

Enclosure A
List of Conditions, June 27, 2014
City of Wichita Falls - PWS 2430001
Temporary Direct Potable Reuse WTP - 410791

Due to the ongoing drought, the City of Wichita Falls (City) proposes to augment its water supply with the temporary reuse of wastewater effluent from the City of Wichita Falls River Road Wastewater Treatment Plant (RRWWTP) as source water for the Temporary Direct Potable Reuse (DPR) Water Treatment Plant (WTP) for a period of six months. The project proposes to utilize the existing Cypress Surface Water Treatment Plants (SWTPs) as a part of the temporary DPR WTP project.

As stated in TCEQ's May 1, 2014 letter, if the City determines that the temporary DPR WTP will be needed for longer than six months; the burial of the above ground pipeline and approval, installation, and use of additional treatment barriers will be required. The maximum duration the project can be operated is six months unless UV disinfection providing at least 3.0-log inactivation of *Cryptosporidium* is approved and installed.

EXCEPTIONS

1. The proposed use of RRWWTP effluent as a raw water source and the associated treatment processes for a DPR WTP require exceptions to Title 30 of the Texas Administrative Code (30 TAC) Chapter 290, Subchapter D regulations. The TCEQ staff review requests for exceptions to ensure that a public water system will provide a safe quality and adequate quantity of drinking water to their customers as required by the Texas Health and Safety Code (THSC) §341.0315(a).

The conditional granting of the temporary exceptions is **valid for a period of 6 months from the date of this letter**. Below are listed the City's temporary exceptions granted for 6 months of temporary DPR WTP use to produce potable drinking water for public user:

- a. The use of RRWWTP effluent in lieu of groundwater or surface water as a source of water for a public water system [30 TAC §290.41];
- b. The use of the temporary DPR WTP equipment and piping in the proposed configuration which includes common walls between areas carrying water in prior stages of treatment [30 TAC §290.42(d)(2)];
- c. The use of pre-formed chloramines as a pre-disinfectant [30 TAC §290.42(e)(3)(G)];
- d. The use of chloramines for inactivation credit [30 TAC §290.42(e)(3)(G)];
- e. Micro Filtration (MF) membranes for removal of pathogens [30 TAC §290.42(g)(3)];
- f. Reverse Osmosis (RO) membranes for the removal of primary and secondary drinking water chemical contaminants [30 TAC §290.42(g)]; and
- g. Post-RO membrane pH adjustment [30 TAC §290.42(g)].

2. Please be aware that these conditionally granted temporary exceptions, and any exceptions granted in the future, **are subject to TCEQ revision or revocation if:**
 - a. Monitoring results, on-site alarms, or other data indicate that the temporary DPR WTP is producing a finished water quality—after all removal, chemical treatment and blending—that is a potential risk to public health;
 - b. The U.S. Environmental Protection Agency (EPA) revises the allowable maximum contaminant levels (MCLs) for existing regulated contaminants or establishes maximum contaminant levels or treatment technique requirements for chemical or microbiological contaminants that are currently unregulated;
 - c. Substantiated data becomes available establishing a public health risk for one or more unregulated contaminants at a specified concentration level in drinking water;
 - d. The City fails to comply with one or more of the conditions of the temporarily granted exceptions.
3. All of the TCEQ's and EPA's regulations that apply to surface water treatment plants also apply to the City's temporary DPR WTP. In addition to the TCEQ and EPA drinking water regulations, **this enclosure includes the minimum site-specific requirements for the granted exceptions for the proposed temporary DPR WTP to use RRWWTP effluent as source water** meant for human consumption. The following conditions are TCEQ site-specific minimum operation, design, reporting, calibration, and record keeping requirements for the temporary DPR WTP facility which will produce drinking water and are based on the full scale verification study data supplied by the City.

OPERATIONAL REQUIREMENTS WITH SHUTDOWN CONDITIONS

4. The City's temporary DPR WTP may only discharge water into the City's distribution system when all of the following conditions have been met. These conditions are in addition to the EPA and TCEQ public drinking water or other rules and are **the minimum site-specific requirements for the granted exceptions for the proposed temporary DPR WTP to use RRWWTP effluent as source for water**. If any of the conditions are not met, the plant or unit must be shut down until all the conditions are met.

The conditions are:

- a. The City's temporary DPR WTP must provide at least a total 9.0-log removal and/or inactivation of viruses; a total 8.0-log removal and/or inactivation (including at least 2.0-log of inactivation) of *Giardia*; and a total 5.5-log removal and/or inactivation of *Cryptosporidium*. If the disinfection or removal barriers do not meet the required parameter(s), resulting in the plant providing less treatment than required, the plant must be taken off line, corrective actions taken, and the temporary DPR WTP must not be returned to service until the failed parameter(s) is within the appropriate range.
- b. All of the RRWWTP influent must pass through each of the treatment units, including the entire RRWWTP process, sedimentation, MF, RO, blending with raw

surface water, second sedimentation, conventional filters and disinfection. If water is bypassed around a unit process, the entire temporary DPR WTP must be shut down until the bypass is corrected, and TCEQ has approved the corrective action.

