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Conservation Matters

THE TEXAS LAND, WATER AND WILDLIFE CONNECTION

A publication of the Texas Water Resources Institute and the Texas A&M Institute of Renewable Natural Resources

Training programs for water professionals Jan. 22-23 in Temple

On **Jan. 22 and 23** the Texas Water Resources Institute (TWRI) will hold two events designed for water professionals at the Texas A&M AgriLife Research and Extension Center, 720 E. Blackland Road in Temple.

According to **Nikki Dictson**, Texas A&M AgriLife Extension program specialist for TWRI, the programs have been developed for watershed coordinators and other water resources professionals.

The **Jan. 22** event is a no-cost Texas Watershed Coordinator Roundtable meeting taking place from 9:30 a.m. to 3:30 p.m.

"These roundtables, held biannually, provide a forum for watershed coordinators where they can develop interactive solutions to common watershed issues faced throughout the state," Dictson said.

Roundtable presenters include speakers from TWRI, the U.S. Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). Additionally, **Amy Hays**, of TWRI and the Texas A&M Institute of Renewable Natural Resources, will present on the role of social media in conservation science, followed by a viewing of the film, "Watershed: Exploring a New Water Ethic for the New West."

A catered lunch is available for $10, and vegetarian options will be available. RSVP is required, and participants may register at watershedplanning.tamu.edu/training.

The **Jan. 23** event, An Introduction to Modeling, will be held at the center from 9 a.m. to 5 p.m. The cost is $75.

"This training will provide an introduction on the variety of watershed models that can be used in watershed planning efforts, considerations when selecting models and procedures for implementing modeling in your watershed," said **Dr. Kevin Wagner**, TWRI associate director.

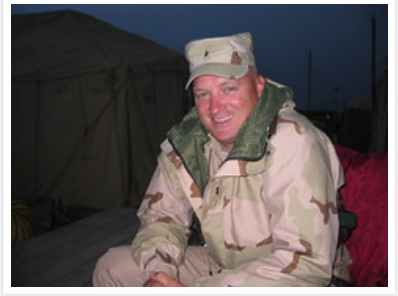
Dr. R. Srinivasan, director of the Texas A&M University Spatial Sciences Laboratory, will talk on the purpose, limitations and different requirements of watershed models currently available.

"The course will conclude with a presentation on stakeholder communications and modeling," Dictson said. "Bringing stakeholders to the table to understand the model, facilitating consensus, and approval of inputs and presenting modeling results to engage stakeholders in implementation is very important."

Registration includes course materials, a catered lunch and a certificate of completion. One TWRI continuing education unit will be provided upon course completion. Participants may register for this training at watershedplanning.tamu.edu/training as well, where more information on both programs is also available.

These programs are supported by funding from TCEQ through an EPA nonpoint source grant.

Metcalf becomes first military land sustainability certificate graduate



Combining his experience in the military with his interest in wildlife and natural resource management, Chief Warrant Officer **Eric Metcalf** received his master's of wildlife science degree and certificate in military land sustainability at Texas A&M University in December 2012.

Metcalf, a pilot with the U.S. Army stationed at Fort Hood, is the first Texas A&M graduate student to earn the certificate in military land sustainability. The certification is offered jointly through A&M's Department of Ecosystem Science and Management and Department of Wildlife and Fisheries Sciences.

Dr. Roel Lopez, interim director of the Texas A&M Institute of Renewable Natural Resources and program coordinator, said the flexible, distance learning graduate program offers coursework and research experiences for current and future natural resource professionals interested in the management of military lands.

"The certificate program and associated graduate degrees employ full use of cyber-learning strategies to afford the greatest flexibility to students, allowing them to pursue a graduate degree without having to be physically located on campus," Lopez said.

"Eric is the type of person we had in mind when we set up the certificate program," he said. "He was able to continue his military service while completing the program and combine his knowledge and interest in the military and natural resources."

Metcalf, who is a Tillman Military Scholar, said he was able to complete all but one seminar and an optional one-week long fieldwork course through the program's online portal. The Tillman scholarship is named after **Pat Tillman**, a former National Football League player who left the league to join the military. He was killed in Afghanistan in 2004.

Lopez said the overall goal of this professional degree is to equip students with knowledge and skills for managing relationships among ecology, economics, policy and conflict resolution, and understanding of how these factors influence natural resource conservation and management on military lands.

