT

Changing Land Use Decision Making One Town at a Time: The NEMO Project at the Ten Year Mark

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Introduction

The *Nonpoint Education for Municipal Officials* (NEMO) Project was created in 1991-1992 at the University of Connecticut, as a collaboration of the Cooperative Extension System, the Natural Resources Management and Engineering Department, and the Connecticut Sea Grant College Program. A major objective of NEMO was to demonstrate the effectiveness of using remote sensing and geographic information system (GIS) technologies to inform and enhance educational programs linking local land use decisions to water quality issues. The most important aspect of NEMO, however, was not its use of technology but its focus on local land use decision makers as the educational target audience.

NEMO was created in recognition of the relative lack of education and assistance available for local land use decision makers. Land use decisions are a key determinant of the social, economic, and environmental health of our communities, and land use in the United States is predominantly a local issue (Arnold, 1999). Land use policies are developed, and land use decisions are made, by elected and appointed officials at the county and municipal or town level. Most of these critical decision makers are volunteers with little or no training in land planning or natural resource protection, and many lack professional staff or outside assistance.

The original pilot project, funded by USDA, was an outgrowth of the Long Island Sound Study National Estuary Program and

focused on three coastal towns. Although the size of the project has remained modest, at present NEMO has worked with over two-thirds of the 169 municipalities in Connecticut, and is an integral part of the state of Connecticut's Nonpoint Source (NPS) Management Program. The project is also the coordinating center for the National NEMO Network, a confederation of 23 projects in 21 states and territories.

This article briefly reviews the evolution of NEMO's methods in Connecticut, and provides examples of the changes to local plans, regulations, policies, and practices that our local partners have implemented, with the assistance and support of the NEMO Project.

Methods

Both the topical content and the delivery methods of NEMO's educational programs have changed over its ten years of existence.

The pilot project created the "basic" NEMO educational program, *Linking Land Use to Water Quality* , which uses a combination of digital photos, carefully simplified GIS maps, and remote sensing images to take the audience through the impacts of development on the water cycle, the concept of watersheds, and the role of land use in determining the health of the watershed (Arnold *et al*., 1993; Stocker *et al*., 1999). The emphasis of the latter half of the program is on the relationship between impervious cover and watershed health, a concept now widely supported by the literature (Schueler, 1994; Arnold and Gibbons, 1996). Community decision makers are then presented with a three-tiered strategy of planning, development design, and best management practices as a way to address nonpoint source pollution.

Linking Land Use was synonymous with NEMO for the first five years of the project, and continues to be a programmatic mainstay. However, the NEMO educational package has broadened considerably in the last five years. This is partly in response to the needs of our towns, and partly driven by the evolution of project philosophy to embrace natural resource based planning as the overall framework of how communities can best balance growth and environmental protection in their community. Natural resource based planning begins with resource inventories that identify and prioritize natural, cultural, and other resources, which then inform both the conservation and development halves of community planning. The need for communities to address both the conservation and development sides of the community planning equation is a key aspect of the process (Arnold and Gibbons, 2001).

At least 10 additional educational "modules" have now been integrated into the NEMO project. Some were newly developed, some (primarily community planning programs) were co-opted from longstanding Extension programs, and some were developed by partners such as the CT Sea Grant program and the Extension Forestry program. The entire menu of NEMO educational programs can be reviewed on the project web site at: **http://nemo.uconn.edu/workshops_initiatives/index.htm.**

For most of the lifespan of the project, delivery of educational programs has been largely reactive, as NEMO staff responded to requests from Connecticut towns generated by our work in the pilot communities. By 1998, NEMO's CT staff (principally two people) were conducting about 150 educational workshops a year, most by request. As the educational offerings of the project expanded, the nature of the interchange between a "client" town and the project changed somewhat. While *Linking Land Use* continued to be the most common "point of entry" into a town, town officials were encouraged to avail themselves of the full educational package. As a result, although "one shot" educational programming still occurred, in many cases more extensive relationships began to develop between the project and certain towns.

