Texas On-Site Insights
Information about On-Site Wastewater Treatment Systems in Texas
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Cluster System Installed Near Northeast Texas Lake

Many remote sites and small subdivisions in Texas face a common dilemma when choosing an on-site wastewater treatment and disposal system. Often, there are not enough homes in such an area to make a centralized sewer system feasible. On the other hand, the cost of installing individual systems for each home may be expensive.

An alternative that has been widely used in many states - though rarely in Texas so far - is a "cluster" system. Individual homes still can use any of a variety of types of on-site systems, based on what best fits site conditions. However, one or more components of the system are shared by two or more users. For example, a small group of homes at a remote site could share a septic tank or a drainfield. Reasons people choose a cluster system may be economic (the cost per household can be reduced) or functional (these systems can be flexible enough so that they work well even in difficult sites).

As stated before, few cluster systems have been installed in Texas yet. However, the Texas Natural Resource Conservation Commission (TNRCC) may consider cluster systems when lot sizes, or site and soil conditions make standard systems unacceptable. Clusters are identified by TNRCC as a way to remediate failing systems.

Installer Maurice Short talks with Lee Green about a new cluster system Short installed near Omaha, TX.

Earlier this year, Maurice Short, an on-site installer from Texarkana and a member of the Texas On-Site Wastewater Treatment Research Council (TOWTRC), designed and installed one of the first cluster systems in Northeast Texas.

Short received a call from Mr. and Mrs. Lee Green, a retired couple who live in a two-bedroom home on Glass Club Lake, near Omaha, TX. The lake and surrounding lands are

owned and managed by a corporation, but individual members own their homes. Homeowners are responsible for their property halfway to their neighbors. The Green's home was built on a pier and beam, and their lot slopes down from a gravel road to the lake. The plumbing flows to the rear of the house towards the lake and the sewer exits at the rear into a septic tank that was shared with a neighbor. There were no drainfield lines. Instead, a sewer line flowed toward the lake.

Short found the septic tank was too close to the lake, that it was not possible to add a new septic tank and dosing tank at the site because the lot was narrow and covered with trees, and that the groundwater table was too high for a standard septic tank and drainfield or other subsurface system. Short developed this solution. Sewer lines had to be routed to the front of the house where they would flow away from the lake. An aerobic system consisting of a trash trap, treatment tanks, a chlorinator and a pump tank followed by surface irrigation was chosen to treat and dispose of wastewater. The existing septic tank would be pumped and abandoned, according to TNRCC rules.

The Greens agreed to this solution, and recommended this fix to their neighbor. Unfortunately, the internal plumbing of the neighbor's could not be changed. Trees, space and slopes on the neighbor's lot prohibited placing any system near the sewer stub-out at either house. An aerobic system was proposed for the neighbor but they decided it was too expensive and obtained a second opinion. After further discussions, the TNRCC Tyler office suggested a cluster system may work for the two homes. Short met with the homeowners and explained how a cluster system could work. The homeowners agreed and engineering drawings were submitted to the TNRCC. Final plans called for an aerobic system for the Greens, a trash trap, a gravity feed line to the treatment tank, and sprinkler heads for the neighbor's lawn.

Although the technology is simple, the policies and procedures that had to be put in place were complex. "Because this was one of the first cluster systems in the TNRCC Tyler Region, a lot of review was required," Short says, noting that duplicate paperwork was needed for construction contracts, permits, service agreements and affidavits. The affidavits are critical. Each homeowner signed notarized statements that they co-owned the system, that they accepted a two-year service agreement, and that they would share the expense of extending the maintenance contract. They agreed to share the cost of service calls for repairs not covered by the warranty, as well as chlorine tablets and electricity.

NOTE: Cluster systems must be approved by the TNRCC on an individual basis. The TOWTRC is developing a request for proposals to conduct workshops to implement cluster systems in Texas. Short can be contacted at (903) 831-0468. For details about the Council, contact Warren Samuelson of the TNRCC at (512) 239-4799.

