

Bryan W. Shaw, Ph.D., P.E., *Chairman*
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Richard A. Hyde, P.E., *Executive Director*



PWS_2430001_CO_20150113_EXCEPTION

Texas Commission on Environmental Quality

Protecting Texas by Reducing and Preventing Pollution

January 13, 2015

Mr. David W. Sloan, P.E., BCEE
Freese and Nichols
4055 International Plaza, Suite 200
Fort Worth, TX 76109

Subject: City of Wichita Falls – PWS ID No. 2430001
Request for an Exception to the UV-Pathogen-Removal Rule
Cypress Temporary Direct Potable Reuse Water Treatment Plant,
TCEQ Plant ID No. TP410791
Wichita County, Texas

RN 105598759;

CN 600129316

Dear Mr. Sloan:

On January 6, 2015, the Texas Commission on Environmental Quality (TCEQ) revised our letter dated November 24, 2014, correcting a typographical error in our response to your request for an exception for innovative/alternate treatment to apply an ultra violet (UV) light for a pathogen-removal process for UV disinfection credit at the City of Wichita Falls' Direct Potable Reuse Water Treatment Plant (Temporary DPR WTP). The requirements for UV-pathogen-removal are specified in Title 30 of the *Texas Administrative Code* (30 TAC) §290.42(g)(5). The City proposes to use the TrojanUV Swift™ ECT 8L24-2L model for UV disinfection treatment at the Cypress SWTP. Your letter includes data from a Temporary DPR WTP revised concentration time (CT) study that shows the TrojanUV Swift™ ECT 8L24-2L UV-reactor system will be operated at a maximum flow rate of 10.0 million gallons per day (MGD). The correction was in the table titled **TrojanUVSwift™ ECT 8L24-2L UV Disinfection Design Criteria**, with the flow rate revised to show the updated range of 1.0 -10.0 MGD. **This letter replaces our November 24, 2014 letter.**

On November 19, 2014, TCEQ received your letter dated November 19, 2014, which was sent in response to the TCEQ letter (Letter) dated November 10, 2014, granting initial approval for the use of UV disinfection at the City's Temporary DPR WTP. In your response, you request that the TCEQ approve an alternative flow metering requirement contained in Condition 2 of our Letter. This condition requires installation of a flow meter on the inlet piping of each UV reactor and you do not believe this to be necessary for proper monitoring of the facility. Specifically, you state that the UV reactors have been selected to provide full treatment of all flow through a single reactor, with a second reactor provided as a spare. The off-duty reactor will be valved off until it is needed, at which time the on-duty reactor will be taken off-line, valved off, and the spare reactor will be placed into service. As a result, the existing permeate flow meter should provide adequate flow metering capability since no other flow may enter or leave the pipeline between the reactor and the flow meter. Based on our review of your letter and data, we are **approving** your request and **reissuing the granted exception** for UV-pathogen-removal treatment under the conditions below. **This letter replaces our November 24, 2014, and November 10, 2014 letters.**