EDITOR'S NOTE

In this issue of *NWQEP NOTES*, we feature the NEMO project, *Nonpoint Education for Municipal Officials*, based at the University of Connecticut. Since 1991, NEMO has been educating local decision makers in Connecticut communities on the link between land use and water quality. Over the past ten years, and particularly with the development of the *Connecticut Municipal Initiative*, NEMO has seen their relationships with communities, and hence their program, evolve from one-time educational delivery to hands-on support with implementation of on-the-ground changes. NEMO advocates natural resource based planning as a way to balance growth and environmental protection. This article highlights communities that have teamed up with NEMO to bring about changes to local plans, regulations, policies and practices.

As always, please feel free to contact me regarding your ideas, suggestions, and possible contributions to this newsletter.

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To further capitalize on this evolution, in 1999 NEMO project staff, in collaboration with the Nonpoint Source Section of the Connecticut Department of Environmental Protection (CTDEP), developed the *Connecticut Municipal Initiative*. The Municipal Initiative allows the NEMO Team to focus more resources on fewer municipalities, establishing relationships between the NEMO project and these municipalities that span from the initial educational program through implementation of on-the-ground changes.

Each year, NEMO distributes a Request for Proposals (RFP) to all 169 towns in Connecticut, soliciting admission into the Municipal Initiative program. The application form is quite simple – one page – but its underlying purpose is to get municipalities to commit to the process of working with the University as partners on a long-term educational program with specific goals. Five municipalities, one for each of the five major Connecticut river basins, are chosen each year. Towns are selected based on the following criteria: (1) desire to incorporate NEMO's strategies for natural resource based planning (see the five categories listed below); (2) willingness to establish a NEMO Task Force committed to working with the NEMO team to achieve implementation; (3) willingness to serve as a model to other CT municipalities, as well as to members of the NEMO National Network.

Selected towns must designate a "contact person" for the project who will be responsible for facilitating communication both between the project and the town, and among various bodies within the town. The contact person works with the NEMO team's Connecticut Programs Coordinator to set up an initial meeting between the NEMO project team and the town's NEMO task force. Membership of the task force must include, at a minimum, members of the following commissions or boards: planning, zoning, inland wetlands, conservation, and the office of the chief elected official (town council; board of selectmen, mayor's office). Other groups, such as town departments, land trusts and economic development commissions are also encouraged to participate.

At the initial meeting, the NEMO Team's Coordinator reviews with the town's NEMO task force the NEMO Project and its educational offerings, and describes the Municipal Initiative and its objectives. Task force and project staff then agree to a "laundry list" of specific town objectives, drawn from the general categories suggested by NEMO but heavily influenced by the needs and interests of the town. The categories are:

1. Changes to the **administrative procedures**. Examples include establishing new commissions, or separating a "combined" commission (e.g., conservation and wetlands) into two commissions, for more effective operation. These changes create a decision making structure that is more conducive to proactive planning.
2. Foundational **research and information gathering**. For example, conducting a natural resource inventory to identify priority natural resource areas for protection, or a study to identify the town's economic assets. These initiatives help provide the local data upon which rational land use plans and decisions can be based.
3. Changes to **planning documents**, such as open space plans, economic development plans, comprehensive plans, or watershed plans. Plans are critical documents that provide the "big picture" vision, goals and priorities of the community.
4. Changes to **regulations**, including zoning, subdivision, and road design regulations. Regulations give "teeth" to plans, and provide specific objectives to be met.
5. Changes to town **policies**, for example, road sand sweeping procedures and catch basin and detention/ retention pond maintenance. Policy changes help ensure that a town takes care of its own responsibilities, in addition to directing the actions of others.

In addition to the educational presentations, NEMO provides support through guidance documents (fact sheets, publications, CD's), Internet tools, GIS and remote sensing information, and consultation via telephone or meetings. NEMO team staff occasionally will review documents or regulations that the town is creating or updating, to advise on how the management strategies promoted by NEMO are being incorporated. However, the NEMO Project draws a fairly firm line in the sand about its educational role, and does not write regulations, produce planning documents, review site plans, testify at public hearings or provide "on-demand" GIS mapping.

Results

While NEMO (along with its sister projects across the nation) is continually seeking better ways to capture and relate project impacts, we can say with certainty that as a result of participation in the Municipal Program, towns are making changes in the five categories outlined above. Following are four brief case studies of towns that are part of the "Year One" (2000-2002) class of the Connecticut Municipal Initiative. Information can also be found at: **http://nemo.uconn.edu/case_stdies/index.htm.**

Woodstock

Woodstock is a rural community in the northeast corner of Connecticut, with a relatively large area (61 square miles) and a population of about 7200. Our latest remote sensing-based land cover information indicates that developed land (urban and residential uses) accounts for about 18% of the Woodstock landscape, while over 70% is forested.