Council Funds Study to Assess Impact of New Rules on System Costs

A study that will compare the costs of systems designed and installed in accordance with new and previous state regulations governing on-site wastewater systems has been funded by the Texas On-Site Wastewater Treatment Research Council. The project was awarded in September 1997 to Charlie Digges, who is a registered sanitarian and private on-site wastewater consultant in Kerrville, TX.

"The Council funded this project because of concerns that the new Texas on-site regulations may have increased the cost of installing systems," says Council Secretary Warren Samuelson of the Texas Natural Resource Conservation Commission. "We want to explore if these concerns are valid."

The goal of the project is to look at the requirements and costs of designing and installing on-site systems under the old rules, as well as the expense of designing and installing these systems under the new rules in six regions of the state. The regions were selected to reflect different conditions regarding such issues as climate, soils and groundwater tables. The cost of standard systems (septic tanks and drainfields) as well as alternative systems (low pressure dosing, aerobic units and spray irrigation) will be computed.

For more information about this study, contact Samuelson at (512) 239-4799 or Digges at (830) 895-1809. More information about the Council is available on the Council WWW site, which is located at http://towtrc.tamu.edu.

New Small Flows Study Summarizes Wastewater Systems

A new report from the National Small Flows Clearinghouse (NSFC) provides a fresh perspective on many on-site wastewater issues in Texas and the rest of the United States.

The report, National Onsite Wastewater Treatment: Summary of Onsite Systems in the United States (1993), was published by the Clearinghouse in 1997. Key individuals who developed the report include John Mori, Peter Casey, and Tricia Angoli of NSFC.

The report contains information provided by local health departments for 1993. The report includes the number of permits issued, the cost range for an on-site system permit, the number of on-site systems that local health departments reported repaired or replaced, the cost of local permits to repair a failing system, the number of homes with on-site systems, local population changes, and the minimum and maximum cost to install or correct a new on-site system.

It needs to be emphasized that the information about on-site systems in Texas is incomplete and should be used carefully. For example, only 109 county health departments were contacted and, of those, only 54 responded. In contrast, Texas contains 256 counties, most of which have health departments. The report shows that 8,892 permits for new on-site systems were issued in 1993, with the greatest numbers in El Paso and Hays Counties (more than 800 each). The cost for on-site systems permits ranged from $0 to $265. The most commonly installed type of system was conventional septic tanks and drainfields, followed by aerobic systems. According to the report, there

were more than 1,260 failed systems and 1,729 systems that had to be repaired or replaced. Harris County led the way in terms of the number of systems that failed (500) and had to be repaired or replaced (500), followed by Fort Worth (250 failed systems and 150 units that had to be replaced). The report shows that there are more than 7 million homes in Texas, and more than 1.26 million of those utilize on-site systems based on 1990 U.S. Census data. However, the report suggests that only 234,379 homes in the responding counties utilize on-site site systems. The most homes with on-site systems are sited in Harris County (40,000 systems), followed by Hunt County, Williamson County, and the City of Lubbock (each 20,000). More than 70% of counties reported that the number of on-site systems in their jurisdictions increased. Counties responding to the survey reported the median cost to install a new system ranged from $2,200 to $4,000, while the highest reported cost was $24,000.

To purchase the report, contact NSFC at (800) 624-8301 or http://www.estd.wvu.edu/nsfc/ or e-mail nsfc_orders@estd.wvu.edu.

The History and Role of the TOWTRC

By Warren Samuelson, TOWTRC Executive Secretary

Prior to the late 1960's, the regulation of on-site sewage facilities (OSSF) in Texas was administered mainly by municipal governments through local building and plumbing inspection programs. There was no inspection of installations outside of municipal jurisdictions. Complaints concerning malfunctioning OSSFs were investigated by local health agencies and the Texas Department of Health (TDH).

In the late 1960's, the Texas Legislature adopted legislation which empowered counties, river authorities, and municipal utility districts to adopt OSSF control orders, subject to approval by the Texas Water Quality Board. These orders gave local governments authority to permit systems, conduct inspections, collect fees, investigate complaints, and impose penalties.

