NEWSLETTER

WATER RESOURCES RESEARCH CENTER
UNIVERSITY OF MARYLAND

October Issue 2001 **Allen P. Davis, Director** **Phil Kearney, Assoc Director**

MARYLAND

Request for Proposals

Proposals for the 2001 Maryland Water Resources Research Center funds are now being solicited. Faculty from any institution of higher education in Maryland are eligible to apply. Proposals are requested on subjects related to research priorities of the Water Resources Program:

Watershed/ecosystem management,

Non-point source pollution,

Domestic water supply issues,

Urban water resources management,

Socio-economic aspects of water resources,

Contaminant fate, effects or removal.

This year, the Maryland Water Resources Research Center has funds in the range of $75,320 to award. We can fund one or two projects at most. Each federal dollar provided by this program must be matched by 2 non-federal dollars, which can include tuition waivers, faculty time, forgiven overhead, etc. (Overhead is not chargeable to the sponsor.) The institution applying for support must certify that the matching funds are available at the time of submission. Cooperative programs involving U.S. Geological Survey personnel will be permitted.

All proposals submitted to the Maryland Water Resources Research Center will receive external peer review.

If you would like to submit a proposal, please contact the Maryland Water Resources Research Center. You may also call us at (301-405-6829) or e-mail pk56@umail.umd.edu. For information on how to prepare a proposal, go to the our web site at:

http://www.life.umd.edu/water_resources. Proposals will be due in the WRRC office (1147Martin Hall, University of Maryland, College Park 20742) by close of business (4:30 PM) on December 3, 2001.

Davis New Maryland Director

Dr. Allen P. Davis has been selected as the new Director of the Maryland Water Resources Research Center. Dr. Davis is a Professor in the Department of Civil and Environmental Engineering, University of Maryland, College Park, MD. He obtained his Ph.D. in Environmental Engineering from the Department of Civil Engineering, University of Delaware in 1989 and has been at the University of Maryland since that time.

His research interests are broadly in the area of the fate and treatment of pollutants in the water environment, especially heavy metals. Davis has extensively investigated the photocatalysis of various pollutants using illuminated titanium dioxide. Recently, his research has focused on examining sources, fates, and treatment of pollutants in urban storm water runoff. Published works have appeared on

sources and fluxes of metals in runoff. Research on bioretention, as a low impact runoff management practice, has demonstrated the effectiveness of this practice. Ongoing work evaluates modifications and improvements in pollutant removal efficiency. He currently directs or co-directs the research of five graduate students. Dr. Davis has received several honors. He was awarded the E. Robert Kent College of Engineering Outstanding Teaching Award, University of Maryland (1992), a National Science Foundation Young Investigator Award (1993), and U of MD Engineering Research Center, Technology Extension Service Award for Environmental Achievement (1996).

Dr. Davis becomes the fourth Director of the Water Center since its establishment at Maryland in 1965. He succeeds Dr. George Helz, Professor of Chemistry and Biochemistry, who held the position from 1990 until present.

As part of the change in directorship, the Water Center is developing several research focus areas for collaborative efforts among interested faculty. One of these areas is water issues related to "Smart Growth."

The State of Maryland is currently engaged in a "Smart Growth" policy to avoid urban sprawl. Unplanned development is causing some serious water supply and quality problems as the population continues to grow. Urban sprawl is also putting a heavy demand on waste water treatment facilities. As Maryland Governor Parris Glendening said in a recent speech".....
making sure Smart Growth / Anti-Sprawl principles are incorporated into key, precedent-setting project decisions. We do this because it is what the people of Maryland want. Remember . . . if growth patterns do not change, development will consume as much land in central Maryland alone over the next 25 years as it has during the entire 368 year history of our State."

Dr. Davis can be reached at the Department of Civil and Environmental Engineering, University of Maryland, College Park, MD 20742, (301)405-1958, FAX (301)405-2585 and e-mail at apdavis@eng.umd.edu. More biographical information can be found at www.ence.umd.edu/~apdavis/apdavis.htm

Dr. Phil Kearney will continue his role as Associate Director of the Center. He can be reached in the same Department at (301)405-6829 and by e-mail at pk56@umail .umd.edu.

Maryland Water Resources Research Center Funds Three Summer Student Assistantships

The Water Resources Research Center has awarded three summer assistantships for 2001. The selected graduate students are working with faculty at College Park doing research relevant to Maryland's water resources. Here are the projects, students, and advisors participating in this program. A brief synopsis follows

Evaluating the Influence of Diverse Riparian Leaf Litter Inputs on Stream Food Webs

Christopher M. Swan, PhD candidate, Margaret Palmer, Professor, Department of Biology.

