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TOWTRC Funds Grant to Gain Data on High-Strength Wastes from Food Services Establishments

The Texas On-site Wastewater Treatment Research Council awarded grants to the Lower Colorado River Authority, the San Antonio River Authority, and the City of Austin for developing data related to high strength wastewater from food services establishments. The project is titled, "Developing Data Related to High Strength Wastewater from Food Services Establishments."

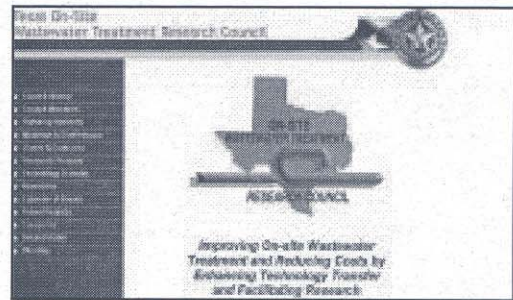
An equal number of food service establishments from the following categories will participate in the study: Mexican, Chinese, fast food, steak house, and seafood. Each food service establishment must have a water meter and have an accessible location for taking effluent samples after the grease trap and before a septic tank (if they exist).

The effluent samples will be taken six afternoons in a row for each food service establishment. Water meter readings and wastewater characteristics will be recorded each day. After two weeks, the process will be repeated. An accredited laboratory will analyze the samples for the following parameters: biochemical oxygen demands, total suspended solids, carbonaceous oxygen demands, pH, temperature, dissolved oxygen, and fats, oils, and greases.

This data, which will assist designers of on-site sewage facilities for food service establishments, will be compiled from all three grant contracts. It will be made available at a later date on the Council's website at <http://www.towtrc.state.tx.us>.

Visit the new TOWTRC Website

The new website of the Texas On-Site Wastewater Treatment Research Council provides a great way to access a wealth of information about the Council and its activities and programs. The website was developed by Tomeka Herrod of The Wilkins Group in Dallas, under a grant provided by the Council. It contains information on the history of the Council, current and past Council members, and the TOWTRC's statutory authority. Some of the most useful documents on the website include information on Council-funded research projects, conference proceedings, fact sheets, and newsletters. You can use the website to learn about training classes, conferences, and opportunities to submit research ideas to the Council. The website address is <http://www.towtrc.state.tx.us>.



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ASAE Honors Lesikar with Extension Award

The American Society of Agricultural Engineers has named Bruce Lesikar, an agricultural engineering with Texas Cooperative Extension, as the winner of the prestigious Nolan Mitchell Young Extension Worker Award. Lesikar is also a researcher in the Texas A&M University Biological and Agricultural Engineering Department and an Associate of the Texas Water Resources Institute. Lesikar was selected for the award in recognition of his outstanding contributions to educational programming about on-site wastewater treatment systems (OSSFs). His research has provided technology transfer and Extension education in on-site wastewater treatment systems, groundwater quality and the implementation of best management practices for non-point source pollutants.

Lesikar has carried out numerous projects for the Texas On-Site Wastewater Treatment Research Council, including leading efforts to develop OSSF training centers in Weslaco, El Paso, and Bryan; the development of fact sheets about OSSF technologies; and several research projects. You can contact Lesikar at b-lesikar@tamu.edu or (979) 845-7453.

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Subscriptions are free upon request. To contact the editor, call (979) 845-8571, fax (979) 845-8554, or e-mail rjensen@tamu.edu. TWRI's mailing address is: TWRI, 1500 Research Parkway, Suite 240, Texas A&M University, College Station, TX 77843-2118.

This newsletter and much more information about TOWTRC and on-site wastewater issues in Texas called "TWRI Septic-Talk." Contact us if you want to learn more about this service.

TWRI is always looking for story ideas from its readers. If you want to suggest an article for the newsletter, please contact the Editor.