Metcalf said he is already using his knowledge gained through the certificate program and his degree while serving on Fort Hood's seven-member Hunting and Fishing Advisory Council.

"When issues come up during council meetings, I am able to correlate what I learned and how it might affect training and hunting or natural resources management on base," he said. "A lot of it went hand-in-hand. It was really neat."

The veteran of Operation Iraqi Freedom and Operation New Dawn said the program is an excellent opportunity for a military person who is interested in not only military tactics and strategies but "what our tactics and strategies do for the environment and how we can mitigate any issues that might arise."

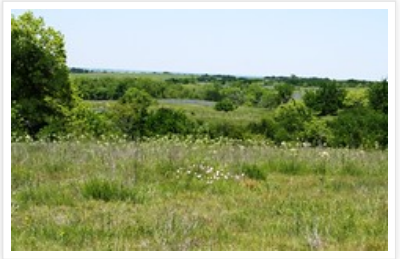
"I would recommend the program to anyone," he said.

The graduate certificate requires 15 credit hours of academic work, all of which are delivered via distance education, Lopez said. Nine of the 15 credit hours are required courses from the military certificate and six are elective credits that may be applied toward the degree from a large list of ecosystem sciences and management or wildlife and fisheries sciences courses.

As for Metcalf, he plans to use his degree and certificate to transition from military life into civilian life and land a job as a game warden when he retires in September 2014 after 25 years of service in the military.

For more information, see military.tamu.edu/education.

Trinity Waters hosting another round of land and water workshops



Trinity Waters and the Texas A&M AgriLife Extension Service are hosting a second round of water and land management workshops in the Trinity River basin. The workshops will be held **Feb. 5** from 1-5 p.m. at the Texas Freshwater Fisheries Conservation Center, 5301 County Road 4812, in Athens, and **Feb. 8** from 1-5 p.m. at the Walker County Storm Shelter, 455 State Highway 75 North, in Huntsville.

According to organizers, topics in this round of workshops will include: land use and ownership trends in the Trinity River basin, Texas Pollutant Discharge Elimination System permit requirements for pesticide applicators, land management with the TRIMS mapping tool and developing a water quality management plan.

"The initial round of workshops focused on the basics of watershed functions and features, as well as water quality management in Texas, which provides the foundation for stakeholders to understand how to manage land in a way to improve water resources," said **Blake Alldredge**, AgriLife Extension associate and education and outreach coordinator for Trinity Waters.

He said that presentations from the first round of workshops may be found on the AgriLife Extension wildlife and fisheries unit's YouTube channel at youtube.com/user/WFSCAgriLife.

To attend a workshop, RSVP by contacting Alldredge at balldredge@tamu.edu or 979.845.0916, or see nrt.tamu.edu/schedule.

Alldredge said a third round of workshops focused on pasture management and feral hog control would be forthcoming in 2013.

The Building Partnerships for Cooperative Conservation in the Trinity River Basin project is managed by the Texas Water Resources Institute and funded by the Texas State Soil and Water Conservation Board through a Clean Water Act grant from the U.S Environmental Protection Agency.

For more information, see the full AgriLife TODAY article or visit trinitywaters.org.

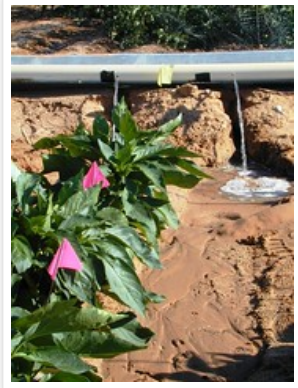
Two irrigation conferences in South Texas set to begin new year

Two irrigation conferences will be held in January in South Texas to provide resources about the latest irrigation research and technology, according to Texas A&M AgriLife Extension Service officials in the Irrigation Technology Program.

The first conference will be the Lower Rio Grande Irrigation Conference on **Jan. 29** in Mercedes, at the Rio Grande Valley Livestock Show Event Center. The South Texas Irrigation Conference will be held **Jan. 31** at the Medina County Fairgrounds Exhibit Hall in Hondo. Both conferences will cover topics such as making best use of limited water resources, selection and practical use of soil moisture sensors and what's new in irrigation technology.

