

9.3 Enforcement of Texas Irrigation Standards

Applicability

Irrigation systems are becoming a standard feature with many Texas homes. Studies have shown that homes with automatic irrigation systems can use 50 percent more water than homes without irrigation systems over the course of a year and up to 70 percent more during the summer months (Water by the Yard, 2018). Having well-designed, properly installed, and efficient landscape irrigation systems is critical to managing future municipal water use. This Best Management Practice (BMP) is focused on ensuring that irrigation systems being installed meet the rigorous design standards set by the Texas Commission on Environmental Quality (TCEQ).

A poorly designed system makes it difficult for the homeowner to use their system efficiently because water may be wasted due to excessive pressure or because the system is not zoned to allow for selective irrigation of different landscape areas, such as grass or bedded plants. In order to reduce initial costs, an installer may choose not to install the required rain sensor.

Utilities that serve fast-growing areas of the state where new homes and businesses are being built should work with city officials to enforce the Texas Irrigation License regulations of the TCEQ to ensure efficiency in newly installed landscape irrigation systems. This can be achieved through required permits and inspections.

Fortunately, Texas has one of the strongest irrigation licensing programs in the United States. The design and installation of all landscape irrigation systems must be completed only by licensed individuals following the efficiency rules outlined in the TCEQ's landscape irrigation regulations (30 TAC Ch. 344). These rules are most effectively enforced at the local level, through a combination of local ordinances, education, and required permits and inspections.

Description

Local Government Code (Section 551.006) directs all municipalities with populations over 20,000 to adopt ordinances relating to irrigation. TCEQ is responsible for the enforcement of this requirement.

Key requirements of the statute include

- that the installer holds a license issued under the TCEQ Occupations Code for Irrigation,
- that a permit be obtained before installing a system within the territorial limits or extraterritorial jurisdiction of the municipality, and
- that a licensed irrigator or irrigation technician be present on site during the installation of the irrigation system (2010 Texas Administrative Code update).

Other requirements include

- minimum standards and specifications for designing, installing, and operating irrigation systems in accordance with the TCEQ, and landscape irrigation rules, and
- that a municipality which has adopted a landscape irrigation ordinance must employ or contract with a licensed plumbing inspector or licensed irrigation inspector to enforce the ordinance.

Municipalities may require proof of current license and charge a fee for obtaining or renewing a permit. The fee should be set to recover the cost of administering the rule. Water districts may also adopt and enforce irrigation rules, and both municipalities and districts may collect fees to cover costs of the licensing program. These requirements do not apply to on-site sewage disposal, irrigation for agriculture operations, or irrigation connected to groundwater wells operated for domestic use.

In 2011, House Bill 2507 made an important advancement in strengthening irrigation licensing in Texas, making it a Class C misdemeanor to install an irrigation system without an irrigation license. Although exceptions still apply for homeowners and plumbers, this law makes it possible to enforce regulations against unlicensed individuals who are installing irrigation systems across the state. This bill took effect in September of 2011, and it allows peace officers to file cases in any Texas court, and citizens to file cases in Justice of the Peace courts against individuals who conduct irrigation installations without irrigation licenses. For more information, see the TCEQ's [Landscape Irrigation](#) page.

Implementation

A draft irrigation standards ordinance should be written with collaboration and input from stakeholders. Additionally, it must be passed by a legal body to be enforceable. For municipalities, this legal body is the city council, and for a water district, their board of directors.

The successful implementation of a landscape irrigation ordinance requires education regarding the ordinance and clearly defined penalties for those who do not follow the ordinance. Education should be rigorous and include as many stakeholder groups and individuals as possible to ensure compliance.

Suggested educational activities include speaking at local irrigator and green industry meetings about the ordinance and enforcement timelines. Meetings with local builders and developers are also key to long-term success, as they may need to revise contracts with irrigators completing installations in order to ensure that all aspects of the irrigation regulations are being followed. Signs at supply stores where builders and irrigators buy their irrigation materials are also a good practice for getting information to anyone working in the irrigation field.

