

Appendix 5C-C

Model Water Conservation Plan for Irrigation Districts

This appendix includes a Model Water Conservation Plan for Irrigation Districts in the ETRWPA. The model plan addresses the latest Texas Commission on Environment Quality requirements and is intended to be modified by each user to best reflect the activities appropriate to the entity. The model plan also includes sample appendices required:

- Appendix A – List of References
- Appendix B – Texas Commission on Environmental Quality Rules on Water Conservation Plans for Irrigation Use
- Appendix C – TCEQ Rules for Water Conservation Plans for Agricultural Users
- Appendix D – Letter to Chair of East Texas Region Water Planning Group
- Appendix E – Sample Implementation Report

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Water Conservation Plan for [Irrigation District]

Date

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Water Conservation Plan for [Irrigation District]

1. Objectives

The Texas Commission on Environmental Quality has developed guidelines and requirements governing the development of water conservation plans for systems that provide agricultural water to more than one user in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.4 of the Texas Administrative Code (TAC). The minimum requirements are:

TAC Reference	Subject	Plan Location
30 TAC §288.4(a)(3)(A)(i)	Inventory of Structural Facilities	Section 2
30 TAC §288.4(a)(3)(A)(ii)	Inventory of Management Practices	Section 3
30 TAC §288.4(a)(3)(A)(iii)	System Profile	Section 4
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30 TAC §288.4(a)(3)(J)	Coordination with Regional Water Planning Group	Section 13
30 TAC §288.4(c)	Review and Update of Plan	Section 14
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The purpose of this water conservation plan is to:

- To reduce water consumption from the levels that would exist without conservation efforts.
- To reduce the loss and waste of water.
- To encourage improvement of processes that inefficiently consume water.
- To extend the life of current supplies by reducing the rate of growth in demand.

This water conservation plan is intended to serve as a guide to [irrigation district]. The following plan includes all conservation measures required by TCEQ.

[The required elements of a water conservation plan are somewhat different for “agricultural users other than irrigation” and an “individual irrigation user.” See 30 TAC §288.4 for guidance.]

2. Inventory of Structural Facilities

[Describe structural facilities, including water storage, conveyance, and delivery structures. This inventory should include the following information:

- *Service area description*
- *Miles of main canals and pipelines*
- *Miles of lateral canals and pipelines*
- *Description of conveyance construction*
 - *Miles of unlined canals*
 - *Miles of lined canals*
 - *Miles of enclosed pipelines*
- *Description of canal conditions and recent or planned improvements*
- *Reservoir capacity*
- *Description of pumps and pumping stations*
- *Descriptions of meters and/or measuring devices*
- *Descriptions of customer gates and measuring devices*
- *Description of other structural facilities.]*

3. Inventory of Management Practices

[Describe management practices, including operating rules and regulations, water pricing policy, and a description of practices and/or devices used to account for water deliveries. This inventory should include the following information:

- *Total water available to the district*
- *Water rights*
 - *Maximum water rights allocation to district*
 - *Water rights numbers*
 - *Other water contracted to be delivered to the district.*
- *Average annual water diverted by the district*
- *Average annual water delivered to customers*
- *Delivery efficiency*
- *Historical diversions and deliveries*
- *Practices and/or devices used to account for water deliveries*
- *Water pricing policy*

4. System Profile

[Describe the system profile, including square miles of the service area, the number of customers taking delivery of water by the system, the types of crops, the types of irrigation

systems, the types of drainage systems, and total acreage under irrigation, both historical and projected. This profile should include the following information:

- *Number of acres or square miles in service area*
- *Average number of acres irrigated annually*
- *Projected number of acres to be irrigated in 10 years*
- *Number of active irrigation customers*
- *Total irrigation water delivered annually*
- *Types of crops grown by customers*
- *Types of irrigation systems used by customers*
- *Types of drainage systems used by customers*
- *Further description of irrigation customers*
- *List of municipal customers and number of acre-feet allocated annually*
- *List of industrial and other large customers and number of acre-feet allocated annually]*

5. Specification of Water Conservation Goals

[The Irrigation District must specify a five-year and ten-year target for water savings including maximum allowable losses for the storage and distribution system. The goals established by a system providing agricultural water to more than one user under this subparagraph are not enforceable]

The TCEQ regulations require that each irrigation user adopt quantifiable water conservation goals in their water conservation plan. The *[Irrigation District]* has adopted goals related to improving water use efficiency and water losses from its delivery system. The *[Irrigation District]* will strive to increase water efficiency per irrigated acre by *[insert amount]* percent within 5 years and *[insert amount]* percent within 10 years. In addition, the *[Irrigation District]* will strive to maintain losses from the storage and distribution system below *[insert amount]* percent annually over the next 10 years.

