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Annis Water Resources Institute

WATER RESOURCES

Review

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In this Issue...

Science Advisory Board Formed

A Science Advisory Board has been formed to provide advice, direction, and constructive criticism to the scientific endeavors at the Annis Water Resources Institute. Members were selected based on their scientific expertise, reputation, and knowledge of the region, and include the following:

- Dr. Stephen Brandt, Director, Great Lakes Environmental Research Laboratory
- Dr. Gary Lamberti, Professor, Department of Biology, Univ. of Notre Dame
- Dr. Peter Meier, Professor, Department of Environmental Health Sciences, University of Michigan
- Dr. Carol Johnston, Senior Scientist, University of Minnesota - Duluth
- Dr. Claire Schelske, Professor Emeritus, Department of Geological Sciences, University of Florida

The first meeting of the Board was held on May 3, 2002. The Science Advisory Board met as a group with staff members at AWRI, faculty from GVSU's Allendale campus who collaborate with AWRI scientists, Doug Kindschi (Dean of GVSU's Science and Mathematics Division), and President Mark Murray. The Board will provide a written report

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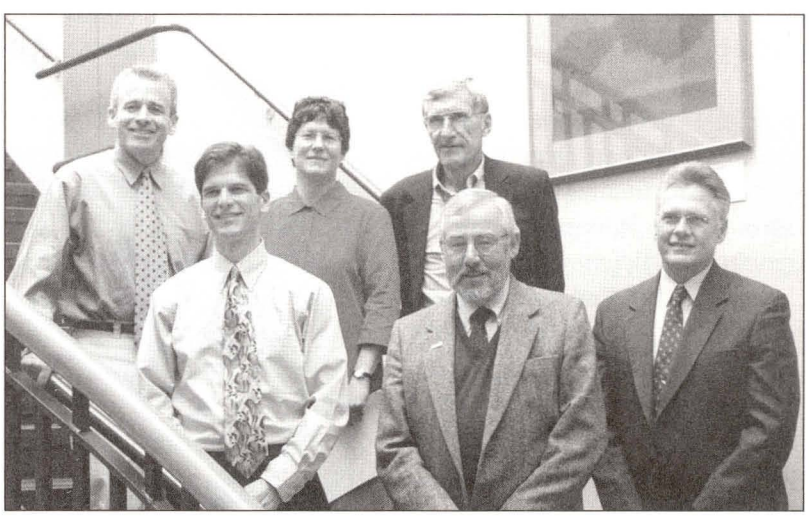

The members of the newly formed AWRI Science Advisory Board with Al Steinman.

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Director's Choice

I have now had the distinct pleasure of being Director of the Annis Water Resources Institute for approximately nine months. Although this is a relative blip on the geological time scale, it has certainly been sufficient time for me to gain a deep appreciation of the talents and skills of the staff at AWRI, and recognize how fortunate I am to have been chosen for this position.

The previous nine months have been both hectic and productive, which is hopefully reflected in this Spring Review. Our goal is to continue to provide both our internal and external customers with timely and high-quality products, whether it be in the form of educational training, watershed management plans, or peer-reviewed scientific publications. We continue to receive wonderful support both internally from GVSU and externally from our clients and donors, for which we are extremely grateful. We have been busy over the past nine months; many new projects have been initiated, construction continues both inside and outside at the Lake Michigan Center, new staff are being hired, an external Science Advisory Board has been formed and has held its first meeting, and new mission and vision statements have been completed. All of these activities and more are described in detail inside the Review.

I am interested in hearing your comments, so please feel free to share them with me. I can be reached by email at steinmaa@gvsu.edu, by phone at (616) 895-3749, or by fax at (616) 895-3864.

"Kick-off" Meeting For Newaygo County Road/Stream Crossing Inventory

A Newaygo County Road Commission (NCRC)/AWRI introductory meeting was held on April 24th, at the Educational Service Center in Fremont to "kick-off" the start of a Newaygo countywide project. The project, entitled the Newaygo County Road/Stream Crossing Inventory, involves the field collection of data for all of the estimated 1300 culverts under NCRC jurisdiction within Newaygo County. The project started in May of this year and will be completed by April, 2004.

Last year, the NCRC submitted a proposal to the Michigan Department of Transportation for funding that was available through the Intermodal Surface Transportation Efficiency Act (ISTEA) established by the Federal Highway Administration. The NCRC, together with $10,000 provided by the Timberland R.C. & D., contributed 40% in matching funds toward the final grant award of $105,700.

The introductory meeting included a presentation given by AWRI Research Associate Kurt Thompson entitled "Ionia County Road/Stream Crossing Inventory – A Case Study" and a public discussion outlining the project goals for Newaygo County. The meeting was attended by an assortment of representatives from Newaygo County, Muskegon River Watershed Assembly, neighboring road commissions, the USDA-NRCS, U.S. Forest Service, and the Conservation Resource Alliance.