Local ordinance penalties for completing irrigation work without a license are likely to be similar to those incurred for a speeding ticket. The penalties can escalate for repeat offenses. For irrigators who fail inspections, the logical penalty is that the building project does not pass inspection until the quality is improved to the satisfaction of the inspector. Pausing a building project before completion is likely to be a highly effective measure to improve quality on future projects.

Scope & Schedule

There are several key steps to putting effective enforcement of irrigation regulations into place. Allowing several months for city staff, stakeholders, and other interested parties to review the ordinance will lead to success and decrease any associated controversy. These steps include the following:

1. Review of Existing Ordinance

Determine if the existing municipal ordinance provisions cover all of the requirements outlined in the Chapter 344 regulations. Having a local ordinance that references TCEQ standards is recommended. This will make it easier to enforce in local courts. It should be noted that local jurisdictions can use the ordinance requirement to adopt local rules that are more stringent than TCEQ requirements as needed.

2. Drafting Ordinance Revisions

Produce a draft document that amends portions of the code that are inadequate. This is also a good time to review whether additional costs will be incurred in the process of the additional enforcement. Estimates of cost are key to developing a cost-recovery fee structure associated with the permits.

3. Stakeholder Discussions

Stakeholders who will have an interest in local irrigation regulations may include local developers, local builders, local irrigators, local landscape companies, and area plumbers. It is important to note that plumbers are a key exemption in the Occupations Code for irrigation licensing, as a licensed plumber may repair and install irrigation systems. If there is a local irrigation association, that group is likely to be supportive of any efforts to enforce the rules of their license. The Texas Irrigation Association spends significant time and energy working to improve enforcement of licensing rules in Texas.

4. Revision of Inspection Processes

A critical step in making the enforcement program effective is ensuring that a meaningful inspection takes place. A plumbing inspector already completes inspections on new homes, but there may be no inspection of the irrigation system installed in the yard. If inspecting irrigation systems will be a new task for your local plumbing inspector, it is recommended to set up a series of meetings and possible field visits to discuss inspection requirements, thresholds, and what is working and isn't working once the inspections

begin. It is ideal to hire an experienced irrigator who obtains the Irrigation Inspector License from TCEQ for irrigation inspections. If this is not possible, having plumbing inspectors trained through a TCEQ-approved training provider is a key step.

An ideal inspection process should look for several key indicators of quality work, such as

- **A Plan:** A detailed as-built plan for the irrigation system must exist and be provided to the new owner. Residential systems are not exempt from this regulation, but it is often skipped in large developments. The lack of a plan is a signal that the system may have pressure that is too low or too high, may not be using manufacturer equipment to specifications, or may not be zoned to separate grass from bedding areas.
- **Master Valve:** The system may have a master valve that stops flow from the main supply line to the main irrigation line when there is no scheduled operation. The master valve helps prevent significant underground leaks.
- **Information at Controller:** The controller for the system must be provided with a sticker which includes the irrigator's name and license number, the name and phone number of the company that completed installation, and the warranty information.
- **Zoned Design:** The system should have separate operational zones for grass and for beds each with matched precipitation rates. The water needs of the grass and the other landscape plants are too different to be watered by the same zone.
- **Pressure Regulation:** Water should not mist when coming out of irrigation heads. Such misting results in water waste due to excess evaporation and a compromised distribution pattern. If this occurs, the pressure is too high and must be regulated.
- **Rain Sensor:** A rain or moisture sensor must be properly installed to minimize operation of the system during and after rain events.

5. Owner Education

Another key step in enforcement of irrigation regulations is education of the homeowner. Municipalities and utilities will improve compliance with irrigation standards by helping new and existing homeowners understand the irrigation regulations and the requirement for licensed individuals to provide a properly installed and functioning irrigation system. Irrigators who install new systems must provide an owner's manual for the controller, a design of the system showing all underground components, a suggested watering schedule, a maintenance checklist, and information on the system warranty. Another key component of education for the homeowner is that irrigators must perform a final walk-through with the owner to explain the operation of the system.