Disclaimer

The articles in this newsletter do not necessarily reflect the official policies of the Texas On-Site Wastewater Treatment Research Council, the Texas Natural Resource Conservation Commission, or the Texas Agricultural Experiment Station (TAES). Feature articles often present useful information about on-site wastewater issues, but may not always identify systems endorsed by the TNRCC, TAES, or the council

TOWTRC Project at Texas Tech Investigates Denitrification Rates of Wastewater Effluents

A research project funded by the Texas On-Site Wastewater Treatment Research Council (TOWTRC) will investigate denitrification rates that occur when effluents are disposed in soils through onsite wastewater treatment systems (OSSFs). The research is being carried out by Texas Tech University researchers Clifford Fedler of the Civil Engineering Department and Cary Green of the Plant and Soil Science Department.

Denitrification is a process through which nitrate is reduced to other nitrogen forms. Typically, OSSFs apply 2 to 8 inches of wastewater each month to disposal fields. The amount of denitrification that occurs in soils is influenced by several factors, including soil moisture, soil temperature, nitrate levels, and the amount of available carbon. If sufficient denitrification does not occur, the likelihood of nitrogen-based pollution may increase.

This project focuses on how the land application of treated effluents from OSSFs may influence the rates of denitrification that occur in West Texas soils in the Lubbock area. The research will be carried out at the Lubbock Land Application site. In this project, soil column studies will assess denitrification rates in the field at four different times during the year (January, April, June, and October). During each of these periods, five soil columns will be evaluated from three soil series (Amarillo fine

sandy loam, Acuff loam, and Estacado clay loam). These soil columns will be treated with effluents to achieve two moisture regimes (50% of saturation and full saturation). Samples will be collected each day for a week to determine the short-term dynamics that occur under field conditions. Samples will also be collected at different sites around each



Photo by Cliff Fedler/ Texas Tech

Texas Tech graduate student Phil Pearson obtains soil samples at the Reese Center near Lubbock.

sample plot to examine trends associated with spatial variability.

Another major thrust of this project is to utilize laboratory studies to determine denitrification capabilities of these soils. In this effort, samples of each soil will be treated with varying amounts of glucose and potassium nitrate. These results will be compared to the amount of denitrification that occurs from wastewater samples. These tests will determine the extent to which carbon and nitrogen are controlling and limiting the denitrification process.

According to Fedler, the benefit of this study is that it may allow a better understanding of how wastewater application, from both OSSFs and larger efforts, may be influencing the extent to which nitrogen is treated in these systems. The research may also provide insights into the amount of effluent that can be safely applied without posing an environmental threat.

For details, contact Fedler at (806) 742-2218 or clifford.fedler@coe.ttu.edu.

Ongoing TOWTRC Project Extends Work to Evaluate Whether ETA Systems May Reduce Drainfield Sizes

Researchers at Texas Tech University (TTU) are working with the Texas On-Site Wastewater Treatment Research Council (TOWTRC) to gather more information on the effects of combining absorptive and evaporative disposal methods on drainfield sizing in arid and semi-arid areas. At the same time, they also hope to use data gained from these studies, and other efforts, to estimate these effects in other regions of Texas.

This project is led by researchers Lloyd Urban, Ken Rainwater, and Andrew Jackson of the Texas Tech University Water Resources Center (TTUWRC).

As a background, this project builds upon previous TTUWRC research carried out for TOWTRC. This field investigation was conducted at the Reese Center near Lubbock. In these initial studies, the researchers investigated two technologies: absorptive systems (AB), which are trenches covered with an impervious liner to prevent evapotranspiration, and evapotranspiration systems (ET), which are trenches lined with an impervious liner to prevent water from infiltrat-

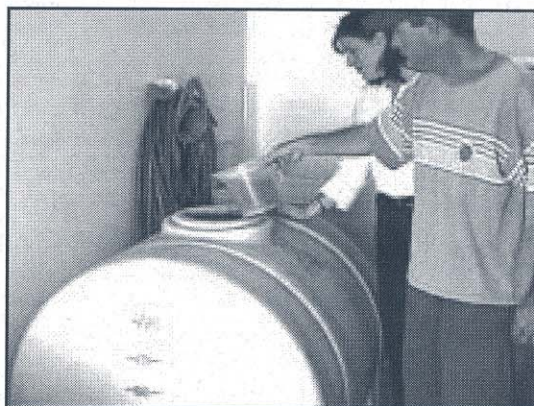


Photo by Dean Muirhead/ TTU

Texas Tech graduate students Greg Collins and Heather Keister make artificial wastewater for OSSF studies.