The first meeting of NEMO project staff with the new Woodstock NEMO task force took place in April, 2001. Although Woodstock is still a town that typifies the regional nickname of the "Quiet Corner" of Connecticut, local decision makers expressed concern about the preservation of open space and their rural community character in the face of increasing development, as people commit to making the long commute to Hartford, or the even longer commute to Providence, RI. They were also interested in implementing a sewer avoidance strategy, particularly around their lakes. Based on discussions with the task force, NEMO educational programs that have been delivered to date in Woodstock include *Open Space Planning*, *Site Plan Review for Compliance with an Open Space Plan*, *Creating an Open Space Plan Map, and Wet Lands*. In addition, NEMO staff have participated in multi-commission discussions on several occasions.

As a result, the town Conservation Commission has conducted a natural resources inventory, which was completed in 2000. The inventory, which identifies key natural resources such as agriculture and unfragmented forest, was done entirely with volunteer effort, supported by the NEMO team, which advised on sources of data and types of data layers that were most relevant. The inventory is entirely digital, and has also been converted into a *Powerpoint* presentation that can be given to various groups and commissions in town. In addition, an open space plan was completed and formally adopted in 2001. The plan outlines the rationale and objectives of preserving open space in town. The task force is currently working on refinements to the plan, incorporating the latest natural resource inventory data to develop a detailed open space plan map (Figure 1).

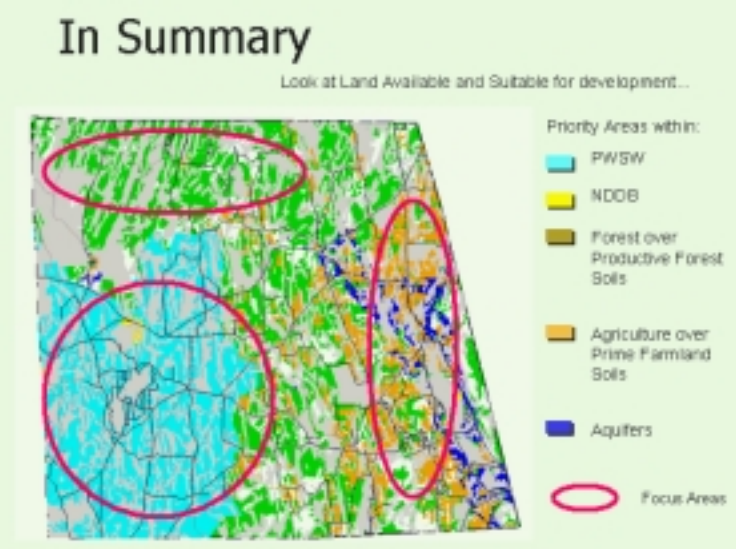

Figure 1. Detail from a map taken from Woodstock's Open Space Plan.

As part of the implementation of the open space plan, the Woodstock Planning and Zoning Commission has asked the Conservation Commission to review subdivision applications for consistency with the Open Space Plan. The idea is that any open space set-asides requested from developers at the time of subdivision should be located and managed in order to maximize the benefits to the town open space network. NEMO staff, along with staff from a sister project, the Green Valley Institute, conducted a specially-designed workshop on subdivision review for the Conservation Commission.

Woodstock Planning and Zoning is also updating their comprehensive plan, called in Connecticut the Plan of Conservation and Development, or POCD. The consultant engaged to assist the town has met with the Conservation Commission and NEMO staff to discuss the process of incorporating the Open Space Plan and NEMO stormwater management principles into the Plan. Sea Grant staff associated with the NEMO project conducted the "*Wet Lands"* educational workshop for the Inland Wetlands Commission, who are interested in strengthening their wetlands and watercourses buffer regulations. The Economic Development Commission has been reactivated and attended NEMO's Economic Development Planning workshop as a means to organize their efforts.

Salem

Salem is a semi-rural town in the center of Connecticut, with about 15% developed land and much of the rest in forest. Salem is one of the three towns that comprise most of the Eightmile River watershed, a tributary of the Lower Connecticut River and the focus of a University of Connecticut watershed initiative that began in 1996 (Kane and Worthley, 2000). Local interest generated by the watershed project facilitated the recent Federal designation of the Eightmile as a Wild and Scenic River. However, town decision makers also wanted to move forward more aggressively on a number of other, more local land use initiatives.