These conferences are funded by the Rio Grande Basin Initiative, which is managed by the Texas Water Resources Institute and administered by the U.S Department of Agriculture's National Institute of Food and Agriculture. For more information on the conferences, visit itc.tamu.edu.

Can graywater keep Texas landscapes green?



With water resources throughout Texas becoming scarcer, a Texas A&M AgriLife Research ornamental horticulturist is working with others to determine the feasibility of using graywater to irrigate home landscapes.

"There has been interest in and discussion about the possible use of graywater for irrigating home landscapes, but so far little formal research has been done to validate its practicality," said **Dr. Raul Cabrera**, of the Texas A&M AgriLife Research and Extension Center in Uvalde.

Cabrera said graywater is essentially "soapy" water left after tap water has been run through a washing machine or used in a bathtub, bathroom sink or shower and does not contain serious contaminants.

He said while it is difficult to precisely estimate the statewide potential for water savings through the use of graywater and application of the technology needed, it may reduce household landscape water use by up to 50 percent, depending on the size, type of landscape plants used and geographical location.

"The average household uses as much as 50-60 percent of its water consumption for the landscape—grass, ornamental plants, trees, etc.," he said. "Considering that the average family of four produces about 90 gallons of graywater per day, if this was used to irrigate a landscape, it could represent a significant water savings."

Cabrera said this would be especially true for a large city such as nearby San Antonio, which has more than 1.3 million people in its metropolitan area.

"Implementing the use of graywater for landscape irrigation across the state could mean a tremendous water savings in terms of acre-feet of water, contributing to the water use and conservation goals of the recently released 2012 Water Plan," Cabrera said.

Using graywater is one of the easiest ways to reduce the need for potable water typically used in a home landscape, said **Dr. Calvin Finch**, director of the Water Conservation and Technology Center (WCTC) in San Antonio, which is administered by the Texas Water Resources Institute (TWRI) and Texas Center for Applied Technology (TCAT).

TWRI is part of AgriLife Research, the Texas A&M AgriLife Extension Service and the College of Agriculture and Life Sciences at Texas A&M University. TCAT is part of Texas A&M Engineering Experiment Station. TWRI is participating in the graywater research, as well as providing funding.

Finch said the 2012 state water plan identifies more than 500 specific activities that, if implemented, would help meet the state's future water needs.

"One of the low-hanging fruit projects that is often overlooked is use of graywater from households," he said. "Research results indicate that, with minimum precautions, water from our showers, bathroom sinks and clothes washers could be used to meet up to 10-15 percent of our overall landscape water needs."

Graywater differs from reclaimed water in that it is not captured water from sewer drainage or storm-water systems and then run through a waste-water treatment facility, Cabrera said.

"Reclaimed or 'purple-line' water is used for irrigation by some large-acreage operations such as golf courses, sports fields and large businesses," Cabrera said. "But graywater is just potable water that has been used for fairly benign household activities and could be reused immediately or stored and used soon after its initial use.

"It is also not what is referred to as 'black' water, which is used water from a toilet or the kitchen sink, both of which have a higher potential for containing bacteria and other organisms considered hazardous for human health. In this regard, graywater poses a minimal risk, particularly if we look primarily at water generated from clothes-washing machines."

He said some southwestern U.S. states, including parts of Texas, already allow for the use of graywater under certain restrictions, such as irrigation through delivery by flooding, subsurface or drip irrigation.

"While graywater has little potential for containing hazardous organisms, such as coliform bacteria, these irrigation distribution methods are preferred to spraying in order to further ensure safety," he said.

Cabrera said collaborating entities working to evaluate the viability of graywater use include AgriLife Research, AgriLife Extension, TWRI, WCTC and TCAT.

Read the full AgriLife TODAY article for more information.

Southwest Stream Restoration Conference coming to San Antonio

Resource Institute, Inc. is presenting the inaugural Southwest Stream Restoration Conference **May 28-30** at the Hyatt Regency Riverwalk in San Antonio.

The conference will provide an opportunity for natural resource professionals to share knowledge, experiences and innovations in stream restoration, according to organizers. It will include presentations, panel discussions, exhibits and professional networking focused on ecosystem and watershed restoration.