The goals for this water conservation plan will be achieved through the following:

[Select applicable measures and/or include additional measures and provide descriptions:]

- *Regular inspections of District storage, conveyance, and delivery structures to identify controllable losses or leaks.*
- *Timely repair of identified losses or leaks.*
- *Installation of meters within the system to help identify areas of loss or inefficient water use.*
- *Increased metering of water deliveries.*

Other best management practices (BMPs) can be found in the Water Conservation Best Management Practices Guide developed by the statewide Water Conservation Implementation Task Force (see list of references).]

In addition, the District has a customer assistance program, as described in Section 9.

6. Measurement of Diverted Water

[Describe the practice(s) and/or device(s) which will be utilized to measure and account for the amount of water diverted from the source(s) of supply]

7. Monitoring and Record Management Program

[Describe the monitoring and record management program for water deliveries, sales, and losses.]

8. Leak Detection and Repair and Water Loss Accounting

[Describe any methods that will be used for leak detection and repair and water loss accounting and control.]

Canal riders and maintenance personnel watch for and report signs of leakage. Customers are also encouraged to report leaks. Drains are monitored for unusual flows. If leakage is detected, the corresponding section of the system can be isolated with shutoff gates while still allowing the rest of the system to function normally. District policy is to repair leaks within 24 hours of detection, and most leaks are repaired within 8 hours of detection.

In addition, the District will conduct an annual water audit of its system and adjust operations to minimize losses if applicable.

9. Customer Assistance Program

[Describe a program to assist customers in the development of on-farm water conservation and pollution prevention plans and/or measures.]

The District's Customer Assistance Program provides education on BMPs and encourages customers to improve volumetric measuring, improve land, and upgrade irrigation equipment to increase water efficiency of their irrigation systems.

Volumetric Measuring

Measuring the volume of water being used to irrigate a crop is useful because it provides [irrigation district] with information needed to evaluate the efficiency of an irrigation system. With this information, [irrigation district] and customers can better manage their crops. Irrigation water users will employ a method of measuring how much irrigation water is used in their system.

The following methods may be used to directly measure amounts of irrigation water being used:

[Select applicable measures and/or include additional measures and provide descriptions:

- *Propeller meters*
- *Orifice, venture or differential pressure meters*
- *Ultrasonic*
- *Stage Discharge Rating Tables*
- *Area/Point Velocity Measurements]*

Indirect methods that may be used to measure irrigation water quantities include:

- Measurement of time of irrigation and size of irrigation delivery system
- Measurement of end-pressure in a sprinkler irrigation system
- Measurement of energy used by a pump supplying water to an irrigation system
- Change in the elevation of water stored in an irrigation water supply reservoir

Irrigation Scheduling

Coordination of irrigation schedules of customers can reduce losses associated with conveying irrigation water. The *[irrigation district]* will implement an irrigation schedule for deliveries to customers to best meet the customers' water needs and minimize conveyance losses.

Land Improvement

To reduce the amount of water required for irrigation, the following land improvement practices are encouraged for customers of the *[irrigation district]*:

- Creation of furrow dikes
- Crop residue management and conservation tillage
- Land leveling
- Contour farming

Irrigation Equipment Improvement

The *[irrigation district]* encourages customers to utilize efficient irrigation equipment, including:

- Installation of a drip/micro-irrigation system
- Installation of gated and flexible pipe for field water distribution systems
- Replacement of on-farm irrigation ditches with pipelines
- Lining of on-farm irrigation ditches
- Installation of low pressure center pivot sprinkler irrigation systems

[Best management practices (BMPs) can be found in the Water Conservation Best Management Practices Guide developed by the statewide Water Conservation Implementation Task Force (see list of references).]

