

Membrane Use Checklist (Step 2)

Texas Commission on Environmental Quality
Water Supply Division
Plan Review Team MC-159
P.O. Box 13 087, Austin, Texas 78711-3087

Public Water System I.D. No. _____
TCEQ Log No. P- _____

Any membrane treatment systems proposed for a public water supply must have plans approved by TCEQ prior to construction– see the “Membrane Construction Checklist (Step 1)”. Plans are reviewed for compliance with “Rules and Regulations for Public Water Systems” Title 30 TAC Chapter 290. After the membrane treatment system is constructed, the completion data listed below must be submitted to TCEQ for evaluation. Based on this submitted data, approval may be given for use of the membrane treatment system. Please include the TCEQ construction approval Log Number and public water system name and identification number when submitting membrane treatment system completion information. This list is not a substitute for the rules and this checklist cannot be accepted in lieu of the required engineering submittals. Failure to submit the following items may delay project approval. Copies of the rules may be obtained from Texas Register, 1019 Brazos St, Austin, TX, 78701-2413, Phone: (512) 463-5561 or downloaded from the website: <http://www.tceq.texas.gov/rules/indxpdf.html>

Before reverse osmosis or nanofiltration membrane systems can be used to produce drinking water, but after the reverse osmosis or nanofiltration membrane system has been constructed at the water system, the licensed professional engineer must submit an addendum to the engineering report required by paragraph (6) of this subsection to the executive director for review and approval. The addendum shall include the following verification data of the full-scale treatment process: [§290.39(e)(7)]

1. Provide the initial baseline performance of the plant. The baseline net driving pressure, normalized permeate flow, salt rejection (or salt passage) must be documented when the reverse osmosis or nanofiltration membrane systems are placed online; [§290.39(e)(7)(A)]
2. Provide the frequency of cleaning or membrane replacement. The frequency must be based on a set time interval or at a set point relative to baseline performance of the unit(s); [§290.39(e)(7)(B)]
3. If modeling is used as the basis for the design, provide verification of the model's accuracy. If the baseline performance evaluation shows that the modeling projection in the engineering report were inaccurate, the licensed professional engineer shall determine if the deviation from the modeled projections resulted from incorrect water quality assumptions or from other incorrect data in the model. The model shall be considered inaccurate if the overall salt passage or the required feed pressure is 10% greater than the model projection. For any inaccurate model, provide a corrected model with the addendum to the engineering report; [§290.39(e)(7)(C)]
4. Provide verification of plant capacity. The capacity of the reverse osmosis and nanofiltration membrane facility shall be based on the as-built configuration of the system and the design parameters in the engineering report with adjustments as indicated by the baseline performance; [§290.39(e)(7)(D)]
5. The calculations for sizing feed pump(s) and chemical storage tank(s) must be submitted to demonstrate that a project meets chemical feed and storage capacity requirements; [§290.39(e)(8)]
6. Submit final blending report showing compliance to all maximum contaminant levels (MCL) and secondary contaminant levels (SCL);

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7. Provide a physical and chemical analysis of the water. The analyses for the raw water (before any treatment), the water produced from the membrane systems, and the water after any post-treatment (including blending) must be submitted to an accredited laboratory for chemical analyses. (See below)[§290.39(e)(7)(E)]
8. Public water systems shall ensure that their operators are trained regarding the use of all chemicals used in the water treatment plant. Submit the applicable training records of operators pertinent to this requirement. [§290.46(e)(2)(B)]
9. Effective September 1, 2016, reverse osmosis or nanofiltration membrane systems must have operators that have successfully completed at least one executive director-approved training course or event specific to the operations and maintenance of reverse osmosis or nanofiltration membrane treatment. Submit the applicable training records of operators pertinent to this requirement. [§290.46(e)(2)(D)]

For Item #7- All systems shall submit a physical and chemical analysis of the water for the raw water (before any treatment), the water produced from the membrane systems, and the water after any post-treatment (including blending) for the contaminants listed below. Reports must come from a TCEQ accredited laboratory and include all QA/QC data. MCL and SCL units are in mg/l (except arsenic which is in micrograms per liter).

Table 1: Primary Constituents with Maximum Contaminant Level (MCL)

PRIMARY	MCL
Nitrate	10 (as N)
Nitrite	1 (as N)
Arsenic	10
Fluoride	4.0

Table 2: Secondary Constituents with Secondary Contaminant Level (SCL)

SECONDARY	MCL
Aluminum	0.2
Copper	1.0
Iron	0.3
Manganese	0.05
Zinc	5.0
Total Dissolved Solids	1,000
Fluoride	2.0
Lead	N/A
Sulfate	300
Chloride	300
pH	> 7.0

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Table 3: Water Quality Parameters

PARAMETER	UNITS
Alkalinity as CaCO ₃	mg/L
Calcium as CaCO ₃	mg/L
Sodium	mg/L

All systems located in a high-risk county (see page 3) shall submit radiological analysis reports for water samples showing the water to be of acceptable quality for the most contaminants listed below. Reports must come from a TCEQ accredited laboratory for temporary use of the membrane unit.

Table 4: Radionuclides with Maximum Contaminant Level (MCL)

CONTAMINANT	MCL
Gross alpha	15 pCi/L
Radium-226/228	5 pCi/L
Beta particle	50 pCi/L
Uranium	30 µg/L

WHERE: pCi/L = pico curies per liter, µg/L = micrograms per liter

Please be aware when you review your radiological data that if the report has gross alpha over 15 pCi/L and individual uranium isotopes are not reported, you will have to resample or reanalyze and resubmit radionuclide results. If you see gross alpha plus radium-228 over 5 pCi/L, and don't have radium-226, you will have to resample or reanalyze and resubmit complete results. For more information please see the website at the following URL:

https://www.tceq.texas.gov/drinkingwater/chemicals/radionuclides/pdw_rad.html

List of Counties where Radionuclide Testing is Required

Please be aware that we have added the requirement for analysis for radionuclides for high-risk counties. For elevated levels of any contaminants found in a test well, treatment or blending may be required.

Table 5: List of Counties where Radionuclide Testing is Required

COUNTY				
Atascosa	Bandera	Bexar	Bosque	Brazoria
Brewster	Burnet	Concho	Culberson	Dallam
Dawson	Erath	Fort Bend	Frio	Garza
Gillespie	Gray	Grayson	Harris	Hudspeth
Irion	Jeff Davis	Jim Wells	Kendall	Kent
Kerr	Kleberg	Liberty	Llano	Lubbock
McCulloch	Mason	Matagorda	Medina	Midland
Montgomery	Moore	Parker	Pecos	Polk
Presidio	Refugio	San Jacinto	San Saba	Tarrant
Travis	Tyler	Upton	Val Verde	Victoria
Walker	Washington	Wichita	Williamson	Zavala