NEMO staff met with the Salem task force in May of 2001. The town Conservation Commission had already embarked on a natural resource inventory, incorporating information from previous studies done as part of the Eightmile River project. The inventory, which was reviewed by NEMO staff, is now completed. NEMO conducted an open space-planning workshop in July 2001, and NEMO staff are working with the town on folding the inventory information into a new draft open space plan, which is expected to be completed over the summer of 2002.

In addition, NEMO staff are working with the Salem Zoning Commission on possible changes to their regulations that would incorporate the concept of "net buildable area" and other NEMO principles. At the request of NEMO, the Extension

Forestry program held a workshop about forestry practices and logging in September 2001, as a first step toward addressing town concerns about the impacts of logging in wetland areas. NEMO held an Economic Development Planning workshop in March, and we expect to provide guidance to the Economic Development Commission as they work to produce a plan by the end of 2002. A workshop on aquifer protection (to be developed with the CT Department of Environmental Protection and Department of Health Services) is planned for fall of 2002. The First Selectman is working with the NEMO Team and a Professional Engineer from NEMO's Advisory Committee to assess the possibility of redeveloping a cul-de-sac to reduce imperviousness.

Old Saybrook

Old Saybrook is a suburban town that lies at the confluence of the Connecticut River and Long Island Sound. The town's landscape is approximately 35% developed, with much of the undeveloped land in either forest or tidal marsh. Old Saybrook has a long history with the NEMO Project, extending back to 1993-94, when it was one of NEMO's original pilot communities. While some changes to zoning regulations and BMP requirements were made as a result of NEMO's early work with Old Saybrook, the addition of a full time planner in 1999, and the inclusion of the town in the Municipal Initiative, have created the critical mass needed for real change.

The town NEMO task force had their first meeting with NEMO staff in January of 2001. Town officials were initiating an update to their POCD and were concerned about both topical issues (e.g., water resource protection) and process issues (e.g., lack of communication between boards and commissions). The town Conservation Commission has conducted a natural resource inventory, and is working with the NEMO team on an open space plan that incorporates the inventory information (Figure 2). The Conservation Commission is working with the Planning and Zoning Commission to then insert the open space plan into the updated POCD.

Figure 2. Members of the Old Saybrook NEMO task force review maps from the town natural resource inventory.

A number of initiatives are underway in Old Saybrook relating to development design that is more protective of water resources. In 2001, the Board of Selectman drafted and issued an Official Policy Statement that incorporates NEMO's nonpoint source management strategies and supports alternative design standards for site development. In response to this statement, the Town NEMO task force is working with the Town Engineer and others to revise the town's road ordinances to allow for alternative stormwater management practices that are more in line with NEMO principles and the state/federal Phase II Storm Water Management Program.

In addition, the Old Saybrook Planning & Zoning Commission, in collaboration with the NEMO Task Force, Town Engineer and a local developer, have implemented a "model subdivision" in town (Figures 3 and 4). The subdivision incorporates vegetated swales, narrow road widths and clustering to help manage stormwater runoff and reduce nonpoint source pollution. Planning and Zoning is also updating its regulations to incorporate impervious surface limits in their business districts, in order to minimize impacts from development to their coastal resources and Long Island Sound. Finally, the Commission will be considering incorporating nonpoint source management strategies in the update of its POCD.

Figure 3. Old Saybrook model stormwater subdivision, showing grassed swale drainage system.

The Old Saybrook Economic Development Commission will hold NEMO's Economic Development Planning workshop this May, as a kickoff to their planning initiative. In the coming year, Old Saybrook will also be the "guinea pig" town for NEMO in the field testing of two new educational programs, *Site Plan Review to Support Natural Resource Based Planning* and *Coastal Resource Protection*, a new module that focuses on priority coastal habitat areas.

Figure 4. Old Saybrook NEMO task force poses at model subdivision site with the site developer, the town's First Selectman, and the NEMO CT Programs Coordinator.

