

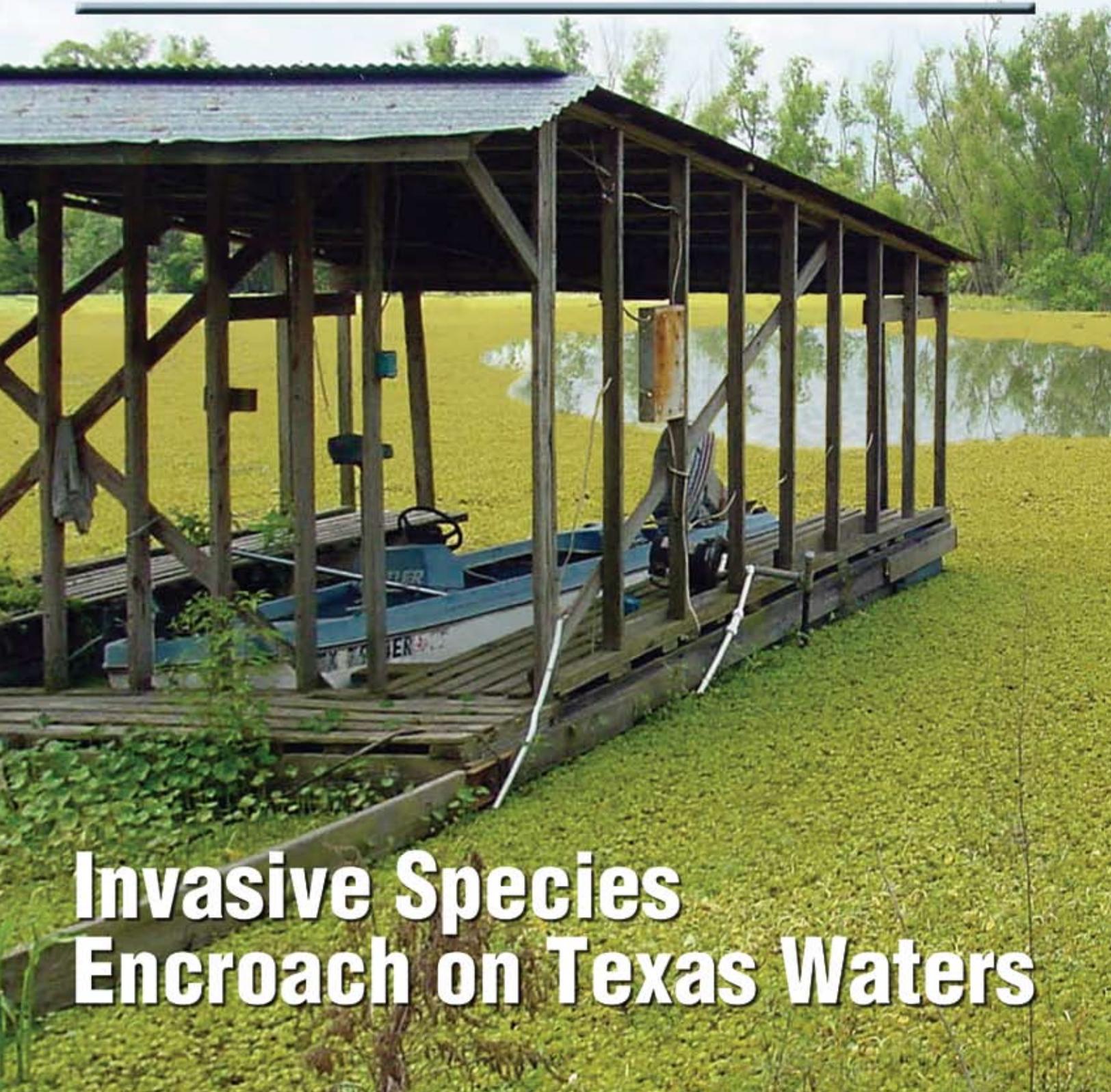
WINTER

2009

*Natural*

# OUTLOOK

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



**Invasive Species  
Encroach on Texas Waters**



*Natural Outlook* is published quarterly by the Agency Communications Division at the Texas Commission on Environmental Quality

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# Natural OUTLOOK

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Exploring environmental issues and challenges in Texas*

## A Long Road to Remediation 1

For two decades, the TCEQ has overseen the cleanup of leaking petroleum storage tanks. So far, more than 22,000 sites have been remediated.

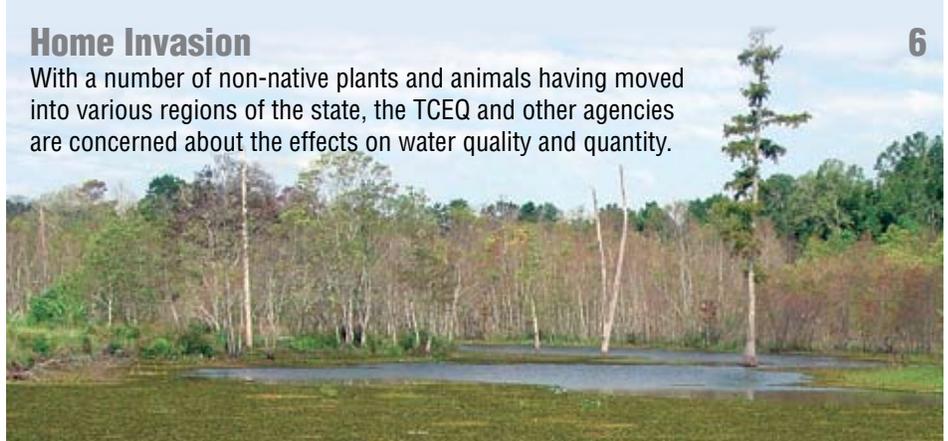
## A New Cover for Closed Landfills 4

The TCEQ has begun approving a new landfill cover that may turn out to be more stable and plant friendly.

## from the cover

## Home Invasion 6

With a number of non-native plants and animals having moved into various regions of the state, the TCEQ and other agencies are concerned about the effects on water quality and quantity.