(See Texas Tech, page 8)

Meetings, Conferences, and Training Opportunities

The Texas Engineering Extension Service (TEEX) has announced its training schedule for on-site sewage facility (OSSF) classes for September 2002 through February 2003. The Installer I, Installer II, Site Evaluator, and Designated Representative classes are required for those seeking Texas OSSF Licenses. The classroom hours for these four courses include the examination period for these licenses. State regulations require those seeking licenses to pre-qualify for the exam. Applicants for licenses should submit TNRCC applications and notarized statements of work experience, as well as their registration forms and payments, three weeks before classes begin. The Aerobic/Surface Irrigation Operations and Maintenance class and the Water Utility Safety class are for continuing education units (CEUs) only.

The Installer I class provides 13 classroom hours of instruction. Those who complete it will earn 13 hours of CEUs. The class will be taught at the following dates and places: Houston—September 9 and 10; Mesquite—October 8 and 9; Corpus Christi—November 5 and 6; Austin—December 10 and 11; El Paso—January 14-15; and San Antonio—February 11 and 12.

The Installer II class provides 21 classroom hours of instruction, and those who successfully finish the class earn 21 CEUs. The class will be offered at the following dates and sites: Kerrville—September 24 through 26; Mesquite—November 19 through 21; Houston—January 7 through 9; and Midland—February 18 through 20.

The Site Evaluator class provides 17 hours of classroom instruction and 17 CEU credits. This class will be offered at the following dates and places: Bryan—October 1 through 3; Kerrville—November 5 through 7; Mesquite—December 3 through 5; and San Antonio—February 4 through 6.

The Designated Representative class provides 24 classroom hours of instruction and 24 CEUs. The class is scheduled for the following dates and sites: Mesquite—October 1 through 4; Bryan—December 3 through 6; and Weslaco—February 4 through 7.

The Aerobic/Surface Irrigation System Operations and Maintenance class provides 8 hours of classroom instruction and 8 CEUs. The class is scheduled for the following dates and places: Midland—October 16; Longview—November 12; and San Antonio—December 19.

It needs to be noted that people only receive the CEUs if they already have a license and are taking the class to earn CEUs. People taking these classes to become licensed do not obtain CEUs.

To learn more about any of these classes, to obtain TNRCC applications and experience forms, or to register, call TEEX at (800) 824-7303.

The 2003 Annual Conference of the Texas On-Site Wastewater Treatment Research Council (TOWTRC) is scheduled for February 25-26 in Waco. If you are considering exhibiting or attending, you might want to contact Warren Samuelson of the Texas Natural Resource Conservation Commission (TNRCC) onsite wastewater treatment program at (512) 239-4799 or wsamuels@tnrcc.state.tx.us.

The Texas On-Site Wastewater Association (TOWA) offers several training opportunities as well as conferences. To learn more, visit the TOWA website at <http://www.txowa.org>, or call them at (512) 494-1125.

The Texas Natural Resource Conservation Commission (TNRCC) offers a list of approved providers of continuing education units (CEU) on its website. The list includes classes in Texas and elsewhere that provide training for which applicants can earn CEU hours. To learn more, go to the web at http://www.tnrcc.state.tx.us/enforcement/csd/ics/ossf_ceu.html.

The Soil and Site Evaluation Course offered by the Texas A&M University System is now on the web, and is the only on-line course approved for continuing education units (CEU) by the TNRCC OSSF Program. The course addresses the major limitations of soils in terms of texture, groundwater, and restrictive layers. The course places a special emphasis on evaluation of the landscape in terms of shallow groundwater issues. You can take this course from the comfort of your own home and at your own pace and there is no need to travel. The class is approved for 8 hours of CEU credit. More information is on the web at http://www.urban-nature.org/soil_and_site.htm.

The National Onsite Wastewater Recycling Association regularly offers conferences as well as educational materials. You can learn more about their programs on the web at <http://www.nowra.org>.

