

**REGION C WATER
PLANNING GROUP**

**MODEL WATER
CONSERVATION PLAN
FOR MANUFACTURING
WATER USES**

DECEMBER 2024

Prepared for:

**REGION C WATER
PLANNING GROUP**

Prepared by:

Plummer

1320 S. University Dr.,
Suite 300
Fort Worth, TX 76107
817/806-1700

Freese and Nichols, Inc.

801 Cherry St.
Suite 2800
Fort Worth, TX 76102
817/735-7300

FOREWORD

This model water conservation plan was prepared by Freese and Nichols and Plummer for the Region C Water Planning Group. It is intended as a template for manufacturers within Region C as they develop their own water conservation plans. Manufacturers should customize the details to match their unique situation. The model plan was prepared pursuant to Texas Commission on Environmental Quality rules. The rules do not require a drought contingency plan for manufacturers.

The other Region C model water conservation plans (for municipal, steam electric power, and irrigation users) include example text for a fictional water user that can be edited to match a real-life situation. However, there are a large number of manufacturers in Region C with widely varying processes and water uses, and it is difficult to generate example text that is applicable to most manufacturers. This template provides a plan structure and instructions for the type of content that belongs in each section.

Questions regarding this model water conservation plan should be addressed to the following:

Qiwen Zhang, P.E.
Plummer.
(214) 631-6100
qiwenzhang@plummer.com

Jeremy Rice
Freese and Nichols, Inc.
(918) 238-1930
jjr@freese.com

This model water conservation plan is based on the Texas Administrative Code in effect on December 5, 2024, and considers water conservation best management practices from the Texas Water Development Board's *Best Management Practices for Industrial Water Users*.

**POCA AGUA
MANUFACTURING
COMPANY**

**WATER CONSERVATION
PLAN**

DECEMBER 2024

Prepared by:

**EFICIENTE ENGINEERS, INC.
123 MAIN STREET
POCA AGUA, TX 76026**

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Poca Agua Manufacturing Company

Water Conservation Plan December 2024

1. INTRODUCTION AND OBJECTIVES

Water supply has always been a key issue in the development of Texas. In recent years, the increasing population and economic development in Region C have led to growing demands for water supplies. At the same time, local and less expensive sources of water supply are largely developed. Additional supplies to meet higher demands will be expensive and difficult to develop. It is therefore important that we make efficient use of our existing supplies and make them last as long as possible. This will delay the need for new supplies, minimize the environmental impacts associated with developing new supplies, and delay the high cost of additional water supply development.

Recognizing the need for efficient use of existing water supplies, the Texas Commission on Environmental Quality (TCEQ) has developed guidelines and requirements governing the development of water conservation plans for industrial or mining uses (Appendix B).¹ The Poca Agua Manufacturing Company has adopted this water conservation plan pursuant to TCEQ guidelines and requirements.

This model water conservation plan includes measures that are intended to result in ongoing, long-term water savings. Best management practices established by the Texas Water Development Board were also considered in the development of the water conservation measures.² This plan replaces a previous model plan dated August 2019.

This model plan is a template for industrial users to use as they develop their own water conservation plans. This model plan includes all of the elements required by TCEQ. Each industrial user should customize the details to match its unique situation. At a minimum, this will include:

- Setting five-year and ten-year goals for per capita water use (Section 6).
- Completing a water conservation implementation report (Section 9).
- Adopting ordinance(s) or regulation(s) approving the model plan (Section 9).

The final adopted version should be provided to the TCEQ.

The objectives of this plan are:

- To reduce water consumption from the level that would prevail without conservation efforts.
- To reduce the loss and waste of water.

¹ Superscripted numbers match references listed in Appendix A.

- To improve efficiency in the use of water.
- To document the level of recycling and reuse within the manufacturing processes and for non-potable uses.

The plan lists the TCEQ rules; describes the manufacturing process at the Poca Agua Manufacturing Company and associated water uses; sets a water conservation goal; describes water measurement devices and methods; discusses leak detection, repair, and water loss accounting; and reports existing and future water use efficiency practices.

[This model water conservation plan was developed for the Region C Water Planning Group to assist manufacturers in preparing a site-specific water conservation plan. It contains a plan structure that meets all Texas Commission on Environmental Quality rules for industrial or mining use water conservation plans, along with recommendations on content to include in each section.]

2. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES

The TCEQ rules governing development of water conservation plans for industrial or mining use are contained in Title 30, Part 1, Chapter 288, Subchapter A, Rule 288.3 of the Texas Administrative Code (TAC). Applicable TAC rules are presented in Appendix B. Holders of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for industrial uses must develop, submit, and implement a water conservation plan.

A water conservation plan is defined as “A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water. A water conservation plan may be a separate document identified as such or may be contained within another water management document(s)³.”