In 1977 , TDH developed statewide minimum construction standards regarding OSSF design, construction, and installation. TDH acted as a clearinghouse for innovative technology, and investigated complaints in areas of the state without local governmental control. At the time, septic tanks and drainfields were the most common type of on-site wastewater treatment system installed, even though it was known they were not suitable for all sites. A report to the Legislature stated that alternative systems had not gained wide acceptance in Texas and local permitting authorities were often unwilling to issue permits for alternative systems.

Legislation Issues

In November 1987, the 70th Texas Legislature created the Texas On-Site Wastewater Treatment Research Council (TOWTRC) to fund research to demonstrate and develop alternative wastewater disposal systems. Results were to be passed along to regulatory agencies and system users. The Legislature did not appropriate any funds to the Council so no research grants were issued. Initially, the bill gave the Council a two-year sunset

date of 1989. In 1989, a report to the Texas Sunset Advisory Commission recommended the Council should complete its work in 1992 and then cease operations. Later legislation tentatively calls for the abolition of the Council in 2001.

In 1990, House Bill 105 defined the Council's organization and administration. In 1995, the Legislature clarified the structure of the Council and its granting processes. The Council's statutory authority is found in Chapter 367 of the Texas Health and Safety and Chapter 286 of the 30 Texas Administrative Code.

Council Members

After the creation of the Council, it took roughly two years to appoint the first Council. A chairman and vice-chairman preside over the Council. Each Council member serves a two year term. Terms are staggered, which allows for the terms of five members to expire in even-numbered years and the terms of six members to expire in odd-number years. The Council is structured so that members represent many industries and activities relating to on-site systems. Slots on the Council are designated for professionals representing housing construction, real estate development, engineers designing on-site systems, and industries that use on-site systems as part of a commercial or manufacturing process. Other Council positions are designated for local regulators of on-site systems, TNRCC staff members; rural water quality professionals; soils scientists involved with on-site systems; and a representative of the general public involved in efforts to safeguard the environment.

Staffing and Funding

The Council was provided no staff, but was given authority to contract with the TNRCC to provide staff and administrative support. The TNRCC currently provides the executive secretary, an administrative assistant, and budgeting, financial, and legal support.

The Council's funding is derived from fees. Each permitting authority in Texas collects a $10 fee from property owners for each on-site wastewater permit it issues. Monthly reports are submitted to the Council's administrative staff. Fees collected totaled $503,940 for fiscal year (FY) 1996; $378,267 for 1995, and $201,980 for FY 1994. Recently, the amount of fees that are collected has increased because more OSSF systems are being installed.

The budget allocated to the council is determined by the Legislative Budget Board during the annual Legislative Allocation Request. The Council was allocated $325,853 for this year.

Grants Awarded by the Council

The Council awards competitive grants to support applied research at Texas colleges and universities, government agencies, and public and private entities. Research must be related to on-site wastewater technology and systems applicable to Texas. The Council also awards grants to enhance technology transfer and information dissemination through educational courses, seminars, and publications. Solicited and unsolicited proposals are welcomed. To date, the Council has awarded grants totaling $1,476,672.

On-site wastewater training centers at the Texas A&M University (TAMU) Riverside Campus in College Station, and the TAMU Research & Extension Centers in El Paso and Weslaco are examples of how the Council supports technology transfer and education projects. The centers feature examples of many types of on-site systems. These centers are used as sites for many training courses needed by industry professionals and regulators.

For the past six years, the Council has funded a quarterly newsletter, Texas On-site Insights, that is published by the Texas Water Resource Institute (TWRI) at TAMU. In 1997, the Council awarded a grant to TWRI to develop a World Wide Web site that contains all the issues of the newsletter and information about a wide array of on-site wastewater issues. The WWW address is http://towtrc.tamu.edu/.