10. Wholesale Water Customer Contract Provisions

Every wholesale water supply contract entered into or renewed after official adoption of this plan (by either ordinance, resolution, or tariff), and including any contract extension, will require that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this 30 TAC §288.4. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of this chapter.

11. Adoption of Water Conservation Plan and Goals

The *[Irrigation District]* Board adopted this water conservation plan and its goals by resolution on *[date]*. A copy of the resolution is presented in Appendix C.

12. Other Water Conservation Practices

[Describe any other water conservation practice, method, or technique which the District will use to achieve conservation.]

13. Coordination with Regional Water Planning Group

The *[Irrigation District]* submitted this water conservation plan to the East Texas Region Water Planning Group. A copy of the letter to the chair is presented in Appendix D.

14. Review and Update of Plan

As required by TCEQ rules, the *[Irrigation District]* will review and update this water conservation plan every five years, beginning in *[year]*. Goals for irrigation use will be re-evaluated based on previous five-year and ten-year goals and any new information.

15. Water Conservation Implementation Report

The *[Irrigation District]* has completed a water conservation implementation report that details its water conservation efforts and achievements. The implementation report is presented in Appendix E.

[The plan must include a water conservation implementation report. At a minimum, this report must include the following information:]

- *The list of dates and descriptions of the conservation measures implemented;*
- *Data about whether or not targets in the plans are being met;*
- *The actual amount of water saved; and*
- *If the targets are not being met, an explanation as to why any of the targets are not being met, including any progress on that particular target.]*

Appendix A
List of References

Appendix A List of References

Title 30 of the Texas Administrative Code, Part 1, Chapter 3, Subchapter A, Rules 3.2 and Chapter 288, Subchapter A, Rule 288.4, downloaded from <http://www.sos.state.tx.us/tac/index.shtml>, effective December 6, 2012.

Texas Water Development Board: *Report 362 Water Conservation Best Management Practices Guide*, prepared for the Water Conservation Implementation Task Force, Austin, November 2004.

Texas Commission on Environmental Quality, *System Inventory and Water Conservation Plan for Agricultural Water Suppliers Providing Water to More Than One User*, TCEQ Form No. 10244, Revised April 17, 2013.

Texas Commission on Environmental Quality, *Water Conservation Implementation Report Non Public Water Supplier*, TCEQ Form No. 20645, Revised September 18, 2013.

Appendix B
TCEQ Rules for Water Conservation Plans for Agricultural Use

SUBCHAPTER A: WATER CONSERVATION PLANS
§§288.1 - 288.7
Effective December 6, 2012

§288.4. Water Conservation Plans for Agricultural Use.

(a) A water conservation plan for agricultural use of water must provide information in response to the following subsections. If the plan does not provide information for each requirement, the agricultural water user must include in the plan an explanation of why the requirement is not applicable.

(1) For an individual agricultural user other than irrigation:

(A) a description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and the estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal;

(B) specific, quantified five-year and ten-year targets for water savings and the basis for the development of such goals. The goals established by agricultural water users under this subparagraph are not enforceable;

(C) a description of the device(s) and/or method(s) within an accuracy of plus or minus 5.0% to be used in order to measure and account for the amount of water diverted from the source of supply;

(D) leak-detection, repair, and accounting for water loss in the water distribution system;

(E) application of state-of-the-art equipment and/or process modifications to improve water use efficiency; and

(F) any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

(2) For an individual irrigation user:

(A) a description of the irrigation production process which shall include, but is not limited to, the type of crops and acreage of each crop to be irrigated, monthly irrigation diversions, any seasonal or annual crop rotation, and soil types of the land to be irrigated;

(B) a description of the irrigation method, or system, and equipment including pumps, flow rates, plans, and/or sketches of the system layout;

(C) a description of the device(s) and/or methods, within an accuracy of plus or minus 5.0%, to be used in order to measure and account for the amount of water diverted from the source of supply;

(D) specific, quantified five-year and ten-year targets for water savings including, where appropriate, quantitative goals for irrigation water use efficiency and a pollution

abatement and prevention plan. The goals established by an individual irrigation water user under this subparagraph are not enforceable;

(E) water-conserving irrigation equipment and application system or method including, but not limited to, surge irrigation, low pressure sprinkler, drip irrigation, and nonleaking pipe;

(F) leak-detection, repair, and water-loss control;

(G) scheduling the timing and/or measuring the amount of water applied (for example, soil moisture monitoring);

(H) land improvements for retaining or reducing runoff, and increasing the infiltration of rain and irrigation water including, but not limited to, land leveling, furrow diking, terracing, and weed control;

(I) tailwater recovery and reuse; and

(J) any other water conservation practice, method, or technique which the user shows to be appropriate for preventing waste and achieving conservation.