## More Services Move Online 11

The TCEQ is making additional electronic features available to the users of agency services.

## Light Switch around the Corner 12

The traditional incandescent light bulb is scheduled to be phased out to make way for newer, more efficient models.

## on the back

## Computer Recycling in Full Gear

Under a new e-waste program, more than 60 computer manufacturers report having recycling services in Texas.

**COVER:** Landlocked? No, this boat dock at the Toledo Bend Reservoir in East Texas is surrounded by floating mats of giant salvinia, a plant native to Central and South America. Invasive species of plants and animals flourish in the absence of their natural predators.

*TCEQ illustration based on photo by Howard Elder, Texas Parks and Wildlife Department*



# A Long Road to Remediation

*PST cleanups are important to safeguard the environment*

**I**t has been the largest environmental project undertaken by the state of Texas, costing more than \$1 billion and lasting two decades.

The cleanup of leaking petroleum storage tanks (PSTs) started in 1988. Since then, about 22,580 releases, or leaks, from PSTs have been cleaned up, and remedial work is under way on another 2,900.

Most of the remediated sites have been at service stations, where underground tanks holding gasoline either corroded or malfunctioned. Four out of 10 reported leaks have affected groundwater supplies.

Overall, the PST cleanup has been a massive undertaking. “But at this point we can look back and say it’s been a success, considering the number reported and the portion now cleaned up,” said the TCEQ’s Alan Batcheller, special assistant in the Office of Permitting and Registration. “It’s taken a lot of effort and a lot of money. Every county was affected. But, most importantly, we can say we’ve protected the health and safety of people living in Texas.”

## **A Statewide Problem**

Since the PST program was authorized by the Legislature, about 70,130 PST facilities have been registered in Texas. About 40 percent are still active.

Tank owners and operators are required to notify the TCEQ when a leak is discovered, then clean up the releases, usually by hiring contractors to conduct the assessments and remedial work. Determining the extent of contamination might require drilling monitoring wells, and taking soil and groundwater samples.

In all, 25,470 cases of leaking tanks have been reported since 1988. The TCEQ oversees cleanups of these sites and reimburses eligible parties who meet all statutory deadlines for reimbursement.

How did Texas end up with so many PST releases?

Batcheller reports that some of the problems date back to the 1920s and 1930s when service stations had underground tanks made out of metal, the best material at the time. Decades later, however, the metal began to corrode and the contents escaped. A station owner might have been unaware of the problem until he noticed the tanks had to be refilled more often.

“In those days, the usual solution was to bring in a new tank and install it next to the old one,” said Batcheller. “Those old tanks sat down there for a long time.”

New technology has resulted in larger storage tanks that last longer.

He said tanks today are made of fiberglass or metal with double walls to contain possible leaks. Also, the tanks and the piping are equipped with electronic sensors that sound an alarm when leaks occur.

Release detection and corrosion protection have been required for about a decade, noted Batcheller, adding that owners and operators must also keep a strict accounting of how many gallons are delivered and sold.

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***Tank owners and operators are required to notify the TCEQ when a leak is discovered, then clean up the releases.***

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## **Pre-1999 Leaks Get Funds**

State funds have paid for the vast majority of PST cleanups. Under state law, tank owners were required to report leaks by Dec. 22, 1998, to obtain state assistance. Anyone failing to make the deadline or finding leaks after the deadline became responsible for the remediation cost.

The PST Remediation Fund has paid out about \$1.03 billion. Revenue



TCEQ photo

comes from a fee on gasoline and other fuels sold at bulk distribution facilities.

Although the state picked up most of the remediation costs, the added expenses of hiring consultants and buying equipment with newer technology proved to be too much for some service station owners.

“This really has had an impact on the small mom-and-pop owners and their ability to stay in business,” said Batcheller. “Lots of the gas stations today are the big chains that sell large volumes of gasoline.”

When an owner lacks the financial ability—or the will—to handle remediation, or when the property owner is unknown, those cases are turned over to the TCEQ’s State Lead program—currently with 237 cases. If the contaminated site poses a risk to human health or the environment, the state assumes

**Many of the petroleum storage tanks removed through the state’s remediation program had been underground for decades and were corroded. The majority of the leaks occurred in tanks holding gasoline.**

**PST Releases**  
 The TCEQ defines a “release” as a spilling, leaking, pumping, pouring, emitting, discharging, or disposing of a substance into the environment. Petroleum storage tanks are located above-ground and below ground.

all costs, but will pursue cost-recovery when an owner refuses to fulfill his responsibility.

Leaking tanks have had a major impact on underground water supplies. Of the leaks reported, about 9,430 affected underground water supplies.

When PST contamination is reported, the TCEQ notifies property owners who have water wells near the site. Agency toxicologists alert nearby residents to the source of the contamination.

Contamination sites can be large, especially when a tank has leaked for a long time. Batcheller said gasoline plumes a block long have been found sitting atop groundwater. Gasoline also can dissolve into the water and soil.

Possible solutions, he said, are to pump out the gasoline and groundwater, use air to vaporize the gasoline floating on the water, or excavate the contaminated soil.

When the plume is stable and not affecting water wells, the site is left undisturbed. He explained: “To restore all the sites to pristine conditions would be cost prohibitive. So under the risk-based approach, we have concentrated available funding on sites where the contamination could harm someone or the environment.”

## Two Decades of Cleanups

Since 1988, the TCEQ has overseen the cleanup of 22,588 leaking petroleum storage tanks. The agency reimburses eligible parties who meet the statutory deadlines for reimbursement.

Years	Releases reported	Cleanups completed
1988-91	9,502	3,015
1992-95	8,339	5,986
1996-99	4,579	5,994
2000-03	994	3,099
2004-08	2,057	4,494
<b>Total</b>	<b>25,471</b>	<b>22,588</b>

To perform the assessment and remediation, owners must hire a corrective action project manager (more than 1,300 are licensed by the TCEQ) or a professional geoscientist or engineer.

