TCEQ GUIDANCE

Water Supply Division and Regional Areas
Guidance Document • Revised August 2018

Review and Approval Process for Regulation of Mobile Water Treatment Systems (MWTS)

The Texas Commission on Environmental Quality (TCEQ) regulates public drinking water systems (PWS), including Mobile Water Treatment Systems (MWTSs) determined to be PWSs. This document is intended to inform the MWTS owners and site operators of MWTSs of the review and approval process for these types of systems. This document is limited to MWTSs that treat groundwater sources that use free chlorine disinfectant and are NOT under the direct influence of surface water for drinking water or human consumption purposes. Treatment of surface water and groundwater sources under the direct influence of surface water requires additional review which is not covered in this document. A MWTS must be approved by the TCEQ and must be operated in compliance with all site-specific requirements prior to providing treated water for human consumption.

MWTSs are determined to be a PWS based on operational characteristics and are regulated similarly to water haulers as transient noncommunity PWSs. The Environmental Protection Agency (EPA) has determined that water haulers are considered PWSs if they meet "the minimum standards for number of the outlets or customers served." The TCEQ is applying the same approach to the regulation of MWTSs. In general, a water hauler can be considered a mobile distribution system and a MWTS is exactly what it purports to be, a mobile water treatment system. This document is meant to address MWTSs that, at a minimum, utilize pretreatment, cartridge filtration, reverse osmosis membranes, and disinfection using free chlorine.

This guide is not a substitute for the rules. It is the MWTS owner's and site operator's responsibility to ensure their operation complies with applicable regulations. Requirements for PWSs, including transient noncommunity PWSs, can be located online at:

- The federal Safe Drinking Water Act
  http://water.epa.gov/lawsregs/rulesregs/sdwa/index.cfm
- The Texas Health and Safety Code, Chapter 341, Subchapter C
  http://www.statutes.legis.state.tx.us/Docs/HS/htm/HS.341.htm
- The Texas Administrative Code (TAC), Title 30, Chapter 290, Subchapters D and F
  http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=290

In addition, the TCEQ website provides helpful PWS information at:
http://www.tceq.texas.gov/drinkingwater/index.html

Related Definitions

To assist in your understanding as you read this document it will be helpful for you to become familiar with the following definitions:

4-log treatment – At least 99.99% (4-log) treatment of viruses using inactivation, removal, or an executive director-approved combination of 4-log virus inactivation and removal. The 4-log treatment must be able to be properly validated and achieved before the first connection of the specified water source.

Drinking water - All water distributed by any agency or individual, public or private, for the purpose of human consumption or which may be used in the preparation of foods or beverages or for the cleaning of any utensil or article used in the course of preparation or consumption of food or beverages for human beings. The term "Drinking Water" shall also include all water supplied for human consumption or used by any institution catering to the public.

Finished water - Water that is introduced into the distribution system of a public water system and intended for distribution and consumption without further treatment, except as necessary to maintain water quality within the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

Groundwater – Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

Groundwater under the direct influence of surface water – Any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*;
(B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions; or,
(C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water.

Human consumption - Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods.

Public water system (PWS) - A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, which includes all uses described under the definition for drinking water. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes; any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Two or more systems with each having a potential to serve less than 15 connections or less than 25 individuals but owned by the same person, firm, or corporation and located on adjacent land will be considered a public water system when the total potential

service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system.

Transient noncommunity water system - A public water system that is not a community water system and serves at least 25 persons at least 60 days out of the year, yet by its characteristics, does not meet the definition of a non-transient/non-community water system.

Approval Process

A water provider who uses a MWTS to treat groundwater sources for drinking water or human consumption purposes is subject to the following requirements:

- Each MWTS will be approved and operated as a separate PWS. The MWTS shall be considered as serving one single Point of Use Entry Point (POU EP). This is where the bacteriological, chemical, and disinfectant compliance monitoring will occur.
- The MWTS must have engineering plans and specifications approved by TCEQ in accordance with 30 TAC §290.39.
- All planning material and business plans shall be submitted in a manner consistent with a new PWS. 30 TAC §290.39(e) and (f)
- All components of the MWTS and any associated treatment chemicals and media must be certified by the American National Standards Institute/National Sanitation Foundation International (ANSI/NSF) for potable water use under 30 TAC §290.44(a)(1) and 30 TAC §290.42(j).
- All proposed MWTS operations must conduct bacteriological sampling before utilizing an unapproved groundwater source for potable use. Based on the regulations required for new public water sources, once three consecutive daily samples are collected and the certified laboratory results for all three samples are shown to be “absent” for total coliform, the MWTS may proceed with treating the source for potable use. In lieu of this sampling requirement, the MWTS may utilize a LT2 challenge tested / TCEQ approved cartridge filter to treat 100% of the flow through the treatment unit, in addition to the RO and other treatment provided.
- Baseline “worst case” water quality parameters (WQPs) which the MWTS is able to treat effectively shall be established by a professional engineer licensed in the State of Texas and substantiated by the submission of reverse osmosis (RO) modeling as allowed by 30 TAC §290.39(e)(6)(C) and verification data from a laboratory accredited by TCEQ (National Environmental Laboratory Accreditation Program (NELAP)) to perform these tests. Actual MWTS results including pretreatment water and final product water will be required.
    - A list of accredited laboratories may be found at this direct link:

      http://www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/txnelap_lab_list.pdf