The National Small Flows Clearinghouse at West Virginia University features a number of excellent resources to help people keep up with developments in on-site wastewater treatment, including meetings and training classes. They also publish databases, magazines, and fact sheets about OSSF issues. To learn more, visit them on the web at <http://www.nsfv.wvu.edu>.

Publications of the National Environmental Health Association (NEHA) regularly feature news about training as well as workshops and conferences. In addition, NEHA publications provide an excellent perspective on how regulatory officials are affected by developments in the on-site wastewater treatment field. For details, see them on the web at <http://www.neha.org>.

Editor's Note

We are always looking for story ideas for the newsletter. Please contact the Editor if you have any articles you would like us to consider developing. Also, the TWRI SepticTalk newsletter is a good way to keep informed of developments in on-site wastewater treatment. This free e-mail list server sends out a few messages each day specifically about OSSF issues.

For more information on SepticTalk or to submit a story idea, please contact Ric Jensen at rjensen@tamuedu.

TAMU Graduate Student Investigates Use of Subsurface Drip Irrigation for OSSFs

Texas A&M University (TAMU) graduate student Vance Weynand is studying the subsurface drip dispersal of wastewater effluents. Weynand, a graduate student in the TAMU Biological and Agricultural Engineering Department, received a Mills Scholarship from the Texas Water Resources Institute (TWRI). He is studying under the direction of Bruce Lesikar of Texas Cooperative Extension.

Several studies suggest that wastewater reuse will become an important source for landscape irrigation and agricultural production in the near future in Texas. One method to functionally reuse effluent is through the use of subsurface drip irrigation. Drip irrigation is often used to dispose of effluents in areas with seasonally high water tables or with soil conditions that do not allow the use of conventional absorption fields.

In his studies, Weynand is evaluating the performance of existing subsurface drainfields. Weynand has evaluated the initial flow rates of drip emitters produced by various manufacturers that are used to land apply effluents from on-site wastewater treatment systems (OSSFs). He ran a laboratory test in which sets of emitters were buried in soil. Each emitter was set up on varying slopes and contours. The purpose was to simulate how drip systems would function in different landscapes if they were started and stopped over a year.

Following an evaluation of flow rates from these simulations, the emitters were then flushed using a scouring velocity. Flushing of drip laterals is routine maintenance for these systems. After the drip emitters were flushed, the flow rates were then analyzed.

Data will be statistically analyzed to compare flow rates at different slopes and positions. Weynand will harvest several sets of drip emitters from systems that have had routine maintenance, as well as those that have not been well-maintained. The flow rates from field data will be compared to the laboratory experiments. Currently, Weynand is conducting the statistical analysis of the



Photo courtesy of Bruce Lesikar/ TAMU

Vance Weynand works with this subsurface drip line used in association with this onsite wastewater treatment system.

three different flows in the lab tests.

Weynand feels his project may be beneficial by showing that routine maintenance is critical to the overall performance of drip dispersal systems. The study should also provide important information about the use of drip irrigation systems to distribute treated wastewater.

Notes: For more information contact Weynand at VLWeynand@ag.tamu.edu, or Lesikar at (979) 845-7453 or b-lesikar@tamu.edu. Lesikar has also created a website that presents information about the programs of Texas Cooperative Extension dealing with OSSFs, and it is located at <http://ossf.tamu.edu>. TWRI Mills Scholarships provide \$1,000 grants to supplement graduate students water resources research at TAMU and TAMU-Galveston, and have supported students investigating OSSF issues. To learn more about the TWRI Mills Scholars Program, contact Ric Jensen at rjensen@tamu.edu.

NSFC's Regulations Database is Now On-Line

The National Small Flows Clearinghouse's (NSFC) Regulations Database can now be accessed on-line at www.nesc.wvu.edu/nsfc/nsfc_regulations.htm. The Regulations Database provides access to onsite wastewater treatment regulatory documents for 48 states. This information will be useful for environmental professionals seeking information about a particular state's onsite wastewater treatment regulations or wanting to compare regulatory structures between states.