A field crew of GVSU students will collect data specific to each road crossing during the summers of 2002 and 2003, which will include a GPS location, digital photographs documenting the condition of each crossing structure and the roadway, as well as in-stream water quality measurements. The data will then be transferred to the NCRC as dynamic information in a decision support system designed by AWRI. AWRI's Research Assistant Jean Conzelmann will be the project manager. For further information please contact Jean at (616) 895-3722 or through her email at conzelmj@gvsu.edu.

Science Advisory Board

continued from cover

to Director Alan Steinman by July 1, 2002, which will contain an evaluation of AWRI, as well as recommendations for the future.

The Science Advisory Board will meet on an annual or biannual basis. This initial meeting was designed to allow Board members to familiarize themselves with AWRI and its staff, facilities, mission, and culture. Future meetings will provide more time for one-on-one interactions with the appropriate programs within AWRI.

Strategic Planning Begins At AWRI

AWRI's five-year plan is being updated along with its mission and vision statements. AWRI personnel attended a retreat in January with a follow-up in February to forge the new direction for the institute. Our new mission statement is:

"*Integrating research, education, and outreach to enhance and preserve freshwater resources.*"

Our new vision for AWRI is:

- The vision of the Annis Water Resources Institute (AWRI) is to enhance the knowledge, understanding, and appreciation of freshwater resources. AWRI has adopted this vision recognizing that sustainable freshwater ecosystems are a fundamental necessity, and that the integrity of such systems helps to define our quality of life. AWRI is advancing its vision and commitment through three mechanisms: unique educational programs, outreach, and pure and applied research.

  - The Institute's vision for educational programs is to be both innovative and nationally respected. It will enhance educational opportunities both regionally and nationally. This vision will be realized through programming based at the Lake Michigan Center, and will continue to offer unique and diverse educational programs that target students of all ages. In addition, a broader vision for the AWRI will be accomplished through innovative methods and programs designed for teaching science. These innovative teaching methods will be published in national science education literature.

  - The AWRI vision for outreach and planning is to be a source of information and innovative concepts needed by local and regional communities as they plan for future development in a way that preserves freshwater resources.

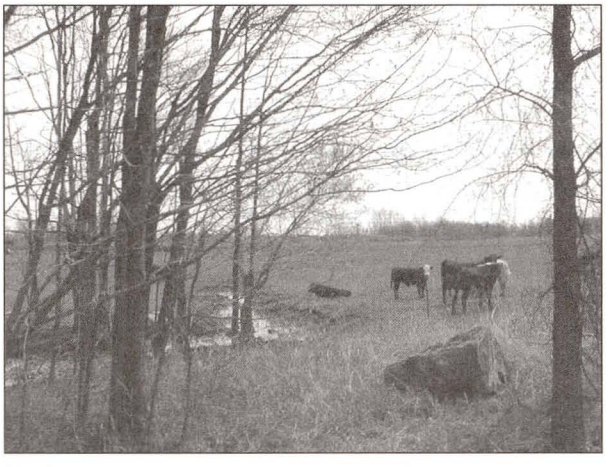
  - The AWRI vision for research is to be a respected freshwater research institute with national and international recognition. This vision will be realized through credible pure and applied research that advances our understanding and knowledge of freshwater ecosystems and leads to publication in regional, national, and international journals.

Building on our successes in outreach, education, watershed projects, geographic information systems, and environmental chemistry, AWRI is expanding its research capabilities through the addition of Ph.D.-level principal investigators with expertise in fisheries, modeling, and microbial ecology. A support technician will soon be part of the team. The Scientech Education Foundation is again sponsoring interns this year who will assist in research projects.

US EPA Administrator Christine Whitman visits Muskegon. From left to right: US EPA Region V Administrator Thomas Skinner, Senator Leon Stille, MDEQ Director Russell Harding, GVSU President Mark Murray, Christine Whitman, AWRI Director Al Steinman, AWRI Sr. Program Manager Janet Vail, and NOAA Marine Superintendent Dennis Donahue.

Muskegon River Watershed 319 Project Wraps Up With Inventory Of Pilot Project Areas

Beginning this April, researchers from Grand Valley State University's Annis Water Resources Institute will be inventorying sections of selected stream systems in the Muskegon River Watershed as part of a Watershed Management Planning Grant. The grant and awarded funds were authorized by Section 319 of the Federal Clean Water Act



Cattle access to streams can cause excessive nutrient amounts in the water and increased sedimentation resulting from streambank erosion.