The TCEQ has begun performing random audits of labor costs requested in reimbursement applications, as well as the level of expertise used in the project. The agency expects to conduct about 500 audits a year.

## Entering a New Decade

With the backlog of reported leaks dwindling, will the PST program eventually go out of business?

Not likely, according to Batcheller. “Every year that we knock off 400 pending cases, another 300 to 400 new cases are reported.”

Even with technological advances in standards and equipment, leaks still occur. That is the reason the state emphasizes employee training.

“Many of the leaks occurring now are due to the equipment not being used or maintained properly. That’s why we’re concerned about training the personnel who work every day at the facility,” he said.

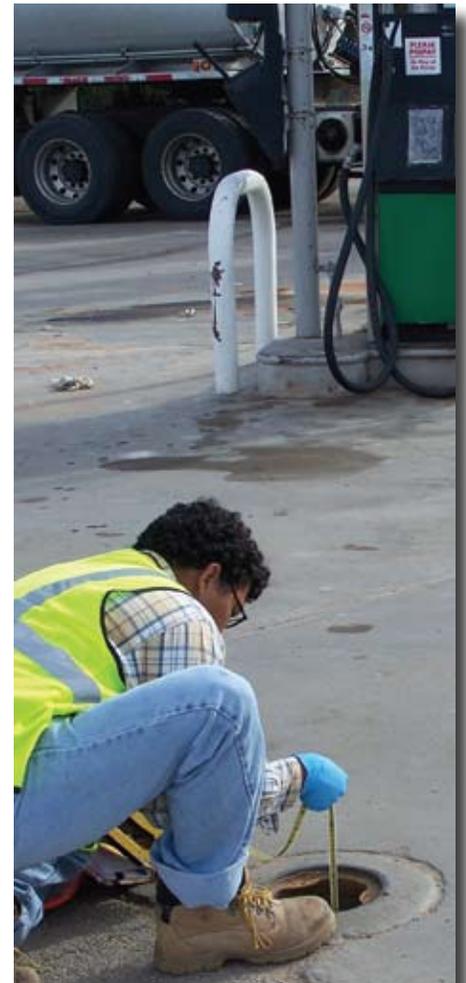
The Legislature in 2007 extended the PST reimbursement fund by four years. Reimbursement claims are due to the TCEQ by March 2012, and the fund will expire six months later.

On average, the TCEQ spends about \$25 million a year on PST reimbursements—a sum likely to continue for the near future. 🗣️

## Highlights of the PST Program

Much progress has been made since Congress created the comprehensive underground storage tank regulatory program in the mid-1980s. Soon after, the regulatory authority was delegated to Texas.

- 1986 The Texas Water Commission (TWC) begins to administer the state program for petroleum storage tank (PST) registrations.
- 1987 The Legislature authorizes TWC to develop a statewide PST program and create requirements for registration, technical standards, leak detection, release reporting, corrective action, tank closure, and financial responsibility.
- 1989 The state establishes a PST remediation fund and a groundwater protection program for the cleanup of releases.
- 1993 The Legislature approves a \$120 million loan to the remediation fund to reimburse claims and establishes a priority system for reimbursement claims. The PST program is transferred to the Texas Natural Resource Conservation Commission (now TCEQ).
- 1998 The tank registration deadline of December 1998 determines eligibility for financial assistance from the PST remediation fund.
- 2005 Federal regulations require mandatory recurring inspections of all regulated PST sites and certification of all PST operators. Texas extends its sunset date for making reimbursements to 2007.
- 2007 The Legislature extends the corrective action deadlines and changes the sunset date for PST reimbursements to 2012.



A TCEQ contractor conducts gauging and sampling tests at a gasoline station. After leaking storage tanks have been replaced, monitoring wells are established at the site for periodic testing of groundwater pollution.

# A New Cover for Closed Landfills

**Cover redesign offers the prospect of more stability, better appearance**

By Staci Semrad



**W**hen motorists drive Interstate 30 west of Fort Worth, some may glance at a grassy hill on the horizon and assume it has been there for ages. In fact, the relatively new hill is part of the 106-acre Westside Landfill, which was closed and capped in 2007 using an alternative design—an evapotranspiration (ET) cover.

An ET cover uses deep layers of soil and deep-rooted vegetation to permanently top a landfill that has reached capacity. The goals are the same as for any kind of landfill cover system—to contain the waste, keep out rain and other moisture, and prevent contaminants from leaking into the surrounding environment.

With evapotranspiration covers, moisture returns to the air by “evaporation” from the soil and “transpiration” from plant surfaces. These covers rely on the natural capacity of fine-textured soils to store infiltrated moisture until removed by evapotranspiration via plants.

The long-term advantages are predicted to be economic, but aesthetics come into play as well. With an ET cover, it may be easier to establish a healthy stand of native grasses and plants, producing a more natural look than that expected of the more traditional “composite” landfill covers.

The composite cover consists of a tightly compacted clay soil barrier topped with a plastic sheet, or membrane, to minimize water infiltration to the waste below. This system has been in use since federal standards for covering municipal landfills were implemented in 1993, says Arten Avakian, a geologist with the TCEQ’s Municipal Solid Waste Permits Section.

Minimum requirements for composite covers specify 18 inches of clay that is densely compacted, smoothed, and covered with a sheet of plastic.

The sections of plastic are fused together so that no gaps or holes remain. A minimum 6-inch layer of soil capable of sustaining vegetation goes on top of the plastic.

But a composite cover can prove hard to maintain, Avakian says, because the top layer of soil can slide off the plastic or be eroded, subjecting the plastic layer to weathering and damage. That could expose the underlying clay to the elements and compromise the barrier.

Though it is too soon to say whether evapotranspiration covers outperform composite covers, some landfill owners already believe that ET covers are more efficient and cost-effective.

The Westside Landfill, owned by Waste Management of Texas Inc., is the only evapotranspiration cover completed in Texas so far. The cover took about five months to build, says Walter Hunt, Waste Management’s engineering manager for North Texas.