- Baseline parameters will be tested on the site and subsequently verified by NELAP testing.
- The design of the MWTS cannot be approved based solely on RO modeling; the PWS can

conduct a pilot study which demonstrates the effectiveness of treatment for particular water quality parameters under an exception request to provide *Innovative/Alternate Treatment* as outlined in 30 TAC §290.42(g). Alternatively, the PWS may submit modeling and verification data from a laboratory accredited by TCEQ (National Environmental Laboratory Accreditation Program (NELAP)) to perform these tests of actual MWTS results including pretreatment water and final product water. The applicable portions of the TCEQ "*Membrane Construction Checklist (Step 1)*" can be used as a guide to the data submittal requirements.

- The operating parameters (such as flow rates, cleaning intervals, pretreatment chemical dosages, and post-treatment, and chemical dosages) must be appropriate for the feed water quality to the MWTS. The operation of each MWTS shall be limited by a "worst case" feed water quality. For membrane technologies, the licensed engineer must have sufficient data for the constituents that affect the efficiency of the MWTS, cleaning intervals, and/or cause scaling or fouling. At a minimum, the feed water quality analysis must include the ion concentrations for all constituents listed in the table below and those required by the manufacturer's model (if RO or nanofiltration is used). In all cases, the feed water to the MWTS shall be limited to the water quality used for the demonstration (modeling, pilot testing, and/or water quality limitations of the equipment manufacturer) of the unit and approved baseline values. Therefore, prior to submitting data for MWTS approval, consideration must be given to water quality variability. This variability may be due to site location, blending ratios with other sources, and/or seasonal changes.
- Each groundwater source to be treated by a MWTS must be analyzed for the following analytes as well as those required by the manufacturer's RO model, using EPA approved laboratory methods. The analytical results must come from a TCEQ accredited laboratory with a current National Environmental Laboratory Accreditation Program (NELAP) certification.

  - <u>Primary Contaminants and Maximum Contaminant Levels (MCLs)</u>
    - Nitrate: MCL - 10 mg/L (as N)
    - Nitrite: MCL - 1 mg/L (as N)

  - <u>Secondary Constituents and Secondary Constituent Levels (SCLs)</u>
    - Aluminum: SCL - 0.2 mg/L
    - Chloride: SCL - 300 mg/L
    - Copper: SCL - 1.0 mg/L
    - Fluoride: SCL - 2.0 mg/L
    - Iron: SCL - 0.32 mg/L
    - Manganese: SCL - 0.05 mg/L
    - pH: SCL - ≥ 7.0
    - Sulfate: SCL - 300 mg/L
    - TDS: SCL - 1000 mg/L
    - Zinc: SCL - 5.0mg/L

  - <u>Lead and Action Level</u>
    - Lead: Action Level – 0.015 mg/L

- Corrosion Control Parameters
  - Alkalinity (as CaCO3)
  - Calcium (as CaCO3)
  - Sodium

- Before a MWTS can be used at a groundwater source, a raw water sample must be collected and analyzed. The results must be compared to the baseline treatable WQPs. If the water quality of the source is equal to or better than the baseline treatable WQPs, the owner of the MWTS may proceed with hook-up and treatment. If the water quality of the source is worse than the baseline treatable WQPs, the owner must contact the Technical Review and Oversight Team in TCEQ's Water Supply Division at (512) 239-4691 and water may not be produced from that source.
- The baseline treatable WQPs established for a MWTS may be changed based on the submission of new NELAP Laboratory data or pilot study results and approval of those new results by the TCEQ.
- The raw water source cannot be exposed to the atmosphere to ensure no biological contamination occurs. All storage and treatment units of the MWTS must be fully enclosed and all vents properly screened.
- The MWTS must meet the minimum free chlorine disinfection requirements of at least 4-log treatment of viruses before water is distributed to any customer and shall maintain acceptable disinfectant residuals at the POU EP.
- All lines, tanks, and applicable components of the MWTS must be disinfected in accordance with American Water Works Association requirements before being connected to a new groundwater source.
- The proposed MWTS may not transfer water from one site for use as potable water at a different site. The treatment rig must be completely drained on-site before the rig may travel to the next treatment site.
- A MWTS that stays on a site for 60 or more days per calendar year in accordance with the definition of a Public Water System in 30 TAC §290.38(71) is no longer considered a MWTS. After 60 days of operation at a single location, the raw water source and any associated potable water distribution piping will meet the definition of public water system facilities and the site will be subject to all applicable regulations regarding sources and distribution, as either a transient non-community or non-transient non-community PWS (if serving at least 25 of the same people for six months out of the year).
- The proposed MWTS must provide adequate post-treatment and remineralization to ensure that the water provided for human consumption at the point of use entry point is stable with a pH equal to or greater than seven (pH ≥7).