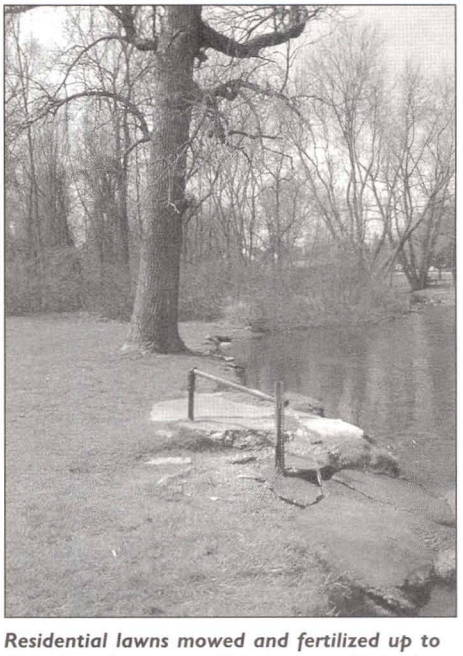
and are being used to develop a Watershed Management Plan for the entire Muskegon River Watershed.

To gather additional and more in-depth information on watershed pollutants and areas of concern for the Muskegon River Watershed Management Plan, two pilot project areas were chosen for further study from previously identified critical areas in the Muskegon River Watershed. The critical areas analysis was completed for the Muskegon River Watershed in spring of 2001 and marks those areas where conditions exist for water quality impairment to occur. Some of the most critical areas in the Muskegon River Watershed are the sub-watersheds of Brooks Creek, Little Muskegon River, Tamarack Creek, Middle Branch River, Butterfield Creek, and the West Branch of the Muskegon River.

The two areas chosen for pilot project studies, based on their location and ranking, were the sub-watersheds of the Middle Branch River and Tamarack Creek. The Middle Branch River is located in northeast Osceola County and covers approximately 96 square miles. Tamarack Creek is located in the northwest panhandle section of Montcalm County and extends northeastward into the southern part of Mecosta County. It is approximately 145 square miles. Thermal pollution and excessive nutrients have been identified as the major concerns for these two areas.

To identify environmental impacts and sources of these and other watershed pollutants, a number of different inventorying methods will be applied. These activities include or have included: a road stream crossing inventory (conducted Summer 2001), macroinvertebrate sampling (Summer 2001), temperature probe readings (Spring-Fall 2001), and a physical inventory of each pilot project area where researchers plan to walk stretches of the river (Spring 2002). Using these data, sites of water quality threats and impairments in the Middle Branch River and Tamarack Creek can be named. Identification of these sites enables areas in these pilot project sub-watersheds to be prioritized for future consideration of Best Management Practices and educational efforts.

A draft of the Muskegon River Watershed Management Plan will be completed in Spring 2002, and the project will end in late Summer 2002. After the final Management Plan is complete, there will be a one-year transition phase between planning and implementation. During this period, efforts regarding information gathering and public education about the Muskegon River Watershed Project will be continued by the Project Manager. It is hoped that necessary funding will be made available so that the implementation phase of the project can begin January 2003. Selected Best Management Practices and the Muskegon River Watershed Information and Education Strategy will be applied during the implementation phase.



Residential lawns mowed and fertilized up to the edge of a stream, like those at this park in Howard City, are a common source of excessive nutrients in streams. They also cause thermal pollution because of the lack of streamside canopy.

If you have any questions about this project please contact the Project Manager, Sarah U'Ren, at 616-895-3789 (or by e-mail at urens@gvsu.edu). More information on this project is available at the project's website: www.gvsu.edu/wri/isc/muskegon.

Stakeholders Meeting Planned For Muskegon River Watershed

Researchers from the University of Michigan, Michigan State University, and other universities will join Grand Valley State University as it hosts a critical meeting for the Muskegon River Watershed. The gathering will take place over a three-day period beginning August 21, and ending August 23, 2002. Stakeholders from within the Muskegon River Watershed are expected to share their knowledge about the river with researchers in the midst of scientific investigations. These investigations include the study of land use and land use change; monitoring of aquatic systems; the creation of hydrologic, ecologic, water quality, and economic models needed to characterize the watershed and help in the assessment of high priority concerns. Issues to be discussed include increasing pressure from urban development, sedimentation, and other water quality impacts resulting from urban encroachment, and the need and desire for dam removal within the Muskegon River system. The Lake Michigan Federation will help in the organization of the event and thus ensure representation by other watersheds throughout the Lake Michigan Basin. The goal is that what is learned during this investigative process will have implications for this larger geographic area. What we discover about the Muskegon River Watershed and how we went about this discovery will have application in other watersheds, and could potentially impact how others approach similar issues throughout the basin.

For more information about this important event refer to the AWRI website at www.gvsu.edu/wri or contact John K. Koches at 616-895-3792.