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1. The City must operate the TrojanUV disinfection unit as required by the Enclosure 1, *TCEQ TrojanUVSwift™ 8L24-2L Approval Letter*, dated October 14, 2014.
2. The City must either document the standard operating procedure (SOP) for switching between the on-line and spare UV reactors or install a flow metering device on each UV reactor. The SOP must be submitted to the TCEQ for review before the UV reactors are placed in service. The SOP should be submitted to the Technical Review and Oversight Team whose address can be found at the end of this letter.
3. UV light sensor and UVT analyzers must be properly calibrated as required in 30 TAC §290.46(s)(2)(D).
4. The City must continuously monitor and record UV intensity as measured by a UV sensor, lamp status, flow rate through the unit, UV transmittance, and lamp power, in accordance with 30 TAC §290.111(d)(3)(A).
5. The City must monitor and record the amount of water treated by each UV unit each month and the amount of water produced each month when the unit is not operating within validated conditions in accordance with 30 TAC §290.111(d)(3)(B). A UV unit is considered to be operating outside the validated conditions when:
 - a. the validated dose falls below that dose needed to achieve the target level of pathogen inactivation,
 - b. the reactor operates at a flow rate that exceeds the maximum validated flow rate,
 - c. the UV transmittance of the water falls below the minimum validated UVT, or
 - d. one or more of the lamps is inoperative.
 - e. The Cypress SWTP must provide a minimum 3.0-log inactivation of *Cryptosporidium* through the use of UV light. If the Cypress SWTP produces off-spec water for more than four (4) consecutive hours during a day, the SWTP must be taken off-line, and the UV reactor must be inspected, and, if necessary, repaired.
6. If the TrojanUV Swift™ 8L24-2L reactor is operated at flow rates below 1.0 MGD or the UV transmittance of the water being treated by this reactor exceeds 98%, the calculated reduction equivalent dose (RED_{calc}) value must be based on a minimum validated flow rate of 1.0 MGD and a maximum validated UVT of 98%.
7. The City must write SOPs for the handling of "off-spec" water, water produced under conditions outside the validated operating parameters. These SOPs must be submitted to the TCEQ for review at the same time the construction plans are submitted.
8. Monitoring and recording, using the SWMOR-Alt form (see Enclosure 2), are required for flow rate, UV sensor readings, lamp status, etc., at least once every 15 minutes, when disinfection credit is being claimed.
9. The City must keep a copy of the Trojan UV validation report on site, and the SWTP operators must have a way to verify that the proper control algorithms and coefficients are being used for each Trojan UV unit at the SWTP.

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The proposed UV system has been sized to provide a 3.0-log inactivation of *Cryptosporidium*. The Cypress SWTP installation will involve the 24-inch TrojanUVSwift™ ECT 8L24-2L reactor with 2 lamps. The 8L24-2L reactor will operate at flow rates of up to 10.0 MGD, with a second 8L24-2L reactor serving as the stand-by reactor. The maximum approved disinfection credits for the reactor and operating condition are described in the table below.

TrojanUVSwift™ ECT 8L24-2L UV Disinfection Design Criteria

Design Criteria	Type of Unit	Design Value
Flow Rate	MGD	1.0 - 10.0
<i>Cryptosporidium</i> disinfection	Log inactivation	3.0
<i>Giardia</i> disinfection	Log inactivation	3.0

Engineering plans and specifications for the proposed UV disinfection system **are** required to be submitted to the TCEQ's Utilities Technical Review Team (UTRT, MC 159) for review and approval of their construction as specified in 30 TAC §290.39(h)(1). Please contact the UTRT leader, Ms. Vera Poe, P.E., by phone at (512) 239-6988, or email at Vera.Poe@tceq.texas.gov for submission instructions for the plan review of your plans-and-specifications submittal.

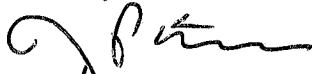
All granted exceptions are subject to periodic review with subsequent amendments, revision, or revocation possible if evidence is found that the granting of an exception results in a degradation of water quality or water supply.

This exception is not intended to waive compliance with any other TCEQ requirement in 30 TAC Chapter 290, or in the conditional approval letter, dated August 5, 2014, for Full-Scale Operation of the Temporary DPR Project. This exception cannot be used as a defense in any enforcement action resulting from noncompliance with any other requirement of 30 TAC Chapter 290.

If you have any questions, or need further assistance, please contact Mr. Bill Melville, P.E., at Bill.Melville@tceq.texas.gov, or by telephone at (512) 239-4729, or by correspondence at the following address:

Technical Review & Oversight Team (MC 159)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087.

Sincerely,



Joel Klumpp, Team Leader
Technical Review & Oversight Team
Plan & Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

JPK/WRM

Enclosures: 1. TCEQ TrojanUVSwift™ 8L24-2L Approval Letter, dated October 14, 2014
2. SWMOR-Alt Form

cc: The Honorable Glenn Barham, Mayor, City of Wichita Falls, P.O. 1431,
Wichita Falls, TX 76307-1431

Bcc: TCEQ Abilene Regional Office – R3