- c. The RRWWTP effluent turbidity must remain below 24 Nephelometric Turbidity Units (NTU) at all times. If the RRWWTP effluent turbidity level is at or above 24 NTU, the water from the RRWWTP must not enter the pipeline leading to the temporary DPR WTP until corrective action is taken, and the turbidity is below 24 NTU.
- d. The RRWWTP effluent monochloramine residual must be 1.0 milligrams per liter (mg/L) or greater when temperatures are above 16°C and 1.5 mg/L or greater when the temperature is at or below 16°C. If the RRWWTP effluent monochloramine residual is below 1.0 mg/L when temperatures are above 16°C and below 1.5 mg/L when the temperature is at or below 16°C, the water from the RRWWTP must not enter the pipeline leading to the temporary DPR WTP until corrective action is taken, and the residual is above the action level.
- e. The *Giardia*, *Cryptosporidium* and virus concentrations in the RRWWTP effluent must not exceed 700 cysts/L, 9.5 oocysts/L, and 22 viruses/L, respectively. If the RRWWTP effluent exceeds the concentrations above (when the results are received), the RRWWTP effluent must stop entering the pipeline leading to the temporary DPR WTP, and the entire temporary DPR WTP must be shut down until TCEQ provides approval to continue.
- f. The *Escherichia coli* (*E. coli*) concentrations in the RRWWTP effluent (after the chlorine contact basin) must be no greater than 75 most probable number (MPN)/100 mL. If the RRWWTP *E. coli* effluent concentration is above 75 MPN/100 mL (when the results are received), the RRWWTP effluent must stop entering the pipeline leading to the temporary DPR WTP and the entire temporary DPR WTP must be shut down until corrective action is taken and the *E. coli* levels return to below 75 MPN/100 mL.
- g. A direct integrity test (DIT) must be performed on **each membrane unit** at a frequency of **no less than once each day** that the unit is in operation. All DITs must be conducted using a sensitivity of 2.8-log and a resolution capable of detecting a 3.0 micron breach using the parameters approved by TCEQ in Enclosure E. If a MF membrane unit fails a DIT, it must be taken off line immediately, inspected and, if necessary, repaired. The MF membrane unit cannot be returned to service until the inspection and any needed maintenance have been performed and the unit passes a subsequent DIT.
- h. If salt rejection $[(\text{total dissolved solids (TDS)-feed} - \text{TDS-product}) / (\text{TDS-Feed}) \times 100]$ for a single RO unit decreases by more than 10% over the unit's acceptable daily salt rejection average from the previous day, then the RO unit must be removed from service. The unit must have any problems repaired and retested until the salt rejection returns to less than 10% of the unit's acceptable daily salt rejection total from the previous day before the RO unit can resume discharging to the next stage of treatment. The monthly average of the unit's salt rejection must not decrease 5% or more from the previous month's average of acceptable daily salt rejection levels.

- i. The nitrate levels of each RO unit's permeate must be below 10 mg/L. If any of the 8-hour sample results show the nitrate level to be at or above 10 mg/L then the unit must be taken off line, inspected, and, if necessary, repaired. The unit cannot be returned to service until the level of nitrate is below 10 mg/L
- j. The ratio of the partially treated RRWWTP effluent from Waste Lagoon No. 3 to the Secondary Reservoir raw surface water must be no greater than 50.00%. No single instantaneous 15-minute reading may be above 55.00% and the 2-hour averages of 15-minute readings must be below 50.00%. The 2-hour averages begin at midnight and continue every 8 readings (i.e. 12 am to 1:45 am, 2:00 am to 3:45 am, etc.). If the instantaneous or averaged ratios are above the threshold then the water from the lagoon to the splitter box or the water from the secondary reservoir must be adjusted to establish a ratio below 50.00%.
- k. The weekly nitrate and nitrite levels at the entry point to the distribution system from the City's temporary DPR WTP must be below 10.0 mg/L and 1.0 mg/L, respectively. If the sample results show the nitrate level to be above 10.0 mg/L or the nitrite level to be more than 1.0 mg/L then the facility must be taken off line, inspected, and, if necessary, repaired. The City can only return the plant to service when the nitrate or nitrite levels are below the MCLs.
- l. The weekly *E. coli* concentration levels at the entry point to the distribution system from the DPR WTP must be zero (0) Colony Forming Units/Liter (CFU/L). If *E. coli* is present at the entry point, the facility must be shut down, inspected and, if necessary, repaired. The City must resample *E. coli* and receive a zero CFU/L concentration before the City's temporary DPR WTP can be returned to service.
- m. The twice monthly *Cryptosporidium*, *Giardia* and virus concentration levels at the entry point to the distribution system from the temporary DPR WTP must be non-detect based on a sample volume of at least 15 L and a "fast response" requested for the laboratory. If upon verbal notification from the laboratory, *Cryptosporidium*, *Giardia* or viruses are present at the entry point to distribution, the facility must be shut down, inspected and, if necessary, repaired. The City must resample *Cryptosporidium*, *Giardia* or virus and receive a non-detected concentration in 15 L of water and the Water Quality Task Force shall be convened to discuss the implications regarding community impacts. The Water Quality Task Force must recommend to TCEQ a return to service and TCEQ must also approve the recommendation before a return to service of the temporary DPR WTP.