The NSFC collects and maintains information about onsite wastewater treatment regulations, but does not interpret regula-

tions. Database users seeking interpretation or additional information about a state's regulations should contact the state's onsite wastewater regulatory agency. The NSFC maintains four additional databases, including the Bibliographic Database, the Manufacturers and Consultants Database, the Facilities Database, and the Contacts and Referrals Database. For more information about any of these databases, visit www.nesc.wvu.edu or call them at (800) 624-8301.

Designing a Low-Pressure Dosing System for the Lake Colorado City State Park in West Texas

What unique considerations have to be considered when designing on-site wastewater treatment systems (OSSFs) for isolated areas with widely fluctuating flows?

For example, when developing an OSSF for a state park, designers and installers must deal with many considerations, including extreme variations in flows; variable waste stream characteristics; the fact that the public may be in close contact with certain components of the wastewater treatment system; the need to be sensitive to archaeological and historic concerns; the limited availability of trained operators or maintenance personnel, and the remote locations of the systems. Several of these issues are routinely encountered in the design of OSSFs for state parks and recreational areas.

One of the engineers designing OSSFs for the Texas Parks and Wildlife Department is Susan Parten, who heads Community Environmental Services, Inc. of Austin. TPWD has over the years employed engineers or utilized other firms to develop these systems. Parten has designed systems for TPWD parks at several sites, including Palo Duro Canyon, Buescher, Cleburne, Copper Breaks, Fort Griffin and Lake Colorado City.

"We are really looking for systems that need little maintenance and are low-tech," said Park assistant manager Santos Reyes.

BACKGROUND INFORMATION

For each of their projects, the TPWD utilizes a list of approved engineers who have worked with the agency or are eligible to do so. Marcia Purvis of TPWD is the manager for this project and manages OSSF projects for parks within the West Texas region.

Once a design has been developed by the engineer, reviewed, and approved individually by TPWD, the Texas Natural Resource Conservation Commission (TNRCC) and/or a local authorized agent, bids are then let for construction.

For example, in a project currently under construction at the Rolling Hills campsite at Lake Colorado City State Park, the engineer is Susan Parten. The contractor is J. D. Godbey, who is working with SEPCO. The design for the system at Lake Colorado City was approved by the designated representative, George Franklin, of the Mitchell County Health Department.



Susan Parten and Louis Hamilton of SEPCO install this septic tank and effluent filter at the Lake Colorado City State Park.

Photo by Ric Jensen/ TWRI

DESIGN AND CONSTRUCTION

One of the initial questions Parten had to consider in the design of this system was estimating the peak flows. For example, the Rolling Hills campground at Lake Colorado City includes 34 campsites, each of which might on average hold up to four people at a time. Therefore, this campground at the park could house as many as 136 campers during Memorial Day and the Fourth of July, but might be relatively empty during winter months.

The quality of wastewater is another issue that had to be dealt with. Flows from this campground won't contain kitchen wastes, but other onsite systems in the park may include chemicals pumped out from recreational vehicles. Because relatively few people may be at the park at one time, the flows could be quite low. This variation in quality and quantity of flow might cause problems for systems relying on suspended or attached-growth aerobic or biological treatment processes.

One of the first steps involved carrying out a thorough site evaluation. After digging soil profiles of 5-6 feet deep, Parten learned the site consists of sandy clay loam soils, that shallow groundwater was not a problem, and that there were no restrictive horizons encountered in the profile holes. Parten designed an OSSF in which the flows to the system are less than 5,000 gallons per day. In this system, flows first go to a two-compartment 8,000-gallon septic tank that utilizes an effluent screen vault, and then enter a 5,000-gallon field dosing tank. A pump station uses two 3" lines to take wastewater to two large low-pressure

(Lake Colorado City, from page 6)

dosing areas that consist of eight zones and have approximately 4,500 linear feet of trench.

To design the layout for this low-pressure dosing (LPD) system, Parten considered the topography of the drainfield to do the necessary hydraulic calculations and properly space the holes in the field lateral lines. In each zone, there are five lateral lines. The holes are spaced based on slopes and expected flow rates. Each pipe was labeled before drilling the holes so that it could be placed in the field such that the correct number of holes and proper pressure head and flow would occur for that field line.