Conservation Plan Requirements

The minimum requirements in the TAC Title 30, Part 1, Chapter 288 for water conservation plans for industrial or mining uses are shown below.

TAC Reference	Subject	Plan Location
30 TAC §288.3(a)(1)	Water Use in the Production Process	Section 3
30 TAC §288.3(a)(2)	Water Conservation Goals	Section 4
30 TAC §288.3(a)(3)	Accurate Metering	Section 5
30 TAC §288.3(a)(4)	Leak Detection, Repair, and Water Loss Accounting	Section 6
30 TAC §288.3(a)(5)	Water Use Efficiency Process and/or Equipment Upgrades	Section 7
30 TAC §288.3(a)(6)	Other Conservation Practices	Section 8
30 TAC §288.3(b)	Review and Update of Plan	Section 9
30 TAC §288.30(2)	Water Conservation Implementation Report	Section 9

[TCEQ rules do not require a drought contingency plan for industrial or mining water users.]

3. DESCRIPTION OF WATER USE IN THE PRODUCTION PROCESS

[Insert a description of water use in the production process. Show a schematic of the production process with all water use locations and flowrates in Appendix C.

This section must include 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.

In typical manufacturing processes, water is used for cooling tower makeup water, steam generation, rinsing, washing, plating and metal finishing baths, conveyance of materials, wet scrubbers, and as an ingredient in products. Typical water sources include potable water purchased from a municipal water supplier, groundwater from wells, raw water diverted from lake or river, captured stormwater runoff, reclaimed wastewater purchased from a wastewater treatment plant, and reclaimed process water.]

4. SPECIFICATION OF WATER CONSERVATION GOALS

The Poca Agua Manufacturing Company has set a five-year goal of reducing water use to ____ ac-ft/yr by ____ [*five years from date of plan*] and a ten-year goal of reducing water use to ____ ac-ft/yr by ____ [*ten years from date of plan*]. These goals will be achieved using the following water conservation methods:

[Edit the water conservation goals and describe how they will be achieved.]

This section must include specification of 5-year and 10-year water conservation goals and the basis for development of such goals. The goals established by an industrial user under this subparagraph are not enforceable.

To determine feasible water conservation goals, to provide the basis for these goals, and to identify a schedule for conservation savings, a four-step water conservation implementation process should be completed:

- 1. The first step consists of a water audit for the manufacturing facility. A water audit consists of an inventory of all water supplied to the site and all on-site water uses, including the amount of water used for each purpose. A comparison of the water supplied to the water used will reveal the amount of water loss. Water loss should be no more than 5 percent of total water supplied.*
- 2. The second step is to identify sources of water waste and to design procedures to reduce water waste and minimize water loss. Water waste reduction measures may include reducing flow to process equipment, installing pressure-reducing valves, installing control or limit switches, or other measures.*
- 3. The third step is to identify methods to conserve water use in the manufacturing process, landscape irrigation, and other water uses. Emphasize water conservation methods that address the largest water uses identified in the audit step. Conservation methods could involve upgrading to water-efficient process equipment, water-wise landscaping, retrofit of domestic plumbing fixtures with water-efficient fixtures, employee education, and other methods.*
- 4. The fourth step is to identify opportunities to reuse process water. At the end of the process, is the water quality suitable for other uses? Is it economical to provide water treatment to improve the water quality to make it suitable for other uses?*

For each water conservation method, please provide a description of how the method will save water, a schedule for when the method will be implemented, and the projected water savings for each method.

In response to a charge by the 82nd Texas Legislature, the Texas Water Development Board and the TCEQ, in consultation with the Water Conservation Advisory Council, developed water use and calculation methodology for preparation of water use reports and water conservation plans in accordance with TCEQ rules. The guidance document⁴ contains a

chapter on developing and evaluating water use in the industrial sector, including identifying total water use, appropriate metrics for evaluating water use, factors that may affect industrial water use, establishment of water conservation goals, and measurement of water savings.]

5. ACCURATE METERING TO MEASURE AND ACCOUNT FOR WATER

One of the key elements in water conservation is careful tracking of water use and control of losses. In order to carefully track and control losses, the Poca Agua Manufacturing Company meters water usage at several locations in the productions process.

[Insert a description of meter locations; meter types; meter calibration frequency; meter calibration tolerance; and meter data collection, tabulation, and storage. Refer to the water use diagram in Appendix C as necessary.]

This section must include a description of the device(s) and/or method(s) within an accuracy of plus or minus five percent to be used to measure and account for the amount of water diverted from the source of supply.

To assist in tracking of water usage, consider installing additional meters at key locations in the manufacturing process, particularly if water loss is greater than 5 percent.]