(3) For a system providing agricultural water to more than one user:

(A) a system inventory for the supplier's:

(i) structural facilities including the supplier's water storage, conveyance, and delivery structures;

(ii) management practices, including the supplier's operating rules and regulations, water pricing policy, and a description of practices and/or devices used to account for water deliveries; and

(iii) a user profile including square miles of the service area, the number of customers taking delivery of water by the system, the types of crops, the types of irrigation systems, the types of drainage systems, and total acreage under irrigation, both historical and projected;

(B) specific, quantified five-year and ten-year targets for water savings including maximum allowable losses for the storage and distribution system. The goals established by a system providing agricultural water to more than one user under this subparagraph are not enforceable;

(C) a description of the practice(s) and/or device(s) which will be utilized to measure and account for the amount of water diverted from the source(s) of supply;

(D) a monitoring and record management program of water deliveries, sales, and losses;

(E) a leak-detection, repair, and water loss control program;

(F) a program to assist customers in the development of on-farm water conservation and pollution prevention plans and/or measures;

(G) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of this chapter;

(H) official adoption of the water conservation plan and goals, by ordinance, rule, resolution, or tariff, indicating that the plan reflects official policy of the supplier;

(I) any other water conservation practice, method, or technique which the supplier shows to be appropriate for achieving conservation; and

(J) documentation of coordination with the regional water planning groups, in order to ensure consistency with appropriate approved regional water plans.

(b) A water conservation plan prepared in accordance with the rules of the United States Department of Agriculture Natural Resource Conservation Service, the Texas State Soil and Water Conservation Board, or other federal or state agency and substantially meeting the requirements of this section and other applicable commission rules may be submitted to meet application requirements in accordance with a memorandum of understanding between the commission and that agency.

(c) An agricultural water user shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. An agricultural water user shall review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.

Adopted November 14, 2012

Effective December 6, 2012

Appendix C
Board Resolution Adopting Water Conservation Plan

[Insert a copy of the Board resolution adopting this water conservation plan and its goals.]

Appendix D
Letter to Chair of East Texas Region Water Planning Group

[Insert a copy of the letter submitting this water conservation plan to the chair of the East Texas Region Water Planning Group.]

Appendix E
Water Conservation Implementation Report



Texas Commission on Environmental Quality

Water Conservation Implementation Report

Non Public Water Supplier

This report must be completed by entities that are required to submit a water conservation plan to the TCEQ in accordance with Title 30 Texas Administrative Code, Chapter 288. Please complete this report and submit it to the TCEQ. If you need assistance in completing this form, please contact the Resource Protection Team in the Water Availability Division at (512) 239-4691.

CONTACT INFORMATION

Name of Entity: [Click here to enter text.](#)

Water Rights Permit numbers: [Click here to enter text.](#)

Address: [Click here to enter text.](#)

City: [Click here to enter text.](#)

Zip Code: [Click here to enter text.](#)

Email: [Click here to enter text.](#)

Telephone Number: [Click here to enter text.](#)

Regional Water Planning Group: _____ [Map](#)

Groundwater Conservation District: _____ [Map](#)

Form Completed By: [Click here to enter text.](#)

Title: [Click here to enter text.](#)

Signature: _____

Date: [Click here to enter a date.](#)

Contact information for the person or department responsible for implementing the water conservation plan:

Name: [Click here to enter text.](#)

Phone: [Click here to enter text.](#)

Email: [Click here to enter text.](#)

Report Completed on Date: dd/mm/yyyy

Reporting Period (**check only one**):

Fiscal Period Begin dd/mm/yyyy Period End dd/mm/yyyy

Calendar Period Begin dd/mm/yyyy Period End dd/mm/yyyy

Please check all of the following that apply to your entity:

An entity that has a non-irrigation surface water right greater than 1,000 acre-feet/year

An entity that has an irrigation surface water right greater than 10,000 acre-feet/year

System Data

Fields that are gray are entered by the user.
Highlight the 0's that are in white and press F9 to populate these fields.