This LPD system uses two duplex, high head, 0.75 horsepower pumps that alternate and send the effluent to different field zones. Each pump uses a distributing valve that feeds one of four different areas each time. When constructing this system, the installer SEPCO obtained 1.5" washed drain rock from Sweetwater for use in the drainfield. The fiberglass septic tanks were backfilled with pea gravel, and sand was used as bedding for the pipes. The LPD trenches vary from 24" to 30" deep, and the bottoms of the trenches filled with washed river rock that won't easily erode and won't clog.

As the system was being built, the installer first laid down 5" of drain rock, then the pressure pipe and lateral lines, and then 6" more of rock. Afterwards, they put down geotextile fabric to keep the backfilled soil out of the rocks. The fabric is a spun polyester that allows water to flow through. Finally, sandy loam and other appropriate soil cover was added to cover the trenches and establish a suitable vegetative cover. Parten says the system will be inspected once a year, and the septic tank may need to be pumped once every few years, depending

upon the sludge and scum build-up when the system is inspected.

Because the OSSF was being developed for a state park, there was a rigorous review that addressed archaeology issues that had to be worked around. Another challenge is that the remote nature of the site made it difficult for workers to easily get to and from the area. The work crew consisted of 3 or 4 workers who were on-site for about six weeks.

One goal was to limit features of this system the public can tamper with, since these systems will be in areas where the public will use them. To control this, the engineer and installer made sure people can only access the system with special tools. Public access issues were another concern. The LPD system allows people to walk on the drainfield (it doesn't have to be fenced off), but the drainfield is still off-limits to vehicles.

To maintain the natural landscape at the site, the drainfield is being overseeded with a mix of native grasses and vegetation. Other areas of this park such as the Mesquite, Lakeview and Cove Campgrounds at Lake Colorado City also have systems that are designed to dose septic tank effluent flows of up to but less than 5,000 gallons per day.

Notes: You can learn more about Texas state parks by visiting the website of the Texas Parks and Wildlife Department at <http://www.tpwd.state.tx.us>. That website provides information on the types of wastewater systems used at each state park. To learn more about the OSSF described in this article, contact Parten at (512) 443-2733 or SueParten@aol.com.

National Sanitation Foundation Publishes New Standard for Chlorination Devices Used in OSSF Systems

The National Sanitation Foundation International (NSF) and the American National Standards Institute (ANSI) recently introduced a standard for chlorination devices used in association with on-site wastewater treatment systems (OSSFs).

The new guidelines for OSSF chlorination units have been added to NSF/ ANSI Standard 46 titled "Evaluation of Components and Devices Used in Wastewater Treatment Systems."

The chlorination standard is listed as Section 11 of Standard 46. It covers chlorine dispensers, chlorine disinfection devices, and chlorine products.

The standard covers both chlorine dispensers (which deliver chlorine without a contact chamber) and disinfection devices (which use a contact chamber). It recommends that both types of units should be tested for chlorine resistance, the performance of these units over a 30-day period, and the amount of chlorination that are achieved by these units.

According to this standard, testing must demonstrate that these devices will not be adversely affected by normal contact with chlorine. These units must also show, through testing, that they can operate continuously for 30 days without maintenance. In addition, they must also show they can reduce fecal coliform levels over a 30-day period or that they can maintain adequate chlorine levels.

In addition, the standard requires manufacturers of these devices

to specify all key technical elements that influence the chlorination process, including anticipated design flows, the minimum and maximum flows these units can handle, contact times, and mixing requirements.

The standard also requires manufacturers to specify the type of chlorine tablet or liquid chlorine that can be used with their devices. According to an article published in the Summer 2002 issue of NSF "Regulatory World" newsletter, "The new NSF/ ANSI standard for chlorination is another means by which regulatory officials, design engineers, consumers and others can have greater confidence in the performance of [OSSF chlorination] devices they select and use."