Naugatuck Valley Brownfields Pilot

The Naugatuck Valley Brownfields Pilot (the Pilot) was established by an EPA grant in November 1996 to provide Brownfields management capacity and financial resources for its member towns. The Pilot involves ten towns in the Naugatuck Valley, a former industrial area in the central part of Connecticut. Two appointees from each municipality and interested parties from the region are on its Board of Directors. The Executive Director of the Pilot attended a NEMO workshop at a conference in 1998. With the stated desire to *"not make the same mistakes twice,"* he organized a *Linking Land Use* workshop (2000) for the Board. As a result, the Pilot has decided to *"...require review for inclusion of design components that reduce the impacts of impervious surfaces in any project that accepts Pilot assessment funds."* This ensures that NEMO design principles will be incorporated into brownfields development in this urban environment.

In addition, The NEMO team is working with the Pilot, regional planning agency staff and several consultants to incorporate nonpoint source pollution management strategies into the update of the regional plan. The process involves first updating the individual municipal plans before making changes to the regional plan. The first town to complete its update is Beacon Falls, which has incorporated NEMO's stormwater management and design guidelines into its revised POCD.

Additionally, the City of Derby (one of the Pilot towns) has been accepted into the Municipal Initiative. The NEMO team is working with the Mayor's office and the Pilot to help the City's Recreation Commission incorporate nonpoint source management strategies into its plans and projects. NEMO is also working with the City Engineer and the Planning Commission toward updating its road regulations.

Discussion & Conclusions

The fact that professional education of the type NEMO offers can be an agent for real change, and not just "feel good" fluff, is being realized by a growing number of agencies and organizations. In Connecticut, NEMO is referenced in the state Plan of Conservation and Development, "319" Nonpoint Source Plan, "6217" Coastal Nonpoint Source Plan, and the upcoming Phase II Stormwater Guidance Manual. Some of our older National Network projects are making similar inroads in their states.

Less than two years into the Municipal Initiative, we are already convinced that the program is a major improvement over our former, reactive mode of operation. Philosophically and practically, we see no alternative to changing land use decision making "one town at a time" (we might call this the *Smith Barney* model). The Municipal Initiative is designed with that basic fact in mind. The rapidly evolving world of geospatial technology, and its fusion with internet technology, offers potential assistance for local land use decision makers far beyond what we could have foreseen in 1991 (Arnold *et al.*, 2000). However, we believe that this technical support is far more effective, and much more likely to be used, when mediated by professional education. In addition, our experience over ten years is that, even more than topical information, it is *process* information that is most often needed by our client towns. Helping local leaders initiate new processes, or change existing ones, requires the give-and-take of intensive education.

Our only concern about the Municipal Initiative is not the effectiveness of the model, but its sustainability at our current level of staffing. In an ideal world, towns would "graduate" every 2 years, freeing NEMO staff to take on new participants. In reality, the needs of some towns actually become greater with time, as change begets more change and creates the demand for more assistance. One factor that may help is our plan to use Municipal Initiative towns as examples for others. No town wants to be the first to adopt something new, but as we put more pictures, case studies, sample documents, and testimonials up on the web, and perhaps begin a list-serve so that town officials and planners can exchange ideas, we envision an exponential increase in the adoption rate of natural resource based planning measures. With enough real-life examples to examine and experienced colleagues to talk to, it may be that an increase in adoption rate will not create a corresponding increase in the need for educational programming.

Finally, because of the National NEMO Network, we always examine Connecticut models in the light of their transferability. The Municipal Initiative, which depends on towns coming to us and committing to a two-way partnership, is probably only possible because of NEMO's long track record in

Connecticut, which created a reputation that makes the RFP approach work. Thus, some might envision that an RFP of the Connecticut type might be met with a tidal wave of indifference in another state. This may or may not be true, but our growing experience with the National Network shows us that there are plenty of "clients" out there, and that the educational model - if not the solicitation method - is still applicable. The needs of local land use decision makers will only increase with the implementation of new programs like Stormwater Phase II, Source Water Area Protection, and Total Maximum Daily Loads (Arnold and Giannotti, 2000; Arnold and Schueler, 2001).