The goal of this work was to test the hypothesis that streams receiving leaf litter inputs from diverse riparian vegetation differ in their food web characteristics compared to that of streams with riparian zones comprising few tree species. Previous work has shown that (1) mixed-litter can decompose at markedly different rates than single-species leaf litter, (2) stream invertebrates colonize mixed-litter resources differently than single-species litter, and (3) stream detritivores (e.g., stoneflies) grow at different rates when fed mixed-leaf litter than single-species litter. Since annual input of leaf litter to streams from riparian vegetation supports a large fraction of the invertebrates in streams, and stream invertebrates are prey for stream fishes, these inputs will be examined to determine if their effects on invertebrates will translate into varying patterns in fish growth.

TMDL Program Makes Progress with Nitrogen Point Sources While Bay Program Reduces Nonpoint Sources. Michelle R. Perez, Masters candidate, Matthias Ruth, Associate Professor, School of Public Affairs. Maryland's three-year old Total Maximum Daily Load (TMDL) Program does develop load allocations that restrict nitrogen discharge into impaired waterbodies from nonpoint sources. However, without regulatory authority over nonpoint sources, the TMDL program cannot ensure load reduction Progress has been made instead with point sources as four wastewater treatment plants, for the first time, have been issued nitrogen discharge permits. Additionally, the threat of the 1997 TMDL lawsuit helped forge an ambitious and programmatically thoughtful Chesapeake 2000 Bay Agreement. With a mix of voluntary and statutory programs and a stakeholder approach, the Bay Program aggressively identified load reduction goals for existing state nonpoint nitrogen reduction programs to achieve. However, greater collaboration between the Bay Program and the TMDL Program will be needed to be able to remove the Bay and Maryland's tidal waters from the EPA's List of Impaired Waters by 2010.

The Impact of Management Intensive Grazing on Nutrient Losses to Ground and Surface Waters Rachel E. Gilker, Ray R. Weil, Professor, Department of Natural Resources and Landscape Architecture.

Dairy farmers in the mid-Atlantic have begun to try management intensive grazing (MIG), a radical shift from the conventional confined feed animal operation. Under management intensive grazing, virtually the entire land base of the dairy farm is converted from crop production to grazed permanent grass/legume pastures, an approach that can increase soil quality and decrease soil erosion. However, the environmental impact of the grazing system is not yet understood, and MIG may lead to nutrient losses to ground and surface waters The goal of this research is to characterize the water quality impacts of MIG in four watersheds on two dairy farms in Maryland and compare this with the impacts on two watersheds on a dairy farm typical of the conventional confinement feeding system. The impacts examined include nutrient concentrations in soil percolation water, groundwater and (for two watersheds) surface water. The research project will also document the economic profitability and the nutrient balances of each system.

The students will submit reports on their projects later in 2001.

Recent Publications from Center Funded Projects

Davis, A. P., and Matthew Burns. 1999 Evaluation of Lead Concentration in Runoff from Painted Structures. *Water Research* 33, 2949-2958.

Kim, H., E.A. Seagren, A.P. Davis. 2000 Engineered Bioretention for Removal of Nitrate from Storm water Runoff. In Water Environment Federation 73rd Annual Conference and Exposition, WEFTEC North America. 2000

Rock, M.L. B.R. James, G.R. Helz. 2001 Hydrogen Peroxide Effects 0n Chromium Oxidation State and Solubility in Four Diverse, Chromium-Enriched *Soils. Environ. Sci & Technol. 35 (published*)

UPCOMING SEMINARS of INTEREST TO MARYLAND WATER SCIENTISTS

Wednesday, Sept 26 (1173 Martin Hall, Main Conference Room, Noon-1:00 PM) Professor P. Aarne Vesilind "*William Dibdin and the Development of Biological Treatment*"

Thursday, Oct 4 Special Seminar: (1410 Physics at 4PM) George R. Helz, Chemistry and Biochemistry, UMCP, " *Reconstructing the Rise of Recent Coastal Anoxia; Better History Through Chemistry.*"

Friday, Oct 12 (0112 Chemistry at 3:00 PM) Mark Radosevich, University of Delaware, "*Fate of S-Triazine Herbicides in Soils; Colloid-Water Interactions to Microbial Community Dynamics*".

NATIONAL MEETINGS OF INTEREST TO WATER SCIENTISTS

Society of Environmental Toxicology and Chemistry 22nd Annual Meeting Baltimore Convention Center 11 - 15 November 2001, Baltimore, Maryland, USAFrontiers in Fast Environmental Analysis. 14 - 18 October, 2001, Eilat, Israel. For more information visit: www.iibr.gov.il

15th International Environmental Informatics Symposium. 10 - 12 October, 2001, Zurich, Switzerland The full program is available on http://www.empa.ch/deutsch/fachber/empasg/iep01/Programm_Detail.htm

SETAC Asia/Pacific Symposium 2001. 1 - 2 November 2001, Kanazawa, Japan.

Environmental Toxicology, Chemistry and Risk Assessment for Asia/Pacific. For more information contact the chairperson, Tsutomu Nishihara, Ph.D., 1-6 Yamada-oka, Suita, Osaka, Japan 565-0871

Society of Toxicology: Use of Genomic Data in Risk Assessment: State of the Art 2001. 7 - 8 November 2001, Washington, DC area