Mona Lake Watershed Project Begins

The Community Foundation *for* Muskegon County received a $100,000 environmental grant from the Charles Stewart Mott Foundation to support a comprehensive, two-year assessment of the Mona Lake Watershed. This watershed covers approximately 48,000 acres and contains a tremendous diversity of land uses in Muskegon County, including agricultural, suburban, industrial, and urban coverages. The three main hydrographic features of the watershed include Mona Lake, Black Creek, and Little Black Creek.

The Annis Water Resources Institute will be responsible for the biological and chemical assessments as part of this grant. In particular, AWRI will be:

- assessing land use changes over the past 20 years in the watershed using Geographic Information System analyses
- characterizing the chemical contaminants at select sites in Mona Lake, Black Creek, and Little Black Creek
- characterizing the invertebrate and fish communities at select sites in Mona Lake, Black Creek, and Little Black Creek
- characterizing the water quality and phytoplankton at select sites in Mona Lake
- conducting experiments to determine what nutrients are limiting growth of algae in Mona Lake
- measuring the amount of nutrients entering Mona Lake and determining the major sources of these nutrients
- developing an action plan with recommended practices to improve the environmental health of this watershed

The Muskegon Conservation District is partnering with AWRI, and is responsible for education and outreach activities. This is a multidisciplinary project and involves staff from all program areas within AWRI, including Rick Rediske, Mark Luttenton, Don Uzarski, Rod Denning, Bopi Biddanda, and Alan Steinman. Project duration is from 2002 to 2004.

View of a tributary entering Mona Lake in Muskegon County.

Education And Outreach Happenings At The Lake Michigan Center

The Lake Michigan Center has become a focal point for the community – from young students to senior citizens. Through grants to AWRI from the *Next Generation* Fund of the Community Foundation *for* Muskegon County and the Michigan Space Grant Consortium, the opportunity for classes and groups to come to the LMC classrooms for hands-on science has become a reality. For instance, three classes of sixth grade students from Ealy Elementary in Whitehall visited the center to learn about watersheds. About 200 Pinewood Middle School 7th grade students had pre- and post-cruise experiences correlated with their trips aboard the AWRI *W.G. Jackson* vessel. Almost 125 Westwood Middle School 8th grade students practiced the GLOBE soil protocols using the AWRI GLOBE soil equipment.

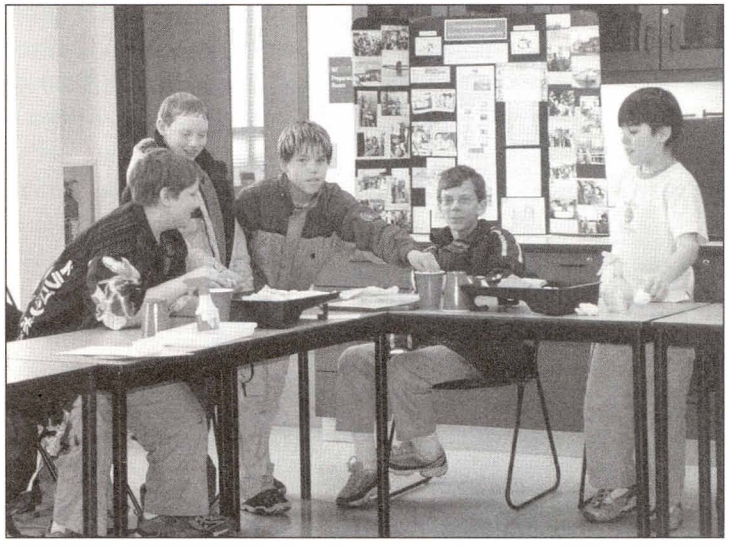
The LMC classrooms - a general science laboratory and an audio-visual classroom with high speed Internet access - are sites for teacher workshops. Teachers participated in a Project WET (Water Education for Teachers) workshop in May. In this six-hour workshop, they were able to do many activities from the Project WET manual. Also part of Project WET is the annual nationwide water festival day on September 27, 2002. Janet Vail of AWRI is the state of Michigan coordinator for this national program. Educators will be coming to the LMC for the annual GLOBE training funded by the Dart Foundation, the Grand Rapids Community Foundation, and the Wege Foundation. This is the 4th year AWRI has been involved in the training, which will take place this summer during the week of August 5th.

The Lake Michigan Center has been a destination for senior citizen groups in the Muskegon-Grand Haven area. The seniors view a video about AWRI, tour the building, and learn about the research, education, and outreach at the Center.

Henry Matthews, GVSU Gallery Director, conducted several art tours of the building. There is a variety of original art at the LMC including pieces by Paul Heald, Charles Heald, Elona VanGent, Kenneth Foster, and Wanda Anderson. A special committee selected the art from over 350 entries. A unique donor-recognition "rock wall" contains over 20 kinds of rocks and minerals from Michigan. The tile medallion in the lobby is an eleven-foot diameter map of the Great Lakes. There is also a display of historical navigation and weather instruments used by D.J. Angus, which were donated by Chuck Angus.