NOTIFICATIONS

5. The City must notify the Technical Review and Oversight Team (MC-159) in writing when the City's temporary DPR WTP begins distributing treated water at:

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

6. Item No. 4, above, contains the conditions under which the City's temporary DPR WTP, or a particular treatment process, must be shut down. Table 1, below, shows the

conditions under which the City must notify their customers, their wholesale water customers, and the TCEQ of a plant or process shut down, or lack of shut down, due to noncompliance with an item in No.4. When the City notifies the TCEQ, the TCEQ may determine that the retail and/or wholesale customers need notification, even if that notification is not shown on Table 1.

TABLE 1: CITY TEMPORARY DPR WTP NOTIFICATION REQUIREMENT

Condition	Shutdown Requirement	Notify		
		Retail Customers	Wholesale Customers (PWSs)	TCEQ
4a. Treatment total below <i>Crypto</i> 5.5-log, <i>Giardia</i> 8-log, and virus 9- log	Entire Plant			✓ *
4b. Water bypasses a treatment unit	Entire Plant	✓	✓	✓
4c. Turbidity higher than 24 NTU at RRWWTP and no diversion of WW effluent	Water from RRWWTP	✓	✓	✓
4d. Monochloramine too low at RRWWTP and no diversion of WW effluent	Water from RRWWTP	✓	✓	✓
4e. <i>Crypto</i> , <i>Giardia</i> , virus above limits at RRWWTP	Entire Plant			✓ *
4f. <i>E. coli</i> at RRWWTP above 75 MFN/100 mL	Entire Plant			✓ *
4g. Failing a DIT and continuing to produce water	MF Unit	✓	✓	✓
4h. Having too little salt rejection on a RO unit and continuing to produce water	RO Unit	✓	✓	✓
4i. Nitrate above 10 mg/L at a RO unit effluent and continuing to produce water	RO Unit	✓	✓	✓
4j. Ratio above 55% for one reading or with a 2-hour average greater than 50.00%	Adjust pumps			✓ *
4k. Nitrate and nitrite above MCLs at entry point.	Entire Plant	✓	✓	✓
4l. <i>E. coli</i> above zero CFU/L at entry point	Entire Plant			✓ *
4m. <i>Crypto</i> , <i>Giardia</i> , virus above zero or non-detect at entry point	Entire Plant	✓	✓	✓

* When the City notifies the TCEQ, the TCEQ may determine that the retail and/or wholesale customers need notification, even if that notification is not shown above.

7. Public notice is required for specific situations as described in 30 TAC §290.122
8. If notification is required by Table 1, the TCEQ and the City's retail and wholesale customers must be contacted within 24 hours. The TCEQ shall be contacted by telephone at 1-888-777-3186 or by e-mail at PDWS@tceq.state.tx.us. Within five working days, the City must submit written notification to:

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

The written notification to TCEQ must include:

- a. A detailed description of the problem that required:
 - i. The RRWWTP effluent to be diverted from the temporary DPR WTP; or
 - ii. The City's temporary DPR WTP, or a particular treatment process, to be taken out of service;
- b. The corrective actions taken; and
- c. The quantity and duration of any unacceptable water discharged to the retail and wholesale customers.

OPERATIONAL REQUIREMENTS WITHOUT SHUTDOWN CONDITIONS

9. The City has chosen to achieve removal credits for *Cryptosporidium* and *Giardia* through the optimization of the granular media filters. To achieve the 1.0-log removal credit the facility must maintain the turbidity under the conditions set in 30 TAC §290.111(g)(1) (IFE readings less than or equal to 0.15 NTU) and §290.111(g)(2) (CFE readings less than or equal to 0.15 NTU). If the conditions of §290.111(g)(1) are not met then the facility cannot receive the additional 1.0-log removal credit for enhanced individual filter performance for the month. If the conditions of §290.111(g)(1) are not met, but those in §290.111(g)(2) are met, then the facility can receive 0.5-log of additional removal credit for enhanced combined filter effluent credit.
10. The City must provide an additional 1.0-log viral inactivation when using pre-formed chloramines (ammonia before chlorine) as a pre-disinfectant. Based on consultation with EPA Region 6 staff, the TCEQ has concluded that 1.0-log of additional viral inactivation will provide an equivalent safety factor to that provided when chlorination precedes ammonia addition. Therefore, using pre-formed chloramines will require at least 9.0-log of total viral removal and inactivation through the temporary DPR WTP.
11. The City must conduct conductivity measurements on individual RO pressure vessel to identify pressure vessels which should be investigated on an 8-hour basis. If necessary, based upon the conductivity readings being 20% over the daily average of the entire unit, the individual vessels must be repaired or replaced. No shutdown of units is necessary for this process control parameter.