Westside opted for an ET cover mainly because of functionality, faster construction, and its use of natural soils and native grasses, Hunt says. “Those native grasses have a pretty deep root structure, so they’re a lot heartier than hybrid and other grass types.”

ET systems are being constructed around the country, and a number of applications have been received by the TCEQ since 2005.

In addition to the Westside Landfill, nine other sites with ET cover designs have received TCEQ approval:

- City of Lubbock Landfill, Lubbock County
- Itasca Landfill, Hill County
- Abilene Landfill, Taylor County
- Clint Landfill, El Paso County
- Royal Oaks Landfill, Cherokee County
- Southwest Landfill, Randall County
- Covell Gardens Recycling, Processing, and Disposal Facility, Bexar County
- ECD Landfill, Ellis County
- Greenwood Farms Landfill, Smith County

The TCEQ is also reviewing ET applications for landfills in Ector, Kerr, Scurry, and Wichita counties.

Six of the 10 approved ET cover designs belong to Allied Waste Inc., which plans to build its first ET cover



The surface of the Westside Landfill near Fort Worth has been steadily growing vegetation since it was covered in 2007. The evapotranspiration cover design promotes plant growth thanks to deep layers of soil. Several waste management companies have asked to use this cover system as they close landfills.

in 2009 at the Itasca landfill, south of Fort Worth, says Lee Kuhn, director of engineering and environmental management for the company's south region.

"The most appealing benefit is that this is a cap system designed to work with the natural surroundings, as opposed to being against the natural surroundings," Kuhn says. "Long-term, a natural cap system that uses natural vegetation will adapt and work with the environment, whereas a traditional cap provides a synthetic barrier that is foreign to the natural surroundings."

While a more efficient system that keeps soil in place should result in lower maintenance costs, Kuhn says that substantial savings also come from not having to install the plastic layer required in standard cover systems. Also, the ET design of loose soil placement to foster vegetation avoids the costly job of compacting clay.

The design, engineering, surveying, construction, and quality assurance of an ET cover system typically totals \$40,000 to \$75,000 per acre, compared with twice that amount for a standard composite cover, Kuhn says.

The TCEQ considers a region's historical rainfall amounts and intensity when reviewing ET cover proposals. Most of the ET cover designs approved so far are in areas that average less than 35 inches of rain per year.

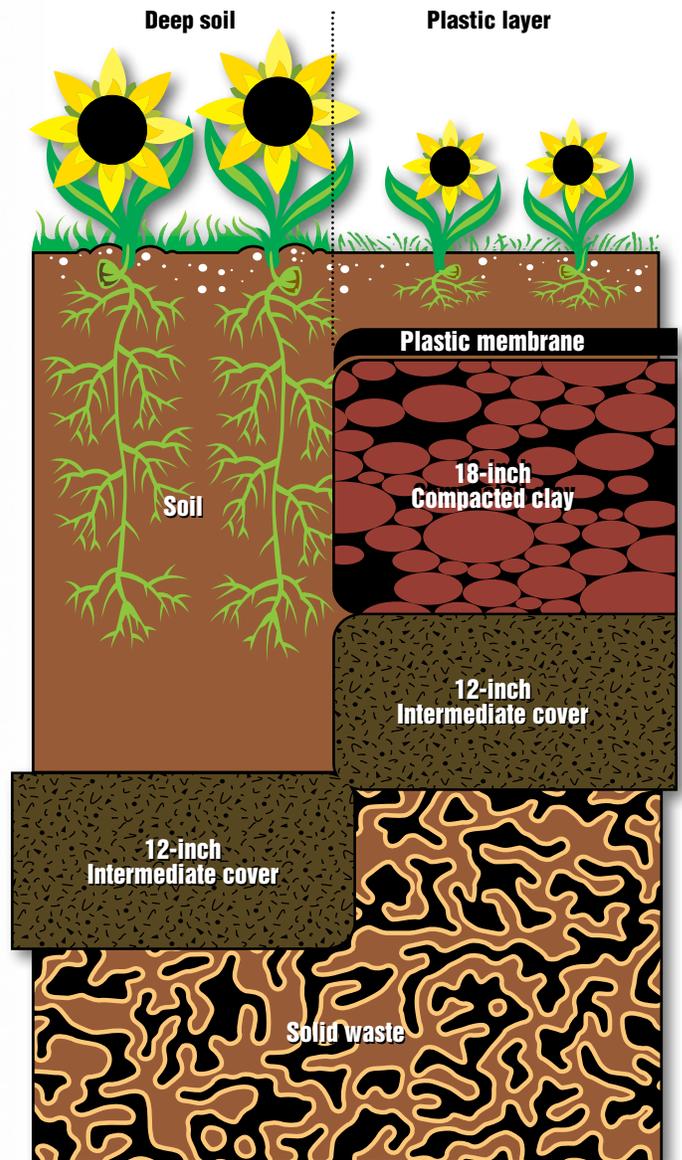
While ET covers look promising, Avakian says that questions remain about this method of capping a landfill. Will the vegetation grow as densely as needed? Will ET covers be able to store enough moisture to be practical for use in the wettest parts of the state?

ET covers have been tested in other states for about five years, and those original sites continue to be monitored.

"We're eager to see how these perform long-term—over 10, 20, 30 years," Avakian says. "What we'll want to see is that the vegetation achieves the desired density, so that there will be sufficient transpiration to prevent seepage of moisture into the waste." ♻️

## Two Methods of Capping a Landfill

The traditional way to cover a closed landfill is to blanket the buried waste with compacted clay and plastic. At least six inches of soil on top will allow some plants to grow. With evapotranspiration, the landfill is topped with several feet of soil, allowing plant cover to achieve much deeper root penetration.



Note: Illustration is for general information only.