Dr. Kevin Wagner, Texas Water Resources Institute (TWRI) associate director, is leading the organization of a pre-conference workshop on riparian vegetation establishment, which will cover stream bank stabilization, overcoming challenges of riparian management and restoration and methods of establishment. TWRI has partnered with Resource Institute, Inc. to provide this conference.

For more information and registration, visit southweststream.org.

Water savings potential in high-value crops examined by TWRI grant recipient

As water supplies continue to decrease, producers across Texas face several choices, such as planting high-revenue crops that require a lot of water or saving water but potentially reducing economic returns. According to recent research, farmers in the Texas High Plains can have high-revenue crops and save water, too.

"My research will aid in developing drought-resistant, deep-rooted cultivars that could be a viable alternative to more water-intensive crops in water-scarce regions," said **Cora Lea Emerson**, Texas Tech University doctoral candidate and recipient of a 2011-2012 Texas Water Resources Institute (TWRI) research grant. Through this grant, she is exploring water-saving alternatives to traditional crop rotation systems.

Traditionally, producers in the Texas High Plains alternate their cotton crops with grain sorghum in an effort to reduce the incidence of cotton diseases such as Verticillum wilt. However, Emerson said, "Placing grain sorghum in rotation with cotton doesn't compare favorably to continuous cotton crops either economically or in terms of water use efficiency."

Farmers in the region also rotate cotton with crops that are important in biofuel production. "To supply this market farmers in the area have increased the production of water-intensive corn," Emerson said. As a result, the groundwater is being depleted at a faster rate, but the demand for biofuel is still not being met.

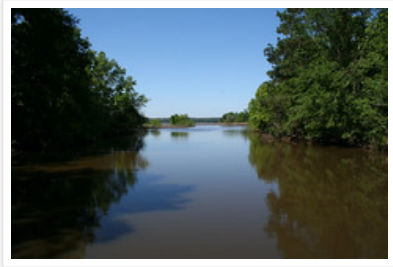
Emerson studies cotton rotations with plants such as safflower, sunflower and forage sorghum, instead of corn or grain sorghum. "These plants can adapt to the region and have potential value as animal feed or biofuel sources," she said.

"Our ability to continue producing enough food and fiber to meet the ever-increasing demand is directly linked to our ability to grow crops that provide economic returns while using less water," she said.

Emerson's research was funded by TWRI with funds obtained through the U.S. Geological Survey as part of the National Institutes for Water Research annual research program. TWRI is the designated institute for water resources research in Texas.

For more information on Emerson's research, see TWRI Research Grants.

New reservoir data resource from Texas Water Development Board



The Texas Water Development Board (TWDB) has launched waterdatafortexas.org, which provides comprehensive information on Texas reservoir conditions, according to TWDB.

TWDB compiled records from federal, state and local partners to generate current and historical information on reservoir levels, storage, surface area and elevation-area-capacity curves. In many cases, the website provides data for the entire history of the reservoir, according to TWDB's news release. The data can be downloaded both by end users and by third-party applications.

For more information on the site or on how to download reservoir datasets, contact webmaster@twdb.texas.gov.

Reminder: National Competitive Grant Program proposals due Feb. 21

The Texas Water Resources Institute (TWRI) announces the Request for Proposals (RFP) for the FY 2013 National Competitive Grant Program by the U.S. Geological Survey in cooperation with the National Institutes for Water Resources (NIWR).

Proposals must be filed online at niwr.net by 3:00 p.m. on **Feb. 21**. The proposals will then be approved for submission to the National Competitive Grants Program by TWRI by **March 7**.

Proposals are requested on the topics of improving and enhancing the nation's water supply, including evaluation of innovative approaches to water treatment, infrastructure design, retrofitting, maintenance, management and replacement; evaluation of the dynamics of extreme hydrological events and associated costs; development of methods for better estimation of the physical and economic supply of water; alternative approaches and governance mechanisms for integrated management of groundwater and surface waters; and the evaluation and assessment of conservation practices. Proposals are sought in not only the physical dimensions of supply, but also the role of economics and institutions in water supply and in coping with extreme hydrologic conditions. Further information on these priority research issues is in the RFP.