12. The City has elected to use a Water Quality Task Force to communicate with health officials during the operation of the temporary DPR WTP. The Water Quality Task Force must be convened when the triggers for convening the Water Quality Task Force are reached. These triggers are described in section 11 of the City's final engineering report submitted to TCEQ on December 11, 2013 and the Alarm and Shut Down Triggers document submitted as part of the full scale verification test-2 report.
13. If the *E. coli* levels at the RRWWTP before the chlorine contact basin are above 15,000 CFU/100 mL, a sample of *Cryptosporidium* and *Giardia* must be collected and analyzed.
14. If the *E. coli* levels at the RRWWTP before the chlorine contact basin are above 30,000 CFU/100 mL the Water Quality Task Force shall convene to discuss the situation.
15. To assure the pipeline from the RRWWTP to the temporary DPR WTP is intact, the City shall inspect the pipeline for leaks or illegal taps at least once a day. If a leak or illegal tap is found, the leak or tap must be investigated and repaired/removed as necessary.
16. Because of concerns regarding the potential introduction of contamination into the Lake Kemp/Headquarters Road Reservoir raw water line, the 1961 SWTP and 1987 SWTP treatment equipment and associated clearwells and piping, the following conditions must be met:
 - a. The 2008 SWTP flow control vault's valve located on the Lake Kemp/Headquarters Road Reservoir pipeline must continue to remain closed at all times during the six-month temporary project. The City must take the following actions:
 - i. The valve and flow meter after the valve and before the tee must be inspected at least once during each eight-hour shift;
 - ii. If leaking of the RRWWTP effluent back into the Headquarters Road transmission pipeline is noted, immediate corrective actions must be taken to stop the leaking and prevent the exposure of the pipeline to the RRWWTP effluent; and
 - iii. The results of the eight-hour visual inspections and any corrective actions must be recorded, kept onsite, and made available to the TCEQ upon request.
 - b. The weir gates in the Cypress Splitter Box to the 1961 and 1987 SWTPs must be maintained closed and:
 - i. Visually inspected at least once during each eight-hour shift for leakage;
 - ii. If leaking from either of these two weir gates is noted, immediate corrective actions must be taken to stop the leaking and prevent the exposure of the 1961 and 1987 SWTPs' pretreatment facilities to the partially treated RRWWTP effluent;
 - iii. As proposed by the City in your July 29, 2013 email, the drain valve in the 1961 SWTP settling basin must be maintained open during the proposed six-month temporary project;

- iv. The drain valve in the 1987 SWTP Parshall flume must be maintained open during the proposed six-month temporary project; and
 - v. The results of the eight-hour visual inspections and any corrective actions must be recorded, kept onsite, and made available to the TCEQ upon request.
- 17. Operators having both a water and wastewater license may work in the temporary DPR WTP and the RRWWTP, but not during the same shift, to prevent the introduction of contaminants.
- 18. The temporary DPR WTP must have a Class B or higher Surface Water operator onsite when CIP procedures are being conducted on the MF and RO membrane units. A Class B operator must be available to respond to alarms and shut-downs caused by the automated control system.
- 19. A plant operations manual that meets the requirements of 30 TAC §290.42(l) must be kept on site and must be made available to TCEQ staff upon request. The manual shall include the procedures and contact information for the TCEQ and the receiving PWSs.
- 20. The Texas Pollutant Discharge Elimination System (TPDES) permit and 30 TAC Chapter 210 authorization of the City's RRWWTP must be current. For assistance, please contact TCEQ's Wastewater Permitting Section (MC 148) for information at (512) 239-2369.

START- UP REQUIREMENTS

- 21. The disinfection and start up plan for the 3, 5 and 10-MG ground storage tanks (GST) submitted to TCEQ on June 25, 2014 is generally acceptable. To place the 10 MG tank in service, the plan states that total coliform samples must be negative, chloramine levels must be adequate and other chemical/physical analysis performed on the water in the GST must be within normal ranges. In addition, TCEQ requested that the water in the 10-MG tank be tested for nitrate, nitrite, free ammonia, and monochloramine. The City provided TCEQ with the laboratory results of the bacteriological test and the chemical/physical analysis, and the results are included in Enclosure J. The laboratory results show the water in the 10-MG tank to meet all applicable standards and the water can be released to the distribution system.
- 22. The City must completely isolate the 10 MG, 5 MG, and 3 MG ground storage tanks (GSTs) at the Cypress WTP site by closing all of the 28 butterfly valves located that:
 - a. connect the 3 MG and 5 MG GSTs to the suction line for the Cypress 2010 high service pump station;
 - b. would allow water to flow back and forth between the three GSTs; and
 - c. connect the 2010 Clearwell to the Cypress 1961 or Cypress 1987 plants.The 3 and 5 MG tanks will be isolated during full scale operations and the disinfectant residual of the water in the tanks will be monitored periodically.
- 23. The City must contact each of the City's retail customers and wholesale public water systems (PWSs) that can receive the water from the City's temporary DPR WTP to

notify them of the new source water. The City has provided TCEQ a copy of the notice sent to customers.