For project staff, the NEMO experience in Connecticut has been a gratifying lesson in the power of dedicated volunteers to foster change in their communities. We have found that practically every town has resources to put toward natural resource based planning, and chief among these are human resources. But even the most motivated and talented people need assistance in the form of information, education, guidance and tools, and by providing this assistance, NEMO acts as a catalyst for local leadership of the planning process. This approach has real differences from efforts that either arrive in town with their own impetus and solutions (the "we're from the government and are here to help you" approach), or make changes without providing any education, context, or significant local involvement (the consultant approach). Placing the burden of leadership, and at least some of the work, on local officials creates ownership of new initiatives and gives institutional memory on these issues a fighting chance, thereby making resultant changes in plans and policies more likely to survive into the future.

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For More Information

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Information

Clean Water Act Section 319 Success Stories: Volume III Available on EPA's Nonpoint Source Website

This document is the third volume of Section 319 Success Stories. It contains approximately two new stories per state, highlighting some of the additional successes achieved since the 1997 publication of Volume II. These stories demonstrate better-defined water quality improvements, as well as growing partnerships and funding sources, as state 319 programs expand and states learn increasingly more from past 319 demonstration projects. Web address is**: http://www.epa.gov/owow/nps/Section319III/.**

EPA Releases Environmental Report Card On Coastal Waters

EPA released the first environmental report card on the condition of the nation's coastal waters. The report, primarily evaluating estuaries, describes the condition of U.S. coastal waters as fair to poor. While the current condition is less than ideal, the findings provide EPA with baseline estimates of coastal conditions for select coastal regions. The report was developed in collaboration with the National Oceanic and Atmospheric Administration, U.S. Geological Survey, and the U.S. Fish and Wildlife Service. EPA encourages efforts to protect the coasts by emphasizing watershed protection, restoring habitats, and reducing non-point source and point source pollution. The report is available at**: http://www.epa.gov/owow/oceans/nccr/.**

New EPA Onsite Wastewater Treatment Systems Manual

The new Onsite Wastewater Treatment Systems Manual, EPA 625/R-00/008 is now available on the EPA Web site: **http://www.epa.gov/ORD/NRMRL/Pubs/625R00008/625R00008.pdf**. The new manual complements the *Design Manual for Onsite Wastewater Treatment and Disposal Systems* (EPA-625/180-012) that was originally published in 1980. The 1980 manual has been a standard reference for onsite/decentralized program managers, designers, installers and others involved in the management and design of these systems. The revision was effected over a five-year period through a team effort co-led by USEPA's Office of Water and Office of Research and Development.

The Onsite Wastewater Treatment Systems (OWTS) Manual provides the latest information on onsite system management, siting, design, installation, maintenance, monitoring and replacement. The manual is designed to help users assess and select the best and most suitable sets of technologies and techniques that are appropriate for local site-specific conditions. The manual was written to promote the use of an integrated risk/performance-based approach to OWTS design. Information on OWTS cost and effectiveness has been included.

Questions about the manual should be directed to Rod Frederick of EPA's Nonpoint Source Control Branch at *frederick.rod@epa.gov.*

Success of Wetland Mitigation Report

In a new report, Washington State Department of Ecology examined the question, "When a wetland is destroyed to make way for development, can its functions be re-created or replaced in another wetland?" The authors answer yes, but claim that more often than not, projects intended to replace lost wetlands fail due to a lack of monitoring, maintenance and inspections. The report also concludes that projects to enhance existing wetlands are doing a very poor job of compensating for wetland losses, but creating wetlands from scratch is doing better than expected. In a two-phase study, the state Department of Ecology examined how well man-made ("mitigated") wetlands are working in Washington. The first phase evaluated whether 45 randomly selected projects followed their mitigation plans and met permit requirements. The second phase evaluated 24 projects to determine how ecologically successful they were and to what extent they replaced the functions of the wetlands that were lost. The study also evaluated the factors that contributed to success and failure. Researchers concluded that, to be successful, projects must be inspected to ensure work is completed, and sites monitored over time so that problems can be caught and fixed.

An executive summary and full version of the report, entitled *Washington State Wetland Mitigation Evaluation Study Phase 2,* are on the Internet at **http://www.ecy.wa.gov/programs/sea/mit-study/.**

Web Resources

New Low Impact Development Web Site

A new Low Impact Development (LID) resource is available on the Internet at **http://www.lid-stormwater.net**. This project is funded under the USEPA Office of Water 104(b)(3) program and is designed to provide guidance to help communities incorporate LID into their aquatic resource protection programs. The website is designed for use by local government officials, watershed managers, regulators, site designers, and stakeholders. It includes information on LID strategies and designs for Transportation, Residential, and Commercial land uses. Each land use will include a description of typical LID practices that can be used with pictures, schematics, and drawings in CADD and PDF format. Detailed information on the use of LID Integrated Management Practices (IMPs), including bioretention, green roofs, street tree filters, permeable pavements, and soils amendments will be included for each land use. Each IMP technique will include design guidance, specifications, and maintenance recommendations.