The standard also describes the level of treatment that must be met by devices being tested for such parameters as biochemical oxygen demands, total suspended solids, fecal coliform, ammonia, and pH. It also outlines flow levels that must be met during these evaluations.

Notes: You can learn more about this new standard by visiting the NSF website, <http://www.nsf.org>, or by contacting Adriana Greco of NSF at greco@nsf.org. If you contact Ric Jensen at rjensen@tamu.edu, I can fax or e-mail a copy of the article published in the NSF newsletter to you.

ing into the underlying soil. The goal was to determine the extent to which these systems can accept effluents applied as part of onsite wastewater treatment systems or OSSFs. In this initial phase, the researchers also quantified the combined effects of absorptive and evapotranspiration (ETA) systems on OSSF drainfield performance.

Although the Texas Natural Resource Conservation Commission loading guidelines consider drainfields as ET or AB only, in actuality a conventional absorption field (with no liner) loses water both to evapotranspiration and infiltration. The TOWTRC is interested in updating the TNRCC loading guidelines to account for both processes and to possibly reduce the size of the trench systems.

In the current follow-up study, titled "Evaluation of Drainfield Absorption and Evapotranspiration Capacity," the goal is to provide further long-term hydraulic loading data for selected drainfields at the field site that use ETA systems. One of the first tasks of this new project is to reinitiate and operate the ETA fields, which had been shut down since the completion of the initial field studies in May 2001. In this project, the ETA fields receive a mixture of "artificial wastewater" comprised of flour, beer, kaolin, urea, and a surfactant.

Activities associated with this field research include monitoring flows, documenting weather parameters at the site, and taking water quality samples for biochemical and carbonaceous oxygen demands,

total dissolved solids, and total Kjeldahl nitrogen.

The other major phase of this new project involves evaluating regional variations in soil types, rainfall, evapotranspiration, and vegetation, as well as the numbers and types of OSSFs that may be pertinent to the evaluation of ETA systems. This information, along with guidance from Council members, local inspectors, and authorized agents, will be utilized to develop recommendations for the appropriate ETA loading criteria for other regions of Texas. This information may be made available in the form of geographic information systems.

According to Urban, the value of this research is that it may provide practical results that could lead to reduced drainfield sizes and lessened costs. For example, results of the initial research project suggested that ETA drainfields could easily reduce the size of drainfields in the Texas High Plains by 50%. It is hoped that this research project can provide additional science-based evidence on whether similar reductions in drainfield sizing may also be appropriate for other regions of Texas.

Note: Urban is the out-going Director of the TTUWRC and Rainwater will become the new Director of TTUWRC in September 2002. For details, contact Rainwater at (806) 742-3490 or ken.rainwater@ttu.edu, or Jackson at andrew.jackson@coe.ttu.edu.

Status of Onsite Wastewater Treatment Systems in the United States Now Available on CD

The National Small Flows Clearinghouse (NSFC) at West Virginia University recently released a new CD-ROM that provides information about onsite wastewater systems in all 50 states. Titled "A Summary of the Status of Onsite Wastewater Treatment Systems in the United States During 1998," this CD was published by the Clearinghouse in 2000. It is a follow-up to a report the NSFC published in 1993.

Data from local agencies and health departments are summarized by state and then compiled into a national summary. State reports are grouped by U.S. Environmental Protection Agency region. Both the state and national summaries include the following information: data about the local agencies contacted and which ones responded; new onsite system permits; failing systems and repair permits; new system installation/construction costs; inspection and maintenance programs,

and licensing and certification programs.

In addition, the CD includes a statistical comparison of data from 1993 and 1998, as well as data relevant to the jurisdiction of maintenance and management districts, including regulations and enforcement and water well testing. The appendix contains a copy of the survey questionnaire. Wastewater professionals will be able to use this report as a convenient statistical reference or for trend analysis in their state, region, and nation.

Notes: The 1998 survey is available only on CD-ROM and requires Adobe Reader. The CD costs \$10 plus shipping. You can order it from the National Small Flows Clearinghouse at West Virginia University by calling them at (800) 624-8301 or visiting their website at <http://www.nsfv.wvu>.