



8140 Walnut Hill Lane, Suite 1000
Dallas, Texas 75231
tel: 214-346-2800
fax: 214-987-2017

May 7, 2012

Mr. Joel Klumpp
Team Leader, Technical Review and Oversight
Texas Commission on Environmental Quality
Public Drinking Water Section (MC-159)
12100 Park 35 Circle, Building F
Austin, Texas 78753

Subject: City of Wichita Falls, TX – PWS I.D. #2430001
Wichita County, Texas
Use of Reclaim Wastewater Effluent from the River Road WWTP as a Source Water for
the Jasper SWTP

Dear Mr. Klumpp:

As a follow up to our meeting with TCEQ on April 13, 2012, this letter outlines the revised project scope and approach that the City of Wichita Falls wishes to take regarding the use and approval of hollow fiber membrane-treated reclaim wastewater effluent from the River Road Wastewater Treatment Plant (WWTP) as a source water for the Jasper Surface Water Treatment Plant (SWTP). As we discussed on April 13, due to the ongoing drought the City is faced with ever decreasing levels in the two lakes that are source waters for the City—Lake Arrowhead and Lake Kickapoo. The attached **Figure 1** illustrates the projected depletion level in the two combined lakes if the drought continues at the rate of the 2011 drought depletion rate for these supplies. A Stage IV “Drought Disaster” as defined in the City’s Water Conservation and Drought Contingency Plan, occurs when these two source lakes reach 30% of combined storage capacity. Furthermore, the City defines the following during a Stage IV Drought Disaster:

- Total ban on outdoor watering for nonessential uses
- Suspend service to and pull all fire hydrant meters for Contractor use (until no longer in Stage IV)
- Continue aggressive public relations and education program
- Implement enforceable restrictions on essential water uses as defined in Stage III

The City has determined that in a Stage IV Drought Disaster, no more than 10 MGD will be required to meet essential water needs.



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Revised Reclaim Water Proposed Project

Because of the ongoing drought in the Wichita Falls area, the City wishes to revise the reclaim water project that has been presented to TCEQ in previous correspondence in order to better address the immediate water needs brought on by the ongoing drought. This new reclaim water project requests approval for two possible treatment scenarios.

Treatment Scenario A. The scenario proposes to use hollow fiber membranes to treat effluent from the River Road WWTP and then send this membrane-treated water to the 10 MG capacity Pre-sedimentation Basins of the Jasper SWTP for further treatment. More specifically, and as noted in the 2009 Pilot Study Report provided to TCEQ, treatment of reclaim wastewater will include coagulation with ferric sulfate followed by MF/UF membrane treatment. During this Stage IV Drought Disaster condition, to satisfy the 10 MGD demand to meet essential water needs, it is proposed that 5 MGD of reclaim wastewater be treated and sent to the Jasper SWTP for further treatment. During a Drought Disaster, 5 MGD of surface water from Lakes Kickapoo and/or Arrowhead will also be pumped from the City's Secondary Reservoir to the Pre-sedimentation Basins of the Jasper SWTP for blending at a 1:1 ratio of lake water to treated reclaim water. Thus, the detention time in the Pre-sedimentation Basin of the Jasper SWTP will be 1 day at this maximum flow of 10 MGD during the Drought Disaster condition. A process flow schematic of this proposed reclaim water project to meet the Stage IV Drought Disaster water needs of the City is shown in **Figure 2**.

Treatment Scenario B. An alternative to the treatment option presented above and shown in Figure 2, is to blend the 5 MGD of River Road WWTP effluent with the 5 MGD of surface water from Lakes Kickapoo and/or Arrowhead in the Pre-sedimentation Basin of the Jasper SWTP and then send this water through the Jasper SWTP for further treatment. Treatment of the blended source waters would be based on *Cryptosporidium* testing of the blended source water that the City is proposing to do in order to determine Bin classification for this new source and the additional treatment, if any, that is required. The process flow schematic for this proposed reclaim water project is shown in **Figure 3**.

A site plan of the proposed reclaim water project is also provided in **Figure 4**.

Treatment for the Jasper SWTP includes disinfection in the raw water pipeline with chlorine dioxide, pre-sedimentation, conventional treatment with lime softening and ferric sulfate coagulation, flocculation, sedimentation, dual-media filtration, and chloramination for residual disinfection.