Annual Conference

TOWTRC sponsors an annual conference to provide a low cost, informative program with exhibits geared toward the needs of OSSF professionals and regulators. Conferences have been held in Austin, College Station, and Plano. As many as 450 people and 24 exhibitors have participated in each conference and attendance has increased over the history of the event. The 1998 Conference will be in Corpus Christi at the Omni Bayfront Hotel on May 20-22, 1998, and will provide continuing educational units required under the new TNRCC rules.

Summary

Meeting the needs of individuals involved in on-site wastewater treatment in Texas is the major goal of the Council. Roughly 33% of Texas's population relies upon OSSFs, and the number of these systems continues to increase. In FY 1990, roughly 18,500 permits were issued Texas. By 1996, TNRCC and authorized agents processed 45,654 permits.

NOTE: This talk was given at the 1997 NOWRA conference that met in College Station, TX. Samuelson can be contacted at (512) 239-4799.

Fort Bend County Works to Keep Up With Urban Sprawl, Growing Number of On-Site Systems

In Fort Bend County, it seems that almost every day the greater Houston area inches a little closer. For example, the population growth in the county has risen dramatically during the past decade from roughly 220,000 people in 1990 to more than 305,000 residents today. As a result, it's no surprise that dealing with growth is one of the major on-site wastewater issues facing the region.

Terri Mathis is a member of the Texas On-Site Wastewater Treatment Research Council and manages a company that works with environmental issues in Rosenberg. Jeff Garrett is the chief sanitarian for the Fort Bend County Health Department. Both say that coping with the growth is a frantic, but necessary task and notes that there are other on-site wastewater issues as well.

The 1990 U.S. Census shows that there were 9,721 on-site systems in the county. No one knows for sure how many systems are in the county now, but officials note there are 129,000 taxable parcels, many of which are homes that could be using on-site wastewater systems. Another way of viewing growth in the county can be illustrated by the fact that more than 4,300 on-site wastewater treatment and disposal systems have been permitted since 1981. "And you can add to that a significant number that have been installed without permits," Garrett adds.

One promising method to make growth in the county more manageable and to assure that adequate on-site wastewater systems are being installed is through the planning and platting process, Garrett says. When large lots are subdivided, a number of records are filed for purposes such as drainage, flooding, roads, and on-site wastewater. "Keeping up with changes in land allocation makes us aware of which sites are being developed for on-site wastewater systems. Hopefully, we can work with the landowner or developer early enough in the process to help them plan a system that will work, rather than having to fix a failing system afterwards," Garrett says.

Other Challenges - Small Lot Sizes, Responding to Complaints, Alternative Technologies

Areas with small lots that are not now receiving adequate treatment, as well as dealing with complaints and enforcement, pose additional challenges for the county. There are a few older subdivisions in the County where lots are as small as 50' x 100'. Little treatment is provided and raw wastewater runs down backyard ditches and flows into the nearby Brazos River. Millions of fecal colony forming bacteria have been measured there. In places, the solids formed a scummy layer that was 4" thick. Complicating these problems, many residents have drinking water wells in their front yards that tap into groundwater tables that are near the surface during winter months. This increases concerns that poorly treated wastewater may flow into areas utilized for drinking water.

"Many people have worked to fix this for the past three years," Garrett says. The County Engineer's office devised viable solutions - either develop a collection system, transport the solids and wastewaters and haul them off site as needed, or develop a package wastewater plant across the street. All of these options would work, but the problem was

finding the funding and determining who would pay for it. Other problems in the county involve clay soils that shrink and swell and low-lying areas that are prone to standing water and flooding.

"Another challenge we face is that manpower is limited and there simply are not enough inspectors to go around," Garrett says. As a result, it's difficult to tell which systems are in violation of rules and which ones are not. So far in 1997, the County Health office has responded to 300 complaints, compared to just 250 in all of 1996. One staff member is assigned full-time to investigate complaints.

Garrett and Mathis say the vast majority of systems installed in the county are standard septic tanks and drainfields, although some new technologies have been introduced recently. For example, many homeowners are choosing aerobic systems followed by surface irrigation to dispose of as much wastewater as possible and reduce landscape watering. At a few sites in the county, individuals utilize low pressure dosing (LPD) because it lets them alternate disposal areas, giving often wet soils more time to dry out. Another advantage of these LPD technologies is that the disposal area can be built around existing landscapes, which can then be preserved.