MONITORING

24. The City must monitor and record the following for the temporary DPR WTP:

- a. All of the data and other information needed to complete the monthly reports for the temporary DPR WTP (Surface Water Monthly Operating Report (SWMOR)-Alt) and the Cypress 2010 plant (SWMOR).
- b. The *E. coli* concentration must be monitored immediately before the chlorine contact basin at the RRWWTP daily.
- c. Continuous turbidity monitoring of the RRWWTP effluent turbidity must be recorded every 15 minutes. The turbidity will be monitored before the chlorine contact basin.
- d. Continuous monochloramine residual monitoring of the RRWWTP effluent must be recorded at least every 15 minutes. The residual will be monitored before the chlorine contact basin.
- e. *E. coli* must be sampled each day in the RRWWTP effluent at the end of the chlorine contact basin, but before the transmission pipeline from the RRWWTP to the temporary DPR WTP.
- f. The City must conduct a DIT on each MF membrane unit to verify that the integrity of the MF membranes has not been compromised and the approved 2.8-log removal credit for *Cryptosporidium* oocysts and *Giardia* cysts is being continuously achieved. A DIT must be conducted on a MF membrane unit:
 - i. Once each calendar day for each unit in operation for any period of time during that day;
 - ii. If any MF membrane unit produces filtered water with a turbidity level above 0.100 NTU in two consecutive 5-minute readings;
 - iii. Before returning a MF membrane unit to service after failing an initial DIT and being repaired; and
 - iv. After each clean-in-place (CIP) procedure.
- g. Each DIT must meet the TCEQ requirements contained in its temporary DPR WTP DIT approval letter shown in Enclosure E.
- h. Continuous indirect integrity monitoring of each MF membrane unit's filtrate turbidity levels must be conducted using the Hach Model FilterTrak method 10133, or an approved alternative acceptable to the TCEQ. The results must be recorded every five minutes.
- i. The nitrate levels must be measured and recorded every eight hours at the effluent of each active RO unit.
- j. The performance of the on-line RO units shall be monitored three times a day by a conductivity or TDS meter. The feed and permeate conductivity or TDS shall be

- monitored three times a day. The average of the three salt rejections found for each RO unit shall be calculated each day that the RO unit is used.
- k. The performance of the individual pressure vessels in the RO units shall be monitored for conductivity once per eight-hour shift.
 - l. The ratio of the partially treated RRWWTP effluent from Waste Lagoon No. 3 to the Secondary Reservoir raw surface water must be determined and recorded every 15 minutes. The highest instantaneous 15-minute ratio for the day must be reported each month. The two-hour averages must also be reported if the maximum daily 15-minute instantaneous ratio is above 50.00%.
 - m. The percent of the total capacity of the Cypress 10 million gallon (MG) storage tank must be recorded every two hours. Any percentage less than 50% full, and the duration, must be reported monthly.
 - n. The nitrate and nitrite levels must be measured and recorded weekly at the entry point to the distribution system from the City's temporary DPR WTP.
 - o. The *E. coli* concentration must be monitored weekly at the entry point to the distribution system from the temporary DPR WTP.
 - p. *Cryptosporidium* and *Giardia* sampling must be performed once a month (normal turn-around) at the RRWWTP effluent and two times per month (Fast Response) at the entry point to the distribution system from the temporary DPR WTP using EPA method 1623. *Cryptosporidium* analysis must be performed by a laboratory approved by EPA for *Cryptosporidium* analysis. One entry point sample per month must be collected and must be delayed by the approximate detention time that it takes the water to travel to the entry point sampling location from the RRWWTP effluent sampling plant. This delay will help to be able to establish the removal efficiency provided by the temporary DPR WTP.
 - q. Virus sampling must be performed once a month at the RRWWTP effluent and two times per month at the entry point to the distribution system from the temporary DPR WTP using EPA method 1615. One entry point sample per month must be collected and must be delayed by the approximate detention time that it takes the water to travel to the entry point sampling location from the RRWWTP effluent sampling plant. This delay will help to be able to establish the removal efficiency provided by the temporary DPR WTP. Please note that during the verification testing process a subset of the EPA 1615 method was required, specifically total culturable viruses. During full scale operation, all of the results generated through EPA 1615 must be determined and submitted.
25. All monitoring required as a condition of this exception must be conducted using methods that conform to the requirements of 30 TAC §290.119. If alternative methods are preferred, reasonable field methods can be approved by the TCEQ.
26. The City must continue using the approved amperometric method to measure the chlorine dioxide residuals at the disinfection zone D1A, D1B, D1C sampling points of the 2010 Cypress SWTP as well as at the entry point to the distribution system. However,

chlorine dioxide samples collected in the distribution system, if necessary, may be analyzed using the colorimetric method and a colorimeter in the field