# HOME INVASION

## Non-native plant and animal species take root in Texas

By Liz Carmack

**R**afters floating down the Rio Grande in Big Bend National Park drift past thickets of saltcedar trees, their pink and white flowers covered with bees. They also glide past thick stands of giant reed whose stalks tower as high as 30 feet. These plants crowd the river banks so densely that the boaters have trouble finding a clearing to pull into.

The massive park in West Texas is home to more than 1,200 native plant species, but the saltcedar and giant reed are invasive non-native species—aggressive interlopers that often disrupt native animal and plant habitats and reduce water quantity.

Saltcedar, a thirsty native of Eurasia and Africa, is known for its heavy consumption of precious water resources. “The tree’s presence reduces the availability of water that other species need to survive,” says Anne Rogers, an aquatic scientist at the TCEQ.

Giant reed, a native of India, typically forms dense stands along river banks, crowding out native plants and animals. It also saps water out of the ecosystem, Rogers says.

Invasive plant and animal species not only can deplete water resources, harm water quality, and impede flow, but sometimes can also restrict recreational uses of water bodies, alter natural habitat and ecosystem functions, damage crops, and interfere with water intake for irrigation and water treatment.

The TCEQ’s primary concern with invasive species stems from its charge to protect the state’s water resources. Rogers explains: “Drinking water use, contact recreation use, and aquatic life use are protected by our water quality standards. Those uses can all be affected by invasives.”

TCEQ rules that are designed to protect surface water quality apply to a number of conditions that pertain to invasive aquatic plants. This includes rules to maintain aquatic habitat, control nutrient levels in water bodies, maintain surface water aesthetics, and maintain navigation.

### Aggressive and Adaptable

Almost every part of Texas is affected by some kind of invasive plant or animal species. Several scientific organizations estimate that there are 67 terrestrial plants, 43 aquatic or wetland

## Trespassers in Texas

The following are examples of invasive species that have caused major headaches at the expense of natural habitats and wildlife. State agencies strongly discourage



### Hydrilla (*Hydrilla verticillata*)

**Texas locations:** Reservoirs and waterways in north-central and eastern regions and south to the Rio Grande

**Origin:** Asia and Australia

**Arrival:** Introduced in Florida from home aquariums; discovered in U.S. waterways in 1960.

**Problems caused:** Growing up to 4 inches a day into dense surface mats, can cause fluctuations in water pH, temperature, and dissolved oxygen levels and can hurt plant and animal diversity and sport-fish populations. Promotes mosquito habitat; clogs intakes for drinking water, power generation, and irrigation; restricts boating access.



### Water hyacinth (*Eichhornia crassipes*)

**Texas locations:** East Texas and Rio Grande

**Origin:** South America

**Arrival:** Introduced in 1884 during the New Orleans Exposition; spread after released from home aquariums.

**Problems caused:** Can shade beds of submerged vegetation, eliminate plants important to water quality, impede flow, and reduce dissolved oxygen levels, killing fish. Large and hanging roots accelerate evaporation. Impedes boat traffic in rivers and waterways; clogs intakes for drinking water, power generation, and irrigation.

# ON



Photo courtesy of Howard Elder, Texas Parks and Wildlife Department

**Invasive riparian plants are not only an inconvenience to boaters, they also stress the ecosystem. Their expansion can harm water quality and impede the natural flow of a river or lake. Once established, non-native plants and animals are extremely difficult to remove.**

plants, 10 mammals, 4 birds, 7 fishes, 11 insects, and 11 mollusks and crustaceans.

Most of these uninvited species originated in South America, Eurasia, or Africa, but all have adapted easily to

Texas turf, often flourishing and even outcompeting native flora and fauna.

“That’s the worst thing about invasives,” says Howard Elder, aquatic habitat biologist with the Texas Parks and

aches in regions around the state. Without natural predators, they continue to proliferate through activities that allow further expansion of these and other non-native plants and animals.



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### **Giant salvinia** (*Salvinia molesta*)

**Texas locations:** Several lakes, such as Caddo, Toledo Bend, Conroe, Sam Rayburn, Texana, and Sheldon

**Origin:** Central and South America

**Arrival:** Introduced to U.S. in the 1920s; arrived in Texas in late 1990s.

**Problems caused:** Damages aquatic ecosystems by outgrowing and replacing native plants. Dense mats are known to grow up to 3 feet thick, reducing dissolved oxygen levels and blocking sunlight, which kills fish and other aquatic species. Clogs intakes for drinking water, power generation, and irrigation.



### **Giant reed** (*Arundo donax*)

**Texas locations:** All regions

**Origin:** India

**Arrival:** Planted as an ornamental in the southwestern U.S. before 1820; often used throughout the Southwest as an ornamental and for erosion control.

**Problems caused:** Growing 2 feet per week, forms thick stands reaching 30 feet in height. Increases fire risk, impedes flow, suppresses native species, and reduces wildlife habitat and groundwater resources. Long fibrous, interconnecting root mats form a framework for debris dams behind bridges, culverts, and other structures, leading to damage.



### **Armored (suckermouth) catfish**

(*Hypostomus plecostomus*)

**Texas locations:** San Marcos and San Antonio rivers and Houston’s Brays Bayou

**Origin:** Central America and South America

**Arrival:** Introduced to U.S. in the 1950s; is released when the fish grows too large for home aquariums.

**Problems caused:** Overgrazes algae, leaving bare spots on streambeds and lake bottoms; crowds out other fish species; contributes to water turbidity and erosion by burrowing into riverbanks and earthen dams to lay eggs.

Photos courtesy of the Houston Advanced Research Center, Texas Parks and Wildlife Department, and San Antonio River Authority

Wildlife Department (TPWD). “There is such a wide range of habitats and conditions they can do well in. They can even do well when native plants can’t. And they don’t have natural enemies here to knock them back.”

Elder is head of a TPWD team charged with fighting invasive aquatic plants that have taken up residence in many of the state’s water bodies. Once established, these species can be difficult, if not impossible, to remove. They can reproduce rapidly to form thick mats of vegetation on the water’s surface. They can choke out native species, reduce oxygen in the water, and otherwise adversely affect aquatic habitat.