NOTE: For details, contact Mathis at (281) 342-4277 or biotex@intertex.net or Garrett at (713) 342-7469.

GBEP Indentifies Failing Systems Near Dickinson Bayou

Scientists with the Galveston Bay Estuary Program (GBEP) are doing detective work to solve a recurring mystery in the region. Why do levels of fecal coliform bacteria in bayous feeding into Galveston Bay jump dramatically after heavy rains? Is there a connection between runoff pollution and the large number of potentially failing on-site wastewater systems in the region?

To answer this question, GBEP began a cooperative demonstration and education project with the Galveston County Health District (GCHD) in 1996. Lead personnel include Thomas Byrom and Helen Drummond of the GBEP and Texas Natural Resource Conservation Commission (TNRCC) and Martin Entringer, a registered sanitarian with GCHD.

"GBEP is involved in many research, demonstration, and education efforts that impact Galveston Bay and its tributaries, as well as implementing the Galveston Bay Plan," Drummond says. "When we began getting feedback that failing on-site systems may be contributing to poor water quality in the region, we had to get involved. The goal of this project was to identify the extent that on-site systems in the region are failing, and to provide a framework local governments can use. We hope to follow up with water quality monitoring and education programs that will be useful for individual homeowners and local governments." Education programs identified in this project could focus on alternative systems for the region, sources of funding for homeowners and local governments, how to modify existing systems and make them functional, how often routine maintenance (pumping out a septic tank) should be performed, how failing systems affects the environment, and how water conservation can be brought into system design and upkeep.

The project is gathering detailed data about on-site systems along Dickinson Bayou, which feeds into Galveston Bay. The project includes delineating specific sites in the watershed served by on-site systems and centralized sewers, verifying the location of permitted on-site systems and identifying where unpermitted systems exist, and mapping where large numbers of on-site systems are grouped. The work is being supported with high tech tools such as global positioning systems and geographic information systems (GIS).

"We felt Dickinson Bayou was an important site to study because peak fecal coliform levels of 16,000 colony forming units per 100 milliliters (cfu/ 100 ml) of water have been found here," Byrom says, noting that these levels are far above the TNRCC regulatory limit of 200 cfu/ 100 ml. "It is suspected that failing on-site systems may contribute a large portion of fecal coliforms found in the bay system."

Failing on-site systems may be a potential water quality problem in the region, because tight clay soils are widespread in the region, and because many residents in nearby Texas City, Dickinson and League City rely on on-site systems. Many systems were installed on small lots before county regulations were enacted, and some discharge directly into the bayou.

To find out, Byrom and staff members from GCHD visited five areas along Dickinson Bayou to conduct voluntary inspections. Roughly 117 neighborhood residents were contacted through a door-to-door survey. Interviewers asked questions about the size, age and history of the residents' on-site wastewater systems, including the exact location of the septic tank and drainfield, the permit number, and when systems were installed. They looked for evidence that systems were failing, assessed likely causes of failure, identified soils in which systems were malfunctioning, and sketched how the system was laid out on each lot. Results are being placed in a database that will be used to screen for future problems and to identify alternative wastewater technologies that may work best in specific instances. As a result of the inspections, they found that nearly 40% of the systems were failing at the time of the survey, as evidenced by surfacing sewage or direct discharges into the bayou, Byrom says

Much of the project centered around the Pine Oaks subdivision, which is densely populated, even though most residents utilize individual on-site wastewater systems. Residents there have expressed an interest in fixing failed systems to improve water quality. "This community was very supportive. We held a community meeting there and many residents attended and provided us with great feedback," Drummond says. "We feel good things will come out of this project."

Drummond and Byrom are exploring wastewater treatment alternatives, including a pressure sewer, a package plant, or an on-site wastewater treatment and distribution system. "We're trying to locate sources of funding to remedy these failing systems," Byrom says.