27. To obtain inactivation credit for the disinfection in the temporary DPR WTP, the operators must monitor specific disinfectants.
 - a. The operators must continue to measure and use monochloramine, instead of total chlorine, residuals at the end of disinfection zones D1, D2, and D3 at the temporary DPR WTP; and
 - b. The operators must also continue to measure total chlorine residuals in disinfection zones D4 and D5 of the temporary DPR WTP using an approved total chlorine method.
28. The free ammonia, total chlorine and monochloramine levels must be monitored at each chloramine injection point, the end of each disinfection zone, and the entry point to the distribution system from the temporary DPR WTP one time per week. See Enclosure F: Updated Use of Chloramines Exception Letter for more details.
29. The TCEQ has received chemical analytical results from the temporary DPR WTP's verification testing. Based on these results, the TCEQ will require quarterly sampling for all regulated compounds in 30 TAC 290 Subchapter F for the life of the temporary DPR WTP.
30. The City must monitor for cyanide quarterly at the entry point to the distribution system.
31. The TCEQ recommends that the City monitor the RRWWTP's effluent and the entry point to the distribution system from the City's temporary DPR WTP for the potential chemical and microbiological contaminants of concern contained in Enclosure G: Unregulated Contaminants of Concern on a quarterly basis.
32. The City must provide the results of any sampling performed under the EPA's Unregulated Contaminant Monitoring Rule –3 (UCMR3) to the TCEQ within two weeks of receiving those results.
33. Before water from the temporary DPR WTP enters the distribution system, all shut-down controls and alarms for summoning the operators must be tested. The testing must be repeated every three months. Documentation of the testing procedure and results shall be kept on site to be reviewed by TCEQ staff during site visits. The alarms and shut down controls are for taking:
 - a. the RRWWTP effluent transfer pumps (to the Cypress facility) out of service when the effluent exceeds 24 NTU;
 - b. the RRWWTP effluent transfer pumps (to the Cypress facility) out of service when the effluent has inadequate monochloramine residual(below 1.0 mg/L when temperatures are above 16°C and below 1.5 mg/L when the temperature is at or below 16°C);
 - c. a MF membrane unit out of service when its filtrate turbidity level is greater than 0.100 NTU for two consecutive five-minute readings;

- d. action to reduce the output of the permeate transfer pumps at Waste Lagoon No. 3 when the flow rate from Lagoon No. 3 is greater than the Secondary Reservoir's raw surface water flow rate to the Cypress Splitter Box; and
- e. a gravity media filter out of service when the individual filter effluent turbidity level exceeds 0.3 NTU for two consecutive 15-minute readings.

DESIGN REQUIREMENTS

34. The following temporary piping modifications at the Cypress Water Treatment Plant that were approved for construction in TCEQ's letter dated January 22, 2014 and as-built modifications approved by TCEQ's letter dated May 12, 2014 to eliminate common walls and cross connections as indicated below must remain as part of the City's temporary DPR WTP:
- a. Connection No. 1- modifications included cutting and removing a portion of pipe to provide an air gap on the connection from Lagoon No. 2 to the reuse Pump Station and include modifications at the Filter-to-Waste Pump Station with the removal of the Flange Coupling Adaptor and modifications at the Reuse Pump Station with the removal of a portion of pipe to provide an air gap at the 12-inch filter-to- waste waterline connection;
 - b. Connections No. 2 and No. 3- approximately 3,800 linear feet (l.f) of proposed temporary 36-inch above-ground high density polyethylene (HDPE) waterline to divert the 2008 SWTP RO permeate to existing storage Lagoon No. 3 with a nine-inch vertical separation between the bottom of the pipe and the top of the lagoon's berm; this includes the blind flange of the existing 36" line;
 - c. Connections No. 8 and No. 9- approximately 2,100 linear feet of a temporary 18-inch HDPE above-ground waterline from the Lagoon Valve Vault, located north of Lagoon No. 2 to an existing 20-inch brine line that ultimately discharges to the Wichita River; and
 - d. Connection No. 6- modifications at the Backwash Valve Vault with the removal of the Flange Coupling Adaptor and closing of the 24-inch valve to isolate the 1961/1987 backwash lines.
35. The following temporary piping modifications are approved for construction for the City's temporary DPR WTP:
- a. Connections No. 4 and No. 5-reconnection of the 2010 transfer pumps to the 10-MG ground storage tank (GST) and backwash supply to the high service pumps; and
 - b. To close the valves as indicated on map supplied by the City to TCEQ on June 26, 2014 to isolate the 3.0-MG, 5.0-MG GSTs from the 10-MG ground storage tank (GST) and the high service pumps.
36. The City must notify TCEQ prior to making any change in water source, (increase or decrease) in production, treatment, and storage facilities, disinfection (disinfectant method/type used, application points, or monitoring points), replacement of membranes (MF or RO), blending ratio, or any additional treatment processes as described in 30 TAC §290.39(j).