6. LEAK DETECTION, REPAIR, AND WATER LOSS ACCOUNTING

At the Poca Agua Manufacturing Company, plant personnel observe, operate, and maintain facilities throughout the day. Inspection of aboveground piping and pump packing is a normal part of employee duties. In addition, flow meter readings are logged on a daily basis.

If a water leak is indicated by any of the above means, the source of the leak is investigated and a work order for repairs is issued as necessary.

[This section must include a description of leak-detection, repair, and water loss accounting in the water distribution system. Please amend the above description to match operations at your facility.]

Consider implementing an active leak detection and repair program if water loss is greater than 5 percent.]

7. WATER USE EFFICIENCY PROCESS AND/OR EQUIPMENT UPGRADES

[This section must include a description of equipment and/or process modifications to improve water use efficiency.

It is suggested that you also include a description of existing water-efficient equipment or processes to demonstrate any water conservation savings that is already being achieved.

Equipment upgrades or process modifications should be a result of the third step in the four-step process recommended in Section 4.]

8. OTHER CONSERVATION PRACTICES, METHODS, OR TECHNIQUES

[This section must include any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal(s) of the water conservation plan.]

Other sections emphasize process water usage, equipment upgrades, and process modifications. This section should report on proposed conservation practices, methods, or techniques that address other water uses, such as domestic water use, housekeeping water use, and landscape irrigation. Potential conservation methods include retrofit of water-efficient toilets, showerheads, and faucet aerators; water-wise landscaping; employee education; and other methods. Each of these is described below.

The water audit in Section 4 should include a survey of landscape irrigation water use. This includes measurement of the landscape area, measurement of the total irrigable area, irrigation system checks and distribution uniformity analysis, and review or development of irrigation system scheduling. The water use survey should identify currently irrigated areas where irrigation can be discontinued due to low visibility or the plant materials that do not need supplemental irrigation. The survey should also identify areas with the opportunity for process water reuse, stormwater reuse, and reuse of treated effluent for landscape irrigation.

State and federal water efficiency standards require water-efficient plumbing fixtures for new construction and remodeling projects. Replacing older plumbing fixtures with water-efficient plumbing fixtures will conserve water. Other methods include retrofitting toilet tank displacement devices (toilet dam), early closure toilet flappers, and installation of a dual-flush adapter.

An employee education program is important to reducing water waste and conserving water. The manufacturer should inform and educate employees about the adopted water conservation program through inserts in the monthly paychecks, with letters detailing program successes and goals, and through posters and pamphlets posted throughout the facility. Additional educational opportunities exist through employee water conservation seminars and workshops, email, company newsletter, and memos¹.

Best management practices established by the Texas Water Development Board should also be considered in the development of the water conservation measures.²

9. IMPLEMENTATION AND UPDATE OF THE WATER CONSERVATION PLAN

Appendix D contains a copy of the Water Conservation Implementation Report for the Poca Agua Manufacturing Company. *[From 30 TAC §288.30(2), an implementation report for industrial use must include the following:*

- *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 E contains a copy of the Board of Directors of the Poca Agua Manufacturing Company resolution adopting this water conservation plan. The resolution designates responsible officials to implement and enforce the water conservation plan.

Appendix F contains a copy of a letter to the chairman of the Region C Water Planning Group to inform the planning group of this water conservation plan.

This water conservation plan will be reviewed and updated every five years.

Appendix A
List of References

List of References

1. Texas Commission on Environmental Quality: “Water Conservation Plans for Industrial or Mining Use,” *Texas Administrative Code* Title 30 Part I Subchapter A §288.3, effective December 6, 2012.
2. Texas Water Development Board: *Best Management Practices for Industrial Water Users*, Austin, [Online] Available URL: <https://www.twdb.texas.gov/conservation/BMPs/Ind/doc/IndMiniGuide.pdf>, February 2013.
3. Texas Commission on Environmental Quality: “Definitions,” *Texas Administrative Code* Title 30 Part I Subchapter A §288.1, effective August 16, 2018.
4. Texas Water Development Board and Texas Commission on Environmental Quality in consultation with Water Conservation Advisory Council: *Guidance and Methodology for Reporting on Water Conservation and Water Use*, Austin, [Online] Available URL: <http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf>, December 2012.

Appendix B

Texas Commission on Environmental Quality Rules on Water Conservation Plans for Industrial or Mining Water Use

Appendix C
Water Use Diagram

Water Use Diagram
Poca Agua Manufacturing Company

[Insert water use diagram here. Show all water uses, sources, and flowrates.]

Appendix D
Water Conservation Implementation Report

Water Conservation Implementation Report
Poca Agua Manufacturing Company

[Insert water conservation implementation report here. The implementation report must include the following:

- *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 E
Board Resolution Adopting the Water Conservation Plan

[Insert Board resolution adopting the water conservation plan.]

Appendix F
Letter to the Region C Water Planning Group

[Insert letter to the Region C Water Planning Group.]