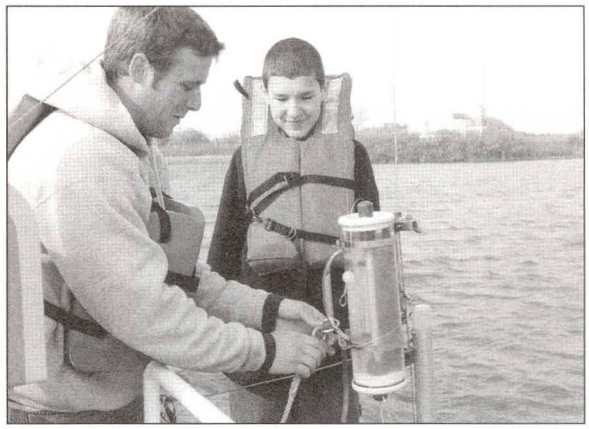
Job shadowing by high school seniors has been a popular event at the LMC and onboard the AWRI vessels. Students from Muskegon Catholic Central, Shelby High School, and Ravenna High School have participated and were provided with a look at a variety of careers. AWRI science instructors have visited schools and participated in career days at Montcalm Community College and Spring Lake.

The LMC Community Foundation *for* Muskegon County Conference Room ("multipurpose room") has been the site of numerous events during the past few months. For instance, Mary Ann Sheline of the GVSU Regional Math & Science Center hosted the directors of the math and science centers from throughout Michigan. The Eco-Bus, a hands-on science lab in a converted bus, traveled to Muskegon for that event. The *7th Annual Hazardous Waste Management Workshop* and the *Analytical Instrumentation Methods Conference* drew environmental managers and scientists to the center. The Michigan chapter of the American Fisheries Society hosted their annual meeting, attended by over 80 people, in our facility. The multipurpose room is frequently used for AWRI research seminars such as those by Dr. Thomas Burton of Michigan State University and Dr. Ramesh Reddy of the University of Florida.



K-12 students participate in pre- and post-cruise experiences in one of the Centers two classrooms.

Outreach Education Program 2001 Season Highlights



AWRI Student Intern Shaun Lehman instructs a student on the use of sampling bottles.

Over 77,000 people have experienced cruises or open houses on the AWRI vessels since the outreach education program was established in 1986. The total number of participants in the *D. J. Angus* education program from 1986 through 2001 exceeds 50,000. The number of events on the *D. J. Angus* was 158 in 2001. The *Angus* was docked at the Coast Guard Station and the Grand Haven Municipal Marina in Grand Haven for much of the season.

The *Angus* continues to serve numerous biology and geology classes from Grand Valley State University, K-12 students, and adult groups. There were 3,124 participants in *Angus* activities that included high school (11.2%), middle school (33.7%), elementary (17.3%), Grand Valley State University events (15.6%), and adults including teachers, chaperones, other college students, and groups (21.3%). Approximately 1% were dockside visitors.

The *W. G. Jackson* completed another successful season with 211 events. The *Jackson* docked at its home on the shoreline of Muskegon Lake at the Lake Michigan Center.

In the 2001 season, more than 5,000 people participated in *W. G. Jackson* activities. The cruise participants included high school (5.5%), middle school (16.2%), elementary (27.5%), GVSU classes and events (4.3%), adults including teachers, chaperones, other college students, and groups (32.3%). Open house activities for *Making Lake Michigan Great 2001 Tour* drew over 700 additional visitors to the vessel (14.2% dockside visitors).

The first day for reservations for the 2003 seasons was May 1, 2002. Over 260 trips have already been reserved. Contact Roxana Taylor at (616) 895-3749 or (231) 728-3601 for information about trips on the *Angus* (Grand Haven) and the *Jackson* (Muskegon).

AWRI Begins New Initiative For The Lower Grand River Watershed

The United States Environmental Protection Agency has approved a 319 Planning Grant for the Lower Grand River Watershed. The Lower Grand River Watershed is about 3,020 square miles, and is the part of the Grand River Watershed east of the Thornapple and Flat Rivers. It includes significant parts of Barry, Eaton, Ionia, Kent, Montcalm, Muskegon, and Ottawa counties, and smaller parts across Allegan, Mecosta, and Newaygo counties. Throughout the Lower Grand River Watershed, elevated levels of nutrients have been discovered, and in some areas, concerns such as mercury poisoning, pathogens, PCBs, sedimentation, nuisance algae, and degraded fish and macroinvertebrate communities have been found. The Lower Grand River Watershed Management Plan intends to combat these problems by sub-watersheds in order to reduce non-point source pollution within the whole Lower Grand River Watershed.