37. All waste discharge must be in accordance with federal and state requirements as described in 30 TAC §290.42(i). You may contact TCEQ's Wastewater Permitting Section (MC 148) regarding information required for the proper disposal of generated waste (such as RO membrane reject, clean in place (CIP) cleaning solutions, etc.) and any required discharge permit at (512) 239-2369.
38. The City must continue to use the MF membrane system with Siemens Memcor (previously distributed by USFilter) S10V MF membrane modules for which an exception was previously granted and for which the City received TCEQ approval to construct on August 19, 2004. This system has the following design and operating requirements:
 - a. A feed-side surface area of 300 square-feet (sf);
 - b. A nominal pore size of 0.2-micron;
 - c. Maximum transmembrane pressure (TMP) of -12 pounds per square-inch (psi);
 - d. Water temperature range of 10 to 40 °C;
 - e. pH tolerance range of 2 to 12;
 - f. Five tanks containing 504 submerged MF membrane elements;
 - g. A maximum instantaneous flux rate of 19.6 gallons per square-foot per day (gfd) at 20 °C;
 - h. A three-minute backwash duration (nine minutes out of service) once every 30 minutes of run-time;
 - i. A 32-minute maintenance clean (45 minutes out of service) once per 24 hours of run-time; and
 - j. A CIP procedure once every 720 hours of run-time.
39. The 2.8-log removal credits for the MF membrane units that were approved in the TCEQ letter dated November 6, 2013 are approved for the duration of the temporary DPR project.
40. The temporary exception to use RO membranes for the removal of chemical contaminants is only for the eight-inch diameter by 40-inch long Hydranautics RO elements currently installed, which previously received an exception and approval to construct, based on:
 - a. Six RO units/skids with two-stages per unit; and
 - b. Operated at a maximum permeate flux rate of 14.9 gfd (average of the two stages flux rates).
41. The City may not recycle sludge blowdown, spent backwash water, or other recycle streams without the prior written approval of the TCEQ. If recycle return is desired in the future, please contact the TCEQ Technical Review & Oversight Team (MC 159) at the following address:

TCEQ Technical Review & Oversight Team (MC 159)
Texas Commission on Environmental Quality

P.O. Box 13087
Austin, Texas 78711-3087

42. All treatment chemicals and media used in the full-scale facility must conform to American National Standard Institute/National Sanitation Foundation (ANSI/NSF) Standard 60 for direct additives and ANSI/NSF Standard 61 for indirect additives and must be certified by an organization accredited by ANSI as described in 30 TAC §290.42(j). This includes dechlorination compounds, disinfectants, anti-scalants, anti-foulants, acids, caustics, other membrane cleaning chemicals, and all other compounds used to treat the RRWWTP effluent.
43. Flow measuring devices will be required on the RRWWTP effluent transmission line, the feed to each HF MF membrane unit, the HF MF membrane backwash supply, the combined HF MF membrane filtrate, RO concentrate, in addition to those described in 30 TAC §290.42(d)(5).
44. The City's temporary DPR WTP must be designed to conduct and record continuous turbidity monitoring of the RRWWTP effluent.
45. The RO membrane system must be designed to measure and record conductivity or TDS on each RO membrane unit's feed and permeate lines.
46. The MF and RO membrane systems must be designed so that the membrane units' feed water, filtrate, backwash supply, waste, and chemical cleaning piping shall have cross-connection protection to prevent chemicals from all chemical cleaning processes from contaminating other membrane units' filtrate and permeate in other modes of operations. This may be accomplished by the installation of a double block and bleed valve arrangement, a removable spool system, or other alternative method approved by the TCEQ.
47. The City's temporary DPR WTP source water must receive the same pretreatment, at a minimum, under full-scale operation as received during the full scale verification study. The treatment is provided at the RRWWTP and is as follows: Raw wastewater is first screened and de-gritted, then flows to a primary clarification. Primary effluent then proceeds to aeration basins for biological treatment. The contents of the aeration basins flow to the final clarifiers, where the active biomass settled from the treated effluent is returned to the aeration basin. The effluent is then chlorinated and after sufficient detention time, the effluent containing a monochloramine residual is the source water for the temporary DPR WTP.
48. An adequately equipped laboratory must be available so that daily tests and all other tests required by the conditions of this letter may be performed.

CALIBRATION

49. Conductivity meters used to monitor the RO membrane units' permeate shall be calibrated with solutions of known concentrations at least once every 90 days.