If owners believe that irrigation standards are not being met, they can look to local ordinances or they can file a complaint with the Texas Commission on Environmental Quality Landscape Irrigation Program. This group will check into the complaint, which can

impact the license holder. Depending on the circumstances, the TCEQ enforcement process may take several months to a year to be completed. For this reason, it is recommended that local ordinances have consequences such as citations or increased future permit fees associated with failure to follow regulations.

Measuring Implementation and Determining Water Savings

Water savings due to the adherence to the landscape irrigation standards are difficult to quantify because it is difficult to determine how many poor-quality systems exist and how much water they waste. Based on anecdotal evidence of poorly installed landscape irrigation systems, the volumes of water that might be saved when irrigation standards are enforced are likely to be significant.

When irrigation systems are procured through a low-bid process and oversight is lax, there is the potential for inefficiency within these systems. Systems put in under these conditions are likely to have the following problems

- **Lack of Zoning:** When grass and landscape beds are watered in the same zones, it is impossible for the owner to water one less than the other. Grass requires more water than established woody plants to maintain a good appearance. As a result, homeowners may apply twice as much water to their landscape beds as necessary if zoning is poor.
- **High Pressure:** All irrigation components are designed to work under a range of water pressure conditions. If pressure exceeds this acceptable range, each irrigation head may spray significantly more water than it should. The pattern of the water spray becomes poor and much of the water may be lost to misting. Improving pressure regulation has been shown to decrease water usage by up to 20 percent.
- **Poor Spray Head Layout:** Manufacturers specifications exist for all irrigation components. Often a system is installed cheaply by increasing the distance between spray heads beyond what is appropriate for the equipment. This results in a poor distribution of water with some areas getting twice as much water as needed and others nearly none. If a customer increases their run-time to compensate for this problem, they may dramatically increase consumption.
- **Lack of As-Built Plan:** An as-built plan is invaluable in order to locate valves, pipes, and irrigation head locations if a problem arises in the future. Irrigation systems are subject to water flow, water pressure fluctuations, and shifting soils. At some point, repairs may be needed. The lack of an as-built plan complicates the repair process, leading to unnecessarily wasted water.

Irrigation systems vary greatly in water consumption, usually related to the area they cover. Another key variable is how often systems are operated. If a community has regulations limiting how many times per week the irrigation system may be used, this will impact total consumption

and therefore the savings range. For this reason, the table below is suggested as a way for a utility to create a logical estimate of long-term savings. Note that savings achieved will be on the higher end of the range suggested if a strong education program helps irrigation system owners understand options, such as watering zones differently.

Table 1: Potential water savings due to enforcement of irrigation standards*

Lot size range	Typical one cycle usage (gallons)	Potential water savings (percentage of irrigation volume)	With additional homeowner education (percentage of irrigation volume)
Estate Lots: Over One Acre	7,000	10	15
½-1 acre	4,000	10	15
¼-1/2 acre	2,000	10	15
Small Lots (under ¼ acre)	1,400	10	15

*Summary of water use data collected from 1,326 residential irrigation sites in San Antonio, Texas.

Cost Effectiveness Considerations

The cost of enforcing irrigation requirements can be passed on to builders and home owners through permit fees. Permit fees should be designed to recover the cost of collecting and processing the permit, as well as inspecting the system. A repeat inspection fee may be necessary should more detailed work be required.

References for Additional Information

EPA WaterSense

<https://www.epa.gov/watersense/when-its-hot>

The Texas Commission on Environmental Quality website includes information on the license program, irrigation regulations, and how to file a complaint against an irrigator.

<https://www.tceq.texas.gov/drinkingwater/irrigation>

Texas House Bill 2507, 82nd Legislature.

<https://capitol.texas.gov/tlodocs/82R/billtext/html/HB02507S.HTM>

Texas Living Waters Project, Water Conservation by the Yard: Estimating Savings from Outdoor Watering Restrictions

https://texaslivingwaters.org/wp-content/uploads/2018/03/WCBTY-II_Final_031918.pdf?pdf=WCBTY-2018