NOTE: Byrom says that many products from this project are now being produced, including a GIS with maps showing the locations of on-site systems and a final report. For details, contact Byrom at (281) 316-3005 or tbyrom@tnrcc.state.tx.us, Drummond at (281) 316-3004, or Entringer at GCHD at (409) 938-2309.

TNRCC Uses Environmental Fines to Fund Repairs of Failing On-Site Systems in Southeast Texas

How do you upgrade or replace large numbers of failing on-site systems? An innovative solution recently implemented by the Texas Natural Resource Conservation Commission (TNRCC) takes fines that have been levied against environmental polluters and uses those funds to pay for the repairs.

Gregary Warmink, who works for the TNRCC Litigation Support Division, says the agency has recently implemented a program for supplemental environmental projects or SEPs. Firms or individuals who have violated TNRCC environmental standards or rules can agree to fund an SEP. In return, the TNRCC may allow them to contribute up to half the amount of the original fine or penalty into projects that will benefit the environment. The TNRCC recommends that environmental projects sponsored through the SEP procedure are implemented in areas where the violations occurred.

"This is a classic 'win-win' situation," Warmink says. "The company or individuals being fined may end up offsetting the amount they have to pay the agency for their misdeeds. Developing an SEP can be used to prevent or reduce pollution, enhance environmental

quality, and heighten concern about the state of the environment. Without projects developed through this program, there may not have been enough money to make these environmentally positive actions occur."

"We feel that SEP projects are a great resource that could be used to fund many improvements to on-site wastewater systems throughout Texas," Warmink says. "The key is to bring together those companies that may want to enter into SEP projects with those projects in their area that most need the help."

If the fines are used to correct failing on-site wastewater systems, the TNRCC Beaumont region requires that only counties with authorized agents (health and environmental departments that operate their own on-site wastewater program and meet TNRCC standards) are able to participate.

Developing an SEP for Orange County

Recently, TNRCC staff had one of the first occasions to use SEP funds to correct failing on-site wastewater systems in Orange County in Southeast Texas.

In 1996, the TNRCC assessed a fine of more than $286,000 against the Fina Oil and Chemical Company for a range of environmental violations at their Port Arthur refinery, including improper storage and monitoring of potential contaminants. In April of 1997, Fina agreed to enter into an SEP project in which they contributed $143,250 to install and upgrade on-site systems for poor and indigent residents of Orange County. The SEP funds target low income families which would not otherwise be able to repair failing systems or to construct new facilities.

According to Georgie Volz of the TNRCC Beaumont office, this type of effort was sorely needed because there are so many failing systems in Orange County. "We're excited about this program," she says, "because we're the ones who do the enforcement and we see firsthand the problems that are out there." According to the 1990 Census, there are roughly 12,000 on-site systems in Orange County. "We estimate that as many as 8,000 of these may be failing because of the poor soils and high rainfall that are common here and because many of the older homes were built on lots that are too small (often only 50' x 100') to properly treat and dispose of wastewater. Certainly, a program that replaces failing systems with treatment and disposal options that work will go a long way towards improving the environment and keeping fecal coliform out of rivers, streams, and groundwater supplies."

Developing and implementing a wide ranging SEP to correct failing on-site wastewater systems required a lot of planning, teamwork and learning by doing, according to Orange County Judge Carl Thibodeaux. "This is a brand new program and we're learning as we go along," he says. "When this program was started about a year ago, there was a lot of publicity and hundreds of calls from interested individuals that came into this office. We expect many more people will contact us to find out if they are eligible for grant funds. Many installers have also inquired to see how they can take part."

One of the keys that made the program feasible was developing a mechanism to determine if applicants were eligible and to manage and administer the funds associated with the program. "We feel extremely fortunate that the U.S. Department of Agriculture's Rural Housing Service (formerly known as the Farmers' Home Administration) decided to work with us," Thibodeaux says. "They are doing a wonderful job of processing applications and determining who is eligible for other USDA assistance to help repair failing systems. Most importantly, they are not charging us for any overhead costs associated with their efforts. Without finding a willing and qualified partner like RHS, implementing this program would either have been much more expensive or perhaps we could not have implemented the program at all."