50. Flow measuring devices and rate-of-flow controllers shall be calibrated at least once every 12 months. The accuracy of magnetic flow meters shall be verified at least once every 12 months and calibrated if needed.
51. Pressure monitors used for DIT measurements shall be calibrated or verified at least once every 12 months.
52. Instruments used to monitor nitrate and nitrite shall be calibrated or verified at least once every 12 months.

REPORTING

53. The City's temporary DPR WTP must submit the completed SWMOR and SWMOR-Alt report and other reports listed in the reporting section of this enclosure to the TCEQ by the tenth day of the month following the end of the reporting period. Send the reports to:

TCEQ Drinking Water Quality Team, (MC-155)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

54. To accurately describe the treatment processes at the temporary DPR WTP, please use the Demonstration of Performance fields on the LT2- Summary page of the SWMOR-alt to allow the plant to gain a 0.5 log removal credit for the second flocculation and clarification unit process.
55. An addendum to the SWMORs containing the following information must be submitted at the same time.
 - a. The highest daily turbidity level in the RRWWTP effluent;
 - b. If water is diverted from the temporary DPR WTP pipeline due to high turbidity, the amount (in gallons) and duration (in minutes) of the diversion;
 - c. The lowest daily monochloramine level in the RRWWTP effluent (before the chlorine contact basin);
 - d. If water is diverted from the temporary DPR WTP pipeline due to low monochloramine levels, the amount (in gallons) and duration (in minutes) of the diversion;
 - e. The *Giardia*, *Cryptosporidium* and virus results from the monthly sampling at the RRWWTP effluent;
 - f. The daily *E. coli* results from the RRWWTP effluent;
 - g. If any of the pathogen concentrations in items 55e and 55f are over the action limits, then also provide a report indicating the time the plant was shut down, the corrective action taken, and the samples that showed the facility could produce safe water again;
 - h. The date that any CIP that had been performed on a RO membrane unit;
 - i. The total daily flow to each of the RO membrane units;

- j. Both the average daily and monthly average salt rejection for each active RO membrane unit;
 - k. If any RO unit does not meet the salt rejection action levels, then also report, the duration of time the RO unit was out of service, the corrective actions taken and the results of the lab tests that show the unit can be returned to service;
 - l. The highest nitrate results found in each of the active RO unit effluent each day;
 - m. The action taken if the nitrate results were higher than the action level;.
 - n. The highest daily 15-minute instantaneous maximum ratio of partially treated RRWWTP effluent to lake water;
 - o. If the highest daily 15-minute instantaneous maximum ratio is greater than 50.00% also include the 2-hour averages of the ratio. For example, the averages from 12:01 am to 2:00 am; 2:01 am to 4:00 am, etc.;
 - p. If the average ratios were over 50.00%, or the instantaneous ratio was over 55.00% then the duration the membrane and RO plant were off-line, the corrective actions taken and the ratio that was achieved when the plant was put back on line;
 - q. The minimum operational level each day of the Cypress 10 MG Storage Tank expressed as percentage full;
 - r. The nitrate and nitrite results found at the entry point to the distribution system from the temporary DPR WTP effluent each week;
 - s. If the nitrate or nitrite concentrations at the entry point to the distribution system from the temporary DPR WTP are above the MCLs, then report the duration the temporary DPR WTP was off-line, the corrective actions taken and the nitrate and/or nitrite results found before the plant was put back on line;
 - t. The weekly *E. coli* concentration at the entry point to the distribution system from the temporary DPR WTP;
 - u. The twice monthly *Cryptosporidium*, *Giardia*, and virus sample results at the entry point to the distribution system from the temporary DPR WTP; and
 - v. If any of the pathogens in items in 55t and 55u are detected, then also report the time the plant was shut down, the corrective action taken, and the samples that showed the facility could produce safe water again;
56. The City shall record the daily and monthly data required in the reporting section of this Enclosure using the customized, site-specific version of the Surface Water Monthly Operating Report (SWMOR-Alt, form number 00102D) that the TCEQ created for the temporary DPR project.
57. The TCEQ will require the reclaimed wastewater to be identified as a raw water source on the Consumer Confidence Report (CCR) for this and any wholesale customer using water from the temporary DPR WTP.
58. The City must report to TCEQ as described in Table 1. If required, the City must contact the TCEQ within 24 hours by telephone at 1-888-777-3186 or by e-mail at pdws@tceq.state.tx.us, and immediately notify all retail customers and wholesale PWS customers. Within five working days, submit written notification to the address below

regarding the problem that required the City's temporary DPR WTP, or part of the WTP, to be taken out of service, the corrective actions taken, and the quantity of any unacceptable water discharged:

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

RECORD RETENTION

59. The City must retain this letter while the exception is valid and subsequently for at least five years after the exception is no longer valid.
60. The following records must be retained for at least ten years:
- a. A copy of the submitted SWMORs for the temporary DPR WTP and the 2010 Cypress plant;
 - b. The highest daily confirmed turbidity level in the wastewater effluent;
 - c. The lowest daily monochloramine level in the RRWWTP effluent (before the chlorine