The Grand Valley Metropolitan Council is the recipient of the grant from the United States Environmental Protection Agency, and Grand Valley State University's Annis Water Resource Institute will be assisting with the project by developing Information and Education Strategies, investigating rural Best Management Practices, and conducting the evaluation of the project. The consulting firm Fishbeck, Thompson, Carr, and Huber will be working with many urban communities examining in detail their stormwater management issues. The project will be coordinated with the Michigan Department of Environmental Quality, Surface Water Quality Division. For more information about the Lower Grand River Watershed Project contact Abigail Matzke, Annis Water Resources Institute (AWRI) Research Assistant and Project Coordinator, at (616) 895-3994 or matzkea@gvsu.edu.

Sustainable Futures Project Enters Second Year

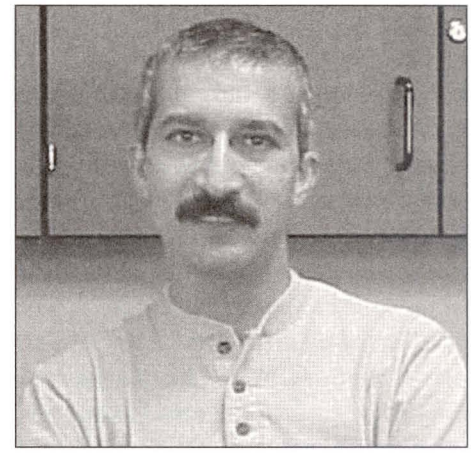
AWRI is moving into its second year of a three-year effort to update, examine, and forecast land use and cover conditions within the Muskegon River Watershed. During the first year AWRI has been working closely with the Center for Remote Sensing & Geographic Science at Michigan State University to update the 1978 land use and cover database to 1998 conditions.

Several counties have been completed or are in the process of undergoing field checking and quality control procedures. During this first year, efforts have focused on the following counties: Muskegon, Newaygo, Montcalm, Mecosta, and Lake. During the second year all of the counties within the Muskegon River Watershed will be updated and the 1998 database completed.

To provide additional insight into the processes driving land use and cover change, scientists from the Geography Department at MSU are working with forecasting tools and models to help us take a look at the future of the watershed. For example, we are interested in answering questions such as, where in the watershed could changes in land use and cover impact critical ecological areas or where do we expect development to occur.

Product development will be a main priority for this second year. Plans are in the works for developing a Land Use and Cover Atlas for the townships within the watershed. Also, preliminary maps will be created showing the extent of new development for future years.

University Of Minnesota Researcher Joins AWRI



In June 2002, Dr. Bopaiah A. Biddanda (Bopi) will be joining GVSU's Annis Water Resources Institute as a Research Scientist. Bopi was born in India, where he obtained a Masters degree in Marine Biology before coming to the US for further studies. For his Ph.D. in Ecology at the University of Georgia, he examined the role of microorganisms in mediating the dynamics of aquatic organic matter. Dissolved organic matter within natural waters is a major reservoir of reactive carbon in the biosphere, and aquatic bacteria play a principal role in its turnover.

Following his Ph.D., he served as a guest scientist at the Alfred-Wegener Institute for Polar and Marine Research in Germany, where he established a field program for the study of "marine snow" dynamics. He subsequently returned to the US as a researcher at the University of Texas Marine Science Institute and made some of the very first measurements of respiration in the open ocean – measurements that are critical for understanding the metabolism of aquatic ecosystems. During his tenure at the University of Texas, he spent a year in Brazil as a Visiting Professor with the Brazilian Science and Technology Council teaching "Biological Oceanography" and studying the ecology of coastal lagoons at the University of Rio Grande.

In 1998, he moved to the University of Minnesota to accept a Research Associate position supported by the National Science Foundation (NSF) and National Oceanic and Atmospheric Administration (NOAA) grants for the study of the role of episodic events in Lake Michigan. Bopi is currently serving as the coordinator of the University of Minnesota component of this multi-investigator, multi-disciplinary project and has published his findings in leading journals such as Aquatic Microbial Ecology, Limnology and Oceanography, and Ecosystems. He has presented his research at national and international scientific meetings.

Bopi brings with him considerable ecological, oceanographic, and limnological experience. He has successfully mentored several Research Experience for Undergraduate (NSF) students, and some of them have coauthored articles with him. His current research interests are in the areas of aquatic microbial ecology, biogeochemistry of carbon, microbial and photochemical transformation of organic matter, microbial metabolism and bioaccumulation of pollutants, response of microbes to global climate change, and land-water linkages. Bopi is excited about joining AWRI, and is looking forward to establishing a program in the area of Aquatic Microbial Ecology and Biogeochemistry that will complement research and education at GVSU. For more information on Dr. Biddanda see: http://biosci.cbs.umn.edu/eeb/researchassociates/BiddandaBopaiah.html.