In Texas lakes, keeping aquatic invasives at bay is a constant battle. Elder says the TPWD wages combat using herbicides, mechanical removal, and herbivores (such as weevils, which feast exclusively on giant salvinia, and sterile grass carp, which dine on hydrilla and other aquatic plants).

The rapid growth of giant salvinia in the Toledo Bend Reservoir in East Texas is the state’s worst case of an aquatic invasive, Elder says. “It is the largest single infestation of giant salvinia in U.S. history. We can’t eradicate it. So if we can just keep it from spreading, we consider that a success.”

A TPWD helicopter survey in September 2008 showed giant salvinia covering about 4,500 acres of the 182,000-acre lake, part of which lies in Louisiana. While the coverage may seem small relative to the size of the lake, Elder says the

plant has taken hold “in the backwaters where fishing and recreation occur.”

Other regional challenges are presented by water hyacinth in water bodies around the state.

In 2008, the U.S. Fish and Wildlife Service sent \$375,000 to the TPWD to help combat the spread of nuisance species on state lakes. One funding recipient, the Cypress Valley Navigation District in Marshall, established a full-time herbicide spraying crew for Caddo Lake. The TCEQ contributed \$52,000 toward the project.

Invasive aquatic plants can easily spread to other water bodies by hitching a ride on boats and trailers. The TPWD posts signs at boat docks and ramps at lakes, warning patrons to clean boats and trailers after a water outing.

Biologists in TCEQ regional offices, who are trained to identify invasive aquatics, use high-pressure washers when feasible to spray down their boats and trailers after working in the field.

### From Pet to Pest

Another aquatic invasive—this one an animal—is wreaking havoc in the San Antonio and San Marcos rivers in Central Texas, and has been found in Brays Bayou in Houston.

The armored (suckermouth) catfish, a native of Central and South America, has been dumped into Texas waterways by owners of home aquariums. Typically, the fish are small when

purchased but grow too large for their tanks. The fish feeds voraciously on periphyton and algae, robbing native fish, insects, and crustaceans of their natural food supply. It also burrows horizontal holes alongside stream banks—increasing water turbidity and contributing to bank erosion, at times even causing banks to collapse.

“Along the San Antonio River near Espada Dam, the

**Given the chance, invasive plants like these water hyacinths and giant salvinias will run rampant, as happened at this inlet of Caddo Lake in East Texas. The plant mat is so thick that the water’s surface is not even visible.**



Photo courtesy of Howard Elder, Texas Parks and Wildlife Department



Photos courtesy of the Texas AgriLife Extension Service

**By the late 1990s, thirsty saltcedars lined the banks of the Pecos River in West Texas. The non-native tree takes up so much water that it can lower the water table. This band of trees, which stretched for miles, has since been eradicated by local irrigation districts, working with state and federal agencies. Saltcedar was brought to the United States in the 1800s as an ornamental shrub and shade tree.**

fish burrowed hundreds of holes. It looked like a condo complex,” recalls Mike Gonzales, manager of the environmental sciences department of the San Antonio River Authority (SARA). Storm waters eroded what little soil was left and caused the riverbank to fail.

SARA doesn’t expect to eradicate the fish. Gonzales explains: “What we can do is improve the habitat so that the desired native species can at least re-establish and become competitive with the armored catfish.”

## Be Cautious on Outings

For boaters and campers, the Texas Parks and Wildlife Department offers the following tips to control the spread of invasive species.

- Remove any plants, mud, fish, or animals before transporting boats, trailers, or other equipment.
- Eliminate water from equipment before transporting.
- Clean and dry anything that comes in contact with water.
- Never release plants, fish, or animals into a water body unless they came out of that same water body.

*Note: State law bars possessing, selling, or transporting 19 prohibited plant species, as well as about three dozen fish and shellfish. Repeat offenders face fines ranging up to \$10,000, plus jail time.*

Along two portions of the river, SARA is re-engineering the straight, deep channelization that was a project of the 1960s. The goal is to re-create natural streambeds that provide pools, riffles, and other water-flow features favored by native fish such as darters, stone rollers, sunfish, and black bass, as well as invertebrates.

## Preserving Native Habitats

In the Galveston Bay watershed, habitat loss is an environmental problem, according to the TCEQ’s Galveston Bay Estuary Program (GBEP).

“Abundance and diversity of healthy native habitat is important for maintaining a healthy ecosystem and certainly has an impact on the quality of water in our bays and bayous,” says Jeff Dalla Rosa, a natural resource uses specialist for the estuary program.

He said the Chinese tallow tree, which is considered highly destructive, has had a serious impact on wetland and upland areas around Galveston Bay.

“It really has displaced a lot of grasslands and often encroaches on the forest edge. This tree crowds out native vegetation, reduces species diversity, and tends to form a monoculture,” says Dalla Rosa. Moreover, as a habitat for native bird species, the Chinese tallow is inferior to native trees.

The extremely adaptable Chinese native is nearly impossible to eradicate, so the program focuses on trying to control

it in nature preserves, wildlife refuges, and other lands under conservation management within the Galveston Bay watershed.

The GBEP provides grants to local conservation groups to address the problem. Houston's Armand Bayou Nature Center, for example, used grant funds to eradicate Chinese tallow, water hyacinth, and other invasive plants.

Dalla Rosa says that public outreach and education have been the most cost-effective tools.

GBEP's booklet, *The Quiet Invasion: A Guide to Invasive Plants of the Galveston Bay Area*, describes a number of invasive species that should be removed or never planted by landscapers and homeowners. The guide can be found at [www.galvbayinvasives.org](http://www.galvbayinvasives.org).

Another way the TCEQ supports efforts to control invasives is through its Supplemental Environmental Projects (SEPs). This enforcement program allows entities found in violation of environmental laws to direct a portion of their penalty dollars to local environmentally beneficial projects.