	Total Gallons During the Reporting Period.
Water Produced: Volume produced from own sources	
Wholesale Water Imported : Purchased wholesale water imported from other sources into the distribution system	
TOTAL System Input : Total water input into the system	0 [Produced + Imported = System Input]
TOTAL System Output : Water used, sold, exported or transferred out of the system	
TOTAL Authorized Water Use: All water that has been authorized for use or consumption.	0 [System Output ÷ 365 = Average Gallons per day]

In the table below please provide the **specific and quantified five and ten-year targets for water savings** as listed in your most current water conservation plan.

Date	Target for: Water Savings	Target for: Water Loss
Five-year target date: dd/mm/yyyy		
Ten-year target date: dd/mm/yyyy		

Are targets in the water conservation plan being met? Yes No

If these targets are not being met, provide an explanation as to why, including any progress on these targets. [Click here to enter text.](#)

Water Conservation Programs and Activities

Fields that are gray are entered by the user.
Highlight the 0's that are in white and press F9 to populate these fields.

As you complete this section, please review your entity's water conservation plan to see if you are making progress towards meeting your stated goals.

1. Water Conservation Plan

What year did your entity adopt, or revise, their most recent water conservation plan?

[Click here](#) to enter a date.

Does the plan incorporate [Best Management Practices](#)? Yes No

2. Water Conservation Programs

Has your entity implemented any type of water conservation activities or programs?

Yes No

If yes: For this reporting period, please select the types of activities and programs that your entity actively administered and estimated volume of water conserved.

Agricultural Activities and Practices	Estimated Volume (in gallons)
<input type="checkbox"/> Irrigation Audit	
<input type="checkbox"/> Information Gathering and Education Practices	
<input type="checkbox"/> Cropping and Management Practices	
<input type="checkbox"/> Scheduling Practices	
<input type="checkbox"/> Land Management Systems	
<input type="checkbox"/> On-Farm Water Delivery Systems	
<input type="checkbox"/> Water District Delivery Systems	
Industrial Activities and Practices	Estimated Volume (in gallons)
<input type="checkbox"/> Industrial Water Audit	
<input type="checkbox"/> Conservation Analysis and Planning	
<input type="checkbox"/> Education Practices	
<input type="checkbox"/> System Operations	
<input type="checkbox"/> Cooling System Management	
<input type="checkbox"/> Landscaping	
<input type="checkbox"/> Sector Specific Practices	
Estimated Volume of Water Conserved	0

Other Activities? Please list or describe: [Click here](#) to enter text.

3. Reuse (Water or Wastewater Effluent)

For this reporting period, please provide the following data regarding the types of direct and indirect reuse activities that were administered:

Fields that are gray are entered by the user. Highlight the 0's that are in white and press F9 to populate these fields.

Reuse Activity	Estimated Volume (in gallons)
On-site irrigation	
Plant wash down	
Chlorination/de-chlorination	
Industrial	
Landscape irrigation (parks, golf courses)	
Agricultural	
Other, please describe:	
Estimated Volume of Recycled or Reuse	0

4. Water Savings

For this reporting period, estimate the savings that resulted from your overall water conservation activities and programs?

Estimated Gallons Saved (Total from Conservation Programs Table)	Estimated Gallons Recycled or Reused (Total from Reuse Table)	Total Volume of Water Saved ¹	Dollar Value of Water Saved ²
		0	

1. [Estimated gallons saved + Estimated gallons recycled or reused = Total Volume Saved]
2. Estimate this value by taking into account water savings, the cost of treatment or purchase of your water, and any deferred capital costs due to conservation.

5. In your opinion, how would you rank the overall effectiveness of your conservation programs and activities, if applicable? [Click here to enter text.](#)

Please List Activities and Practices listed in the Water Conservation Activities Tables	Less Than Effective	Somewhat Effective	Highly Effective
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. What might your entity do to expand water conservation efforts? [Click here to enter text.](#)

If you have any questions on how to fill out this form or about the Water Conservation program, please contact us at 512/239-4691.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512-239-3282.