Lakewide Management Plan Showcased On 2002 Tour

The U.S. Environmental Protection Agency (U.S. EPA) has again funded the annual Making Lake Michigan Great Tour of the *W.G. Jackson* vessel. The *Jackson* has visited over 25 ports of call in Lake Michigan since the first year of the tour in 1998. The tour is a project of the U.S. EPA Lake Michigan Forum. Janet Vail of AWRI serves as co-chair of that group. The 2002 Making Lake Michigan Great Tour will highlight the recent update of the Lake Michigan Lakewide Management Plan, which can be found at http://www.epa.gov/glnpo/michigan.html.

Partners in the southern Lake Michigan tour are Susie Schreiber of the Waukegan Citizens Advisory Group and a Lake Michigan Forum member, and the Shedd Aquarium in Chicago. John McKinney of Michigan Sea Grant, Patty O'Donnell of the Grand Traverse Band of Ottawa and Chippawa Indians and a Forum member, the Watershed Center in Grand Traverse Bay, and Gary Money of the Grand Traverse Math Science Technology Center are planning the northern tour. Other ports of call will be White Lake, Frankfort, Muskegon, Holland, and Kenosha, Wisconsin.

It is anticipated that a Making Lake Michigan Great event will happen in conjunction with the visit of the 180-foot U.S. EPA *Lake Guardian* research vessel to the Port of Indiana. The *Lake Guardian* will be the site of a Great Lakes Teachers Institute. The *Lake Guardian* is equipped with 6 laboratories, 16 cabins, and a variety of scientific instruments and sampling equipment. Participants will spend two nights on the Lake Guardian and will sail from the Port of Indiana to Benton Harbor then on to Chicago before returning to Indiana. They will also spend time at the Indiana Dunes Environmental Learning Center. The workshop runs from July 26-30, 2002. Janet Vail will be teaching onboard for the Institute, which is sponsored by the Lake Michigan Federation, Indiana Dunes National Lakeshore, and the Indiana Dunes Environmental Learning Center.

Improvements To The Lake Michigan Center

Grand Valley State University has approved the use of Capital Management Funds to convert the expansion spaces at the Lake Michigan Center into new offices and a laboratory. These conversions will provide the space needed to accommodate the new staff positions and research needs associated with the growth of AWRI. It is also recognition by GVSU of their support for AWRI, as allocation of these funds is highly competitive within the University system. Specific changes associated with these conversions include:

I. First floor expansion space:
- Five new offices outfitted with systems furniture
- A common area for printers and office supplies

II. Second floor expansion space:
- A laboratory designed for aquatic microbial research
- A microscope area designed for four research microscopes, including a dark room for epifluoresence microscopy
- Six independent work areas for students and interns
- A separate radioisotope room

III. Jackson Laboratory:
- Addition of 5 work desks for students and interns
- Addition of overhead cabinet space
- Addition of a permanent central workbench

In addition, the seawall construction project at the Lake Michigan Center site has been completed. It is possible that additional seawall will be installed in the future; the recently completed project involved the installation of seawall along the entire west side of the site (facing LaFarge) and along approximately 250' of the east side (facing the Mart Dock). Finishing touches at the site, including landscaping, a boardwalk, and passive filtration systems for treatment of stormwater runoff, are scheduled to be completed this summer. The staff at AWRI are excited about these developments and we wish to express our gratitude to John Scherff, project manager in Facilities Services at GVSU, who has helped manage and nurture these projects from Day 1. Thanks, John!

AWRI Obtains A Grant To Conduct A Preliminary Assessment Of Sediment Contamination In Lake Macatawa

The Environmental Research Laboratory at AWRI received a grant from the Great Lakes National Program Office to conduct a Preliminary Assessment of Sediment Contamination in Lake Macatawa. The project will be conducted in two phases. Phase I will begin in July 2002 and consist of an investigation of 15 locations that may have been influenced by historical sediment contamination. Sediment chemistry will be examined at each location along with studies of the benthic macroinvertebrate community and laboratory toxicity evaluations. Phase II will begin in the April 2003 and consist of radiodating and stratigraphy analyses of core samples collected at locations that were identified in Phase I as areas of sediment contamination. The data from Phase I will provide information on the nature and extent of sediment contamination in Lake Macatawa and be used to develop an initial assessment of the ecological status of the benthic community.