Among the agency's pre-approved SEPs are programs that remove invasive



Photo courtesy of Howard Elder, Texas Parks and Wildlife Department

**Invasive species are often transported from one water body to another by boats and trailers. Before leaving a site, boaters and campers are asked to clean and dry any equipment that has come in contact with water.**

species and establish native plants. One such project is administered by the Audubon Society: removal of non-native plants and re-establishment of native grasses, flowering plants, and woody vegetation on the 600-acre upland habitat at the Mitchell Lake Audubon Center in San Antonio.

### Agencies Team Up

While invasive species are a statewide problem, no single governmental agency in Texas has jurisdiction over all the issues concerning invasive species.

That is why eight state agencies have formed the Texas Invasive Species

Coordinating Committee to improve management of invasive species. Representatives share information and obtain federal funding to support the work of local organizations.

In addition to the TCEQ and TPWD, member agencies include the Texas Water Development Board, Texas Department of Agriculture, Texas Forest Service, Texas State Soil and Water Conservation Board, Texas Department of Transportation, and Texas AgriLife Extension Service.

"We will be working to see how shared monitoring and reporting of aquatic invasive occurrences can happen," says Rogers, who is the TCEQ's representative on the committee.

"For instance, our biologists could come back from the field with GPS coordinates and photos of invasives to track new occurrences of these plants or animals. They could enter this information into an online reporting database."

Rogers says that quick identification and management of these intruders will help halt their spread, especially if more Texans are aware of the invasive-species problem and join the effort to fight it. 🐾

## Resources on Non-native Plants and Animals

For more information on invasive species in general or on issues specific to Texas, visit these Web sites. Also, check with the Texas Parks and Wildlife Department and the Texas Department of Agriculture.

[www.texasinvasives.org](http://www.texasinvasives.org)

[aquaplant.tamu.edu/index.htm](http://aquaplant.tamu.edu/index.htm)

[nas.er.usgs.gov](http://nas.er.usgs.gov)

[www.invasivespeciesinfo.gov/index.shtml](http://www.invasivespeciesinfo.gov/index.shtml)

[www.fws.gov/invasives](http://www.fws.gov/invasives)

[weblogs.nal.usda.gov/invasivespecies/archives/2008/07/\\_texas\\_invasive.shtml](http://weblogs.nal.usda.gov/invasivespecies/archives/2008/07/_texas_invasive.shtml)

# More Services Move Online

*The TCEQ continues to generate electronic options for its customers*

To see the main TCEQ functions that are offered online, go to [www.tceq.state.tx.us/e-services](http://www.tceq.state.tx.us/e-services).

The TCEQ is expanding its electronic services to include several new features, such as submitting comments on pending permit applications. Anyone interested in a proposed permit may now comment quickly and easily using the online option.

The move to online comments is the latest in a series of efforts to improve efficiency and encourage public participation at the TCEQ.

For several years, the agency has offered the electronic comment option for rulemaking. Now the public and regulated entities can use the agency Web site to request public hearings, seek reconsideration, or withdraw requests pertaining to any pending air, waste, water, and wastewater permit application. (Comments on proposed permits are still also accepted through mail, hand-delivery, courier, and fax.)

In addition, the TCEQ is phasing in computer-based testing for applicants for occupational licenses. Rather than taking paper tests, which have been offered only once a month at TCEQ regional offices, applicants will have their choice of day and time to take computer examinations at more than 50 test centers around the state.

By the end of 2009, the computer-based tests will be available for nine of the 10 occupations that are licensed by the TCEQ. 🌱

## Work in Progress

Earlier this decade, the TCEQ began moving some permitting and reporting functions to the Internet. This work has continued each year, making a broader menu of e-services available. Among the major features now in place are:

**ePermits.** This automated system allows the public to electronically submit certain applications and the TCEQ to electronically issue certain authorizations and permits. Less than 30 minutes is needed to fill out a form online, pay the application fee, and print the permit authorization. The system works with the agency's Central Registry to instantly assign customer and regulated-entity numbers along with the permit numbers. This gives the TCEQ the flexibility to add applications with minimal modifications. So far, the agency accepts online applications for two multi-sector general permits for storm water (discharges related to industrial and construction activities) and for renewal/self-certification of petroleum storage tank registrations. The next permit application to go online—by the end of summer 2009—will be for concentrated animal feeding operations.

**eReporting.** Online reporting services allow regulated entities to electronically fulfill requirements related to air emissions and maintenance events, industrial and hazardous waste, and annual submissions of air emissions inventory data. Another category of online reporting is the discharge monitoring reports (DMR) for facilities covered under the Texas Pollutant Discharge Elimination System permit.

**ePay.** This online payment application uses the Texas Online portal to provide a secure environment for financial transactions with the TCEQ. Users have the option of paying a number of fees and assessments with a credit card or electronic check. The system processes more than 2,000 transactions a month.

**eLicenses.** With this service, renewing the TCEQ's occupational licenses and registrations is easily conducted online. The agency Web site contains applications to renew both individual licenses and company registrations.

**eRegister.** The TCEQ sponsors a number of seminars, workshops, and other events throughout the year. Attendees may register for these events online.

# Light Switch around

## **Energy-efficient bulbs to become the standard**

**I**t was a great run, no doubt about it.

For 130 years, the incandescent light bulb enabled generations to extend daytime activities after dark. Employees could work the night shift, and kids could do homework long after sundown. No more reading by candlelight.

Edison's invention enabled society to ultimately function 24-7.

In a few years, however, it will be time to bid farewell to the incandescent, which will be replaced on store shelves with lighting choices that are more energy-efficient—chiefly the compact fluorescent light bulb (CFL).

The 2007 federal energy law decreed that incandescents will be phased out of the marketplace, starting in 2012 with 100-watt bulbs and ending in 2014 with 40-watt bulbs.

Energy Star, which is a joint program of the Environmental

Protection Agency and the Department of Energy, reports that CFLs use far less electricity than the standard incandescent—75 percent less, saving at least \$30 over the lifetime of each bulb—and they last 10 times longer.