Thibodeaux notes that the Orange County SEP program is still in its initial stage. County guidelines that will be used to ascertain who is eligible for SEP grants were approved in early November. Shortly afterwards, the county approved the first three SEP grants to correct failing on-site systems and two others are pending. Ultimately, the County, with this SEP, will be able to replace as many as 35 failing systems. Thibodeaux notes the program to replace failing on-site systems is intended to be ongoing and there is no set time period after which the program automatically expires.

Making the Program Work

Orange County officials and RHS publicized the program to make potential participants aware of the opportunity to replace failing systems. These applicants are referred to the RHS regional office in Jasper, TX (roughly an hour north of Beaumont) to determine if they are eligible for conventional RHS loans and grants. RHS loan and grant administrator Sabrina Martindale visits Orange County on a regular basis to meet personally with individuals who have applied for the program and to answer their concerns. Applicants who don't meet RHS criteria are then referred to the Orange County Commissioners to determine if they qualify for grants from the SEP program.

"The RHS program is already set up so it made sense for us to get involved in the SEP," Martindale says. "We already process loan applications for individuals who may want to install or improve an on-site wastewater system so this is a natural extension of what we already do. In addition, improving on-site wastewater treatment and improving environmental quality is consistent with the broad missions of USDA to help rural residents, protect natural resources, and improve the quality of life in rural areas."

There are many differences in the eligibility requirements for loans from RHS and grants from the SEP program. Individuals applying for RHS loans typically have to demonstrate credit worthiness and have to meet certain age requirements that show the applicants should be able to work a sufficient number of years to repay the loan. In the SEP program, there are no requirements for credit worthiness and no age restrictions. To qualify for either program, individuals must be able to prove that household incomes are substantially less than average. In addition, the county requires that individuals have to own the property where the new system will be installed.

Orange County works hand-in-hand with RHS to make the program successful. The county maintains the SEP funds in a special account specifically for funds targeted to SEP projects. They determine if individuals who do not meet RHS criteria are eligible for the SEP program. Once an individual has been approved to take part in the SEP program, they can determine the type of system that is most appropriate for their needs. Individuals then go out for bids and submit them to the county. Usually, the low bid would be accepted. The grant program covers the cost of purchasing and installing a new on-site system. The cost of maintenance contracts (typically required for the aerobic systems widely used here) are not covered and are the responsibility of the homeowner.

A key component of this process is the pre-construction conference where the homeowner meets with the installer of the system and county health department inspectors. At this meeting, everyone makes sure that the system being proposed is technically correct for the site and will be properly designed, installed, and maintained.

Typically, the systems that work best in the county, according to Glenn Turner, an engineer who leads TNRCC's on-site program in the region, consist of a septic tank followed by aerobic treatment and spray irrigation of treated effluent. The area needed to spray irrigate effluents from a typical three-bedroom home is roughly 8,600 square feet. The cost to purchase and install such a system in Orange County now ranges from $3,700 to $4,200. Other systems that show promise in Orange County include intermittent sand filters and drip irrigation, although those technologies are typically more expensive and have not been widely used in the area so far.

Summary

Everyone acknowledges that there are still some problems that need to be resolved and that others may come up along the way. The TNRCC doesn't allow companies which have been issued fines for environmental pollution and entered into SEPs to publicize their efforts unless they also state that "the company's contribution to this project was made voluntarily as part of a settlement of an enforcement action brought by TNRCC."

Other areas are now considering using the SEP program to replace failing on-site wastewater systems, including Bastrop, Del Rio, and Tyler. The TNRCC is willing to consider ideas from the public about how SEP funds can be used for environmental projects.

NOTE: To learn more about how the SEP can be used to correct on-site wastewater problems and challenges in your area, contact Warmink at (512) 239-0612 or gwarmink@tnrcc.state.tx.us. Turner can be contacted at (409) 898-3838 or gturner@tnrcc.state.tx.us. Martindale's phone number is (409) 384-5779.