Responses to TCEQ December 1, 2009 Letter on Pilot Plant Report

Per TCEQ's request, we have provided another copy of the 2009 Pilot Plant Report. Our responses to the TCEQ letter dated December 1, 2009, regarding their review of this report are as follows:

1. The simazine values reported in Table 9-5, page 9-9, were incorrect. The correct values are 9.9×10^{-4} mg/L maximum, 1.5×10^{-4} mg/L minimum, and 5.7×10^{-4} mg/L average. The

results reported for simazine in Appendix E are in $\mu\text{g/L}$ units as noted. These same results have simply been translated to mg/L units for Table 9-5. Simazine was reported originally in Table 9-3, page 9-3, and Table 9-4, page 9-6.

2. The City plans to install an anoxic zone at the River Road WWTP for nitrate removal. This additional process will reduce nitrate levels to less than 10 mg/L in the blended water from the Jasper SWTP.
3. As noted in our meeting with TCEQ on April 13, 2012, no such *Cryptosporidium* data exists because it was not requested to be collected by TCEQ. The City has been proactively collecting *Cryptosporidium* data from the River Road WWTP effluent and the results are provided below:

<u>Crypto (oocysts/L)</u>	<u>Date</u>
<0.097	4/23/12
0.148	4/9/12
<0.123	3/26/12
0.741	3/19/12
<0.102	3/12/12
0.205	3/5/12
1.235	2/28/12
0.037	2/15/12

This preliminary *Cryptosporidium* data appears to demonstrate that a Bin 2 classification, or lower, is a real possibility for the River Road WWTP effluent. The City of Wichita Falls is continuing to collect *Cryptosporidium* data on the River Road WWTP effluent twice a month. However, if more frequent sampling (e.g., weekly) can be considered by TCEQ to obtain 48 samples, the City will consider increasing the sample frequency so that a Bin determination can be made as soon as 48 samples are obtained and submitted.

4. Based on our discussions with TCEQ staff (Mr. David Williams), we understand that TCEQ is currently reviewing the challenge studies for the following membrane vendors and fibers that we piloted for the Wichita Falls Reuse Project:
 - a. Pall UNA-620A (reference Table 4-1 of the Pilot Study Report)
 - b. Siemens Memcor S10V (reference Table 4-1 of the Pilot Study Report)

The GE Zenon ZW1000 membrane will be submitted for approval to TCEQ on another Texas project that CDM Smith is currently working on, so we believe that approval of these items requested in this Item 4, will be addressed via this TCEQ approval process.



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5. GE Zenon piloted the thinner 0.80 fiber. However, GE no longer makes the thinner fiber and we will be seeking TCEQ approval to use the thicker GE fiber (the 0.95). CDM Smith worked with TCEQ to gain their approval of this thicker fiber on another Texas project, so will take this same approach for the Wichita Falls project since GE has data that shows side by side comparison of the two fibers.
6. See our reply to Item 4 above. We will work with TCEQ to get the current information submitted to TCEQ for their approval of the GE Zenon membrane.
7. See our reply to Item 4 above. TCEQ is currently reviewing this information on this fiber for Siemens.
8. See our reply to Item 4 above. TCEQ is currently reviewing this information on this fiber for Siemens.
9. The backwash air flow was 7 scfm/module, as noted in the Appendix B Executive Summary, Page III, and the backwash water flow rate was 9.9 gpm, as noted in the Membrane Performance Table on Page 15 in Appendix B.
10. The basket strainer was a 500 μ m size.
11. The detailed procedure for the Pall CIP is provided in Appendix C, on Page 24 of Pall's Report.

Should you have any questions on the above items please do not hesitate to contact us. We would like to arrange a meeting with TCEQ to review the next steps of this proposed project at your earliest convenience.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Susan Crawford'.

Susan L. Crawford, P.E., BCEE
CDM Smith
TBPE No. F-3043

A handwritten signature in black ink, appearing to read 'T. Dean Hinton'.

T. Dean Hinton, P.E.
Corlett, Probst & Boyd
TBPE No. F-279

Enclosure (1 report)

cc: Mr. Russell Schreiber, City of Wichita Falls
Mr. Daniel Nix, City of Wichita Falls