Proposals may be for projects of 1 to 3 years in duration (discrete 12-month budget periods required) and may request up to $250,000 in federal funds. Proposals require a 1:1 match, thus successful applicants must match each dollar of the federal grant with one dollar from non-federal sources. Federal funds may not be used to pay for indirect costs, but matching funds can be used for indirect costs. To fulfill part of the matching requirement, the applicant's negotiated indirect cost rate may be applied to both federal and non-federal direct costs. The indirect cost rate may not be applied to tuition and equipment costs.

More information is available at twri.tamu.edu/usgs-104g, and a copy of the RFP is also available at niwr.net/competitive_grants/RFP. Additional information about proposal content, format, review process and registration with the NIWR system is available in the RFP.

TWRI grant recipient develops a new PCB remediation strategy

A graduate researcher has developed a filter made of an innovative material called reactive activated carbon that, when used in aquatic ecosystems, is able to remove and destroy a harmful, toxic pollutant: polychlorinated biphenyl (PCB).

"According to the U.S. Environmental Protection Agency, 10 percent of the sediment underlying the country's surface water is contaminated with toxic pollutants that pose potential risks to fish, wildlife and humans," said **Prince Nfdozo**, a doctoral student in civil engineering at the University of Texas - Arlington under the guidance of **Dr. Hyeok Choi**. Nfdozo received a 2011-2012 Texas Water Resources Institute (TWRI) research grant.

"Our research provides tools for managing contaminated sediment in a way that reduces risks to human health," he said. "Residents of areas plagued with problems of sediments contaminated with toxic pollutants can be confident that their contaminated environments can be effectively managed to eliminate or reduce the potential health risks."

PCBs are a class of chemical compounds that were once widely used in transformers, capacitors and other electrical equipment. These chemicals are highly toxic, potentially carcinogenic and can persist in the environment for many years, Nfdozo said.

Remediation of a PCB-contaminated water body is difficult because these contaminants can deposit in aquatic sediments, he said. "These sediments act as long-term sources for the slow release of PCBs to aquatic environment(s)," Nfdozo said.

The traditional remediation strategy is to install an activated carbon layer to sequester PCBs onsite. However, this strategy does not remove all of the PCBs from the site, and the contaminants are still there after remediation, he said.

Using the special filter, which contains iron and palladium nanoparticles, Nfdozo hopes to chemically destroy PCBs and other harmful contaminants. According to Nfdozo, activated carbon can also trap other types of contaminants.

"This strategy can be applied to other contaminants because the iron and palladium nanoparticles can decompose many other chlorine- or fluorine-containing compounds," Nfdozo said.

Nfdozo's research was funded by TWRI with funds obtained through the U.S. Geological Survey as part of the National Institutes for Water Research annual research program. TWRI is the designated institute for water resources research in Texas.

For more information on Nfdozo's research, visit TWRI Research Grants.

Groundwater Protection Committee launches new website

The Texas Groundwater Protection Committee (TGPC) has launched its redesigned website, which offers a clearinghouse of groundwater information and resources. In Texas, nine state agencies and an association of groundwater districts manage aspects of groundwater, and together these entities comprise the

committee, which works to bridge the gap between state groundwater programs, improve coordination between member agencies, and protect groundwater, according to TGPC.

For more information, visit tgpc.state.tx.us or contact TGPC at tgpc@tceq.texas.gov.

New Publications

New Extension publications

Rainwater Harvesting: System Planning, Billy Kniffen, Brent Clayton, Douglas Kingman, Fouad Jaber, Texas A&M AgriLife Extension Service, B-6240, 2012

Ammonia Emissions from Cattle Feeding Operations, Sharon L. Preece, N. Andy Cole, Richard Todd, Brent W. Auvermann, Texas A&M AgriLife Extension Service, E-632, 2012

Dust Emissions from Cattle Feeding Operations, Sharon L. Preece, Ronaldo Maghirang, Stephen H. Amosson, Brent W. Auverman, Texas A&M AgriLife Extension Service, E-631, 2012

Warm-Season Annual Forage Grasses for Texas, Vanessa Corriher, Texas A&M AgriLife Extension Service, E-630, 2012

New TWRI publications

Fate and transport of E. coli in Rural Texas Landscapes and Streams**, K. Karthikeyan**, Texas Water Resources Institute TR-434

Salinization of Irrigated Urban Soils: A Case Study of El Paso, **TX, S. Miyamoto**, Texas Water Resources Institute TR-433