Cross-Connection Control and Backflow Prevention

The MWTS owner or site operator shall ensure that any cross-connections on the piping conveying the raw water source to the MWTS are adequately protected by requiring a reduced-pressure principle backflow prevention assembly (RPBA) or air gap. Examples of potential sources of contamination may include, but are not limited to:

- Groundwater sources exposed to atmospheric contamination;
- Surface water sources; or
- Housing, commercial, production, or industrial operations.

The MWTS owner or site operator shall ensure that the MWTS is protected from actual or potential contamination hazards by requiring an RPBA or air gap after the last treatment process and prior to the Point of Use Entry Point.

Testing requirements for RPBAs installed to provide protection against health hazards will apply per 30 TAC §290.44(h)(4).

Design, Operation, Maintenance, Compliance Monitoring and Reporting Requirements

When a MWTS is approved, the owner will receive an approval letter with detailed, site-specific design, operation, maintenance, compliance monitoring and reporting requirements. The compliance monitoring and reporting requirements will be in accordance with those for a transient noncommunity public water system. The required NELAP laboratory samples must be submitted for microbiological and chemical analyses using EPA-approved drinking water methods to one of the commission's accredited laboratories. Please note that two accredited drinking water laboratories, the Texas Department of State Health Services (DSHS) and the Lower Colorado River Authority (LCRA), report sample results directly to the TCEQ using electronic data transfer. **If the owners or site operators of a MWTS choose to use an accredited laboratory other than DSHS or LCRA, then the results of compliance sampling must be submitted electronically by that laboratory to the TCEQ**. For questions regarding the electronic submission of compliance samples to the TCEQ, please contact a member of the TCEQ Drinking Water Quality Team at (512) 239-4691. Failure to comply with the conditional approval may result in violations, enforcement action, and/or revocation of the approval to use the MWTS.

Owners and operators must maintain documentation demonstrating compliance with the conditions of the approval letter and all applicable PWS requirements and provide them to the executive director or representative upon request. MWTSs are subject to TCEQ investigations to evaluate compliance with PWS requirements.

MWTSs shall provide startup and shutdown information to the appropriate TCEQ Regional Office via mail, email, or facsimile, with a copy to the PWS Liaison in the Program Support Section of the Office of Compliance and Enforcement.

A relocation form has been developed for reporting location change and startup of activities (see attached). This form has a submit function to submit by email to the PWS Liaison. The appropriate TCEQ Regional Office may be sent the same email. There is a link for regional contact information on the form. You may also contact the PWS Liaison with questions at PSSFieldSupp@tceq.texas.gov.

The operators of the proposed MWTS must record and maintain daily logs that state the geographical location of the unit for every day it is in operation. These records must be kept on file for ten years and made available to TCEQ personnel upon request.

Texas Commission on Environmental Quality
Regional Notification
Mobile Potable Water Treatment Systems

This form should be submitted to the TCEQ to report a change in location for Mobile Potable Water Treatment System. All information should be mailed, emailed, or faxed to the appropriate regional office and the PWS Liaison in the Program Support Section of the Office of Compliance and Enforcement.
Email complete form to: PSSFieldSupp@tceq.texas.gov

Clear Form

I. Registrant		
TCEQ Customer Reference Number (No.): CN –		
Company or Other Legal Customer Name: *(must be same as Core Data "Customer" if previously submitted):*		
Company Contact Name:		Title:
Mailing Address:		
City:	State:	Zip Code:
Phone No:	Fax No.	E-mail Address:
II. Facility and Site Information		
TCEQ Regulated Entity No.: RN –		
Name of MWTS Facility:		
PWS ID No.:	Equipment Serial /ID No.:	
MWTS under contract with:		
Physical Operating Location Information		
Texas RRC API No:		
Address:	City:	County:
If no street address, provide written driving directions to the location *(attach description if additional space is needed)*		
Latitude:	Longitude:	
Expected Startup Date:	Shutdown Date:	
Estimated Population to Be Served (number):		
III. Signature for Notification		
The signature below indicates that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the facility will satisfy the conditions and limitations of the indicated standard permit or permit by rule. The facility will operate in compliance with all regulations of the Texas Commission on Environmental Quality and with U.S. Environmental Protection Agency regulations governing drinking water.		
Name:		
Signature:_____	**Date:**	

Regional contact information: https://www.tceq.texas.gov/about/directory/region/reglist.html

Submit Form