Phase II will focus on the issue of sediment stability and determine if historical sediment contamination is buried under layers of clean material or is actively mixed by wind and wave action. Mixing and resuspension of contaminated sediments were found to be significant factors in the movement of historically contaminated sediments in White Lake and Muskegon Lake in previous investigations by the project team. The core samples from Phase II will also be analyzed for total phosphorus. These data will provide information related to the current and historical deposition rates of phosphorus and help support the Total Maximum Daily Load (TMDL) reduction program that is active in the watershed. As part of this project, the Macatawa Area Coordinating Council (MACC) and AWRI will conduct a series of educational outreach activities to solicit public participation and to communicate the results of the investigation. The data from this project will be used to determine the current status of sediment contamination and phosphorus deposition in Lake Macatawa. In consideration of the strong community interest in revitalization and improvement of the lake, the information from the project will be important to local decision makers.

AWRI researchers will work with scientists at Hope College and the University of Michigan on the investigation. Richard R. Rediske, Ph.D. will serve as the Principal Investigator.

Lowell Schools, Coldwater River Watershed Council, And GVSU Professor, Join Forces With AWRI To Prepare Watershed Plan

The Coldwater River Watershed, which includes the Coldwater River and its tributaries such as Duck and Tyler Creeks, encompasses parts of Barry, Eaton, Ionia, and Kent counties, and is approximately 120,708 acres. Agriculture accounts for nearly 70 percent of land use in the watershed, while urban development contributes just over 2.2 percent. The Coldwater River Watershed has been experiencing sedimentation, nutrient overload, and unstable flow regimes. To combat this, the Coldwater River Watershed Council, together with the Robert B. Annis Water Resources Institute at Grand Valley State University, is collecting information and preparing a Watershed Management Plan for the Coldwater River system. Grand Valley State University Biology Professor Mark Luttenton, who also holds a joint research position at AWRI, along with the help of many local schools, is collecting data on total suspended solids, total phosphorus, ammonia, fecal coliforms, and nitrate-nitrogen to determine the severity of the water quality conditions. Included in the Watershed Management Plan are the following objectives: creating a public information and education program, assessing and characterizing the watershed and water quality conditions, setting water quality goals, prioritizing water quality problems, developing an implementation strategy, and performing project evaluations. The Watershed Management Plan is expected to be finished by August 2002, with the project finalizing around February 2003. For more information about the Coldwater River Watershed Project contact Abigail Matzke, Annis Water Resources Institute Research Assistant and Coldwater River Watershed Project Manager at (616) 895-3994, or matzkea@gvsu.edu.

Stormwater Management Project Extended

Over the last two years the Annis Water Resources Institute (AWRI), along with the Kent County Drain Commissioner and the Stormwater Task Force, has been making waves in stormwater management in Kent County. A model stormwater ordinance, a stormwater atlas, and a stormwater educational handbook are tools that were developed to assist communities in making smart choices in managing stormwater runoff. The AWRI, the Kent County Drain Commissioner, and several members of the Task Force presented these valuable tools at numerous workshops and board meetings.

As a result of these efforts, many communities throughout Kent County have adopted the model stormwater ordinance. Two in particular, Algoma and Courtland Townships, have adopted the ordinance and are now ready to move forward with completing a detailed assessment of stormwater management in their area.

The AWRI was awarded an extension by the Department of Environmental Quality to help these two communities develop stormwater atlases. These atlases will include updated land use information, an impervious areas assessment, and many other useful map layers. These atlases will assist Algoma and Courtland Townships in establishing stormwater management zones in their community. These zones will allow them to better determine sensitive areas in their township and areas that are better suited for development. Assisting these townships in improving and strengthening their stormwater management skills will in turn protect water quality in their communities.

If you would like more information about the project contact Project Manager Nichol Stout at stoutn@gvsu.edu or by telephone (616) 895-3092. Check out the project web site at www.gvsu.edu/wri/isc/stormwater/index.htm.

The Rogue River Watershed project utilizes both educational and physical activities to keep the watershed healthy. Pictured is a Leopard Frog.

The Rogue River Watershed Project

On your busy weekday drives to work have you seen any Rogue River Watershed project stickers on vehicles? We hope so! This is one of the many ways we are making people aware of the efforts going on in the Rogue River Watershed.

The Rogue River Watershed project is well underway and will continue into next year. Activities in the watershed include both educational efforts and physical improvements. Starting this summer, two road stream crossings will be improved, vegetation will be planted along a section of the Rogue River, and a stream bank will be stabilized. All of these improvements will help to decrease the amount of sediment entering the watershed and cool the water temperature, which in turn will help the fish and insects in the river.

Although physical improvements are important, we need YOUR help in keeping the watershed healthy. This project offers educational activities where people can learn the steps they need to take to protect the watershed. Community meetings, homeowner workshops, and volunteer monitoring days have already been held throughout the watershed. Upcoming events include a watershed fair, workshops for local decision-makers, farmers, and developers, and many other exciting opportunities.

If you would like more information about the Rogue River Watershed project contact Project Manager Nichol Stout at (616) 895-3092 or email stoutn@gvsu.edu. Visit us on the web at www.gvsu.edu/wri/isc/rogue/index.htm.