CFLs also produce much less heat, so they reduce energy demands on home cooling, according to Energy Star.

With the new form of lighting also comes the need to understand new features of the technology and the proper way to dispose of the bulbs.

Energy Star recommends installing CFLs in fixtures that are used at least 15 minutes at a time or several hours a day. Turning a CFL on and off shortens its life. Also, matching the CFL to the correct fixture will ensure maximum life and performance. For example, recessed lighting or three-way sockets each need a CFL designed specifically for those purposes.

# the Corner

CFLs contain a tiny amount of mercury—an average of 4 milligrams per bulb. No mercury is released when the bulbs are in use, but simple precautions should be taken.

In case of breakage, Energy Star recommends airing out the room at least 15 minutes after shutting off the central air or heating system. Rather than vacuuming or sweeping the fragments, scoop up the residue using stiff paper or cardboard and place it in a sealable plastic bag or glass jar. Use sticky tape to pick up any remaining glass pieces and powder, then wipe the area with damp paper towels. Seal the paper towels in the bag or jar. After placing the bag or jar in an outdoor trash container, wash your hands.

Burned-out CFLs can be disposed of at Home Depot or several other national chain stores. Go to [www.cleanup.org](http://www.cleanup.org) to find commercial and government collection sites by zip code.

***The 2007 federal energy law decreed that incandescents will be phased out of the marketplace, starting in 2012 with 100-watt bulbs and ending in 2014 with 40-watt bulbs.***

Also, the TCEQ lists household hazardous waste collection events. See [www.tceq.state.tx.us/goto/hhwcollection](http://www.tceq.state.tx.us/goto/hhwcollection).

For more information on the best use and proper disposal of CFLs, visit the “lighting” section at [www.energystar.gov](http://www.energystar.gov). 

## Translating Light Output

To get the best use of compact fluorescent light bulbs (CFLs), consumers will want to become familiar with their lumen ratings. The higher the rating, the greater the light output.

<i>Incandescent light bulbs</i>	<i>Minimum light output</i>	<i>Energy Star qualified CFLs</i>
WATTS	LUMENS	WATTS
40	450	9-13
60	800	13-15
75	1,100	18-25
100	1,600	23-30
150	2,600	30-52

Source: Energy Star

# Computer Recycling in Full Gear

**S**ince statewide computer recycling took effect Sept. 1, 2008, more than 60 manufacturers of computer equipment have submitted computer recycling notification and recovery plans to the TCEQ.

Under state law, manufacturers whose computer equipment is sold in Texas must offer free recycling of their brands to customers. The TCEQ list of manufacturers can be found at [www.texasrecyclescomputers.org](http://www.texasrecyclescomputers.org).

Retailers doing business in Texas, including online, may sell only the computer brands whose manufacturers are listed on the TCEQ Web site.

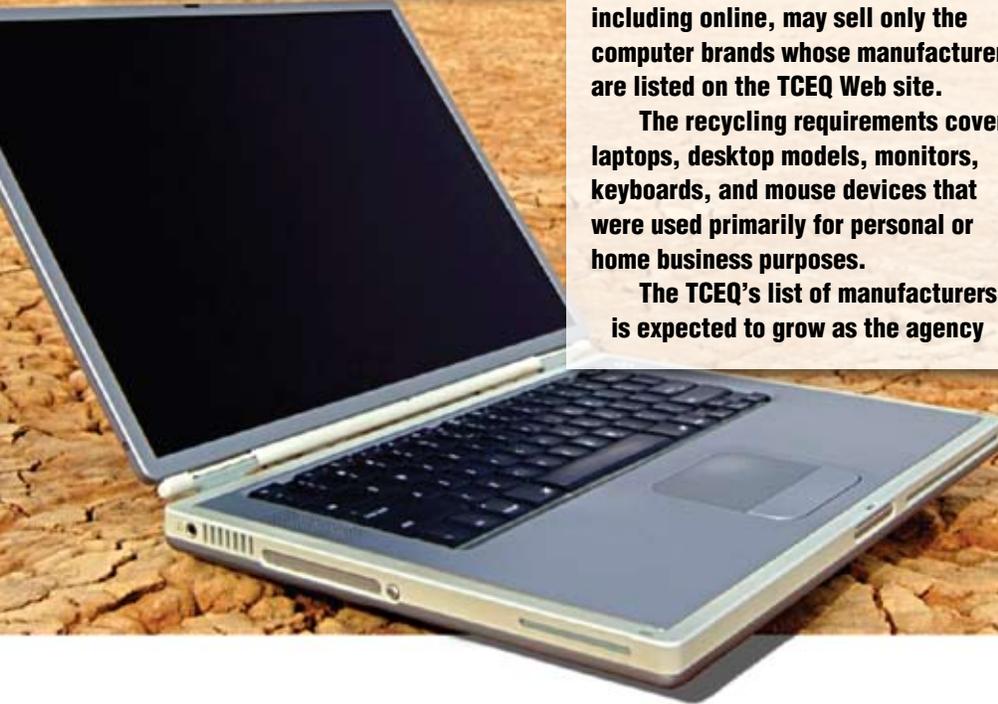
The recycling requirements cover laptops, desktop models, monitors, keyboards, and mouse devices that were used primarily for personal or home business purposes.

The TCEQ's list of manufacturers is expected to grow as the agency

continues to approve the recycling plans of companies that offer computer equipment for sale in the state. Agency staff offers assistance by explaining the program requirements and making suggestions for setting up a computer recycling program.

Consumers who own computer equipment with no brand name or with a brand name that is not listed by the TCEQ can visit manufacturers' Web sites to find which ones accept computer brands other than their own for recycling. Or consumers can check [www.recycletexasonline.org](http://www.recycletexasonline.org) to find recycling facilities that accept computer equipment.

State law requires that manufacturers of computer equipment track their recycling activities during 2009 and submit the data to the TCEQ the following year. ♻️



PD-020/09-01



[www.takecareoftexas.org](http://www.takecareoftexas.org)  
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