This site is still in Beta version and will be completed later this summer or fall. Currently the Single Family Residential land use section is complete as are the bioretention and permeable paver sections. The next update of the site is scheduled for May of this year.

Water Quality Information Center Updates Database

The Water Quality Information Center at the National Agricultural Library has updated its prototype database of online documents related to water and agriculture. To search the database of more than eleven hundred freely available documents, go to: **http://www.nal.usda.gov/wqic/wqdb/esearch.html.**

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Meetings

Meeting Announcements - 2002

July

AWRA's Annual Summer Conference: Ground Water/ Surface Water Interactions: July 1-3, 2002, Keystone, Colorado. Contact Michael J. Kowalski, AWRA Director of Operations, 4 West Federal Street, P.O. Box 1626, Middleburg, VA 20118-1626. Ph: 1-540-687-8390, Fax: 1-540-687-8395, Email: mike@awra.org. Website: www.awra.org.

6th International Conference on Precision Agriculture and Other Precision Resources Management: July 14-17, 2002, Minneapolis, Minnesota. Contact: Phone: 612-624-0724 or 800-318-8636 (USA/Canada only) FAX: 612-625-2207; E-mail: extconf@umn.edu. Conference web site: www.precision.agri.umn.edu/2002.

August

StormCon 2002, The North American Surface Water Quality Conference & Exposition: August 12-15, 2002, Marco Island, FL. Contact Steve Di Giorgi, StormCon Director; Phone: (805) 681-1300 x29; Fax (805) 681-1312; Email: info@stormCon.com.

September

10th National Nonpoint Source Monitoring Workshop: Monitoring and Modeling from the Peaks to the Prairies: September 9-12, 2002, Breckenridge, CO. Contact Tammy Taylor at taylor@ctic.purdue.edu or call 765-494-9555; Fax: 765-494-5969. *(See highlight next column.)*

October

6th International Conference on Diffuse Pollution: September 30-October 4, 2002, Amsterdam, Netherlands. Contact Conference Secretariat, Buerweg 51, 1861 CH Bergen, Netherlands. Tel: +31-20-4602466; Fax +31-20-4602475; Email: r.r.kruize@inter.nl.net.

Wetlands 2002: Restoring Impaired Wetlands and Other Waters: October 7-9, 2002, Indianapolis, IN. Website: www.Core4.org/Wetlands.

Hydrologic Extremes: Challenges for Science and Management. American Institute of Hydrology 2002 Annual Meeting and Conference: October 13-17, 2002, Portland, OR. Visit the website: www.aihydro.org/call_2002.htm/.

November

AWRA's 2002 Annual Water Resources Conference: November 3-7, 2002, Philadelphia, PA. Website: http://www.awra.org/meetings/Philadelphia2002/.

2002 Brownfields Conference: Investing in the Future: November 13-15, 2002, Charlotte, NC. Web site: www.brownfields2002.org.

10th National Nonpoint Source Monitoring Workshop:

Monitoring and Modeling from the Peaks to the Prairies

September 9-12, 2002
Beaver Run Resort, Breckenridge, CO

This year's Workshop offers a great opportunity to share accomplishments and ideas in NPS monitoring and modeling in a beautiful setting, autumn in the Rockies. The focus will be on the outcomes of Section 319 National Monitoring Program projects and similar innovative efforts. The agenda includes three days of workshop sessions and presentations. A one-day field trip will feature stream restoration and legacy mines along with other local technical tours.

Session topics are stream restoration, inactive mine remediation, NPS modeling, BMP implementation and evaluation in agriculture, silviculture, and urban/construction, TMDL development, and, public information/education. Contact Tammy Taylor at taylor@ctic.purdue.edu or call 765-494-9555; Fax: 765-494-5969. Website: http://www.ctic.purdue.edu/NPSWorkshop/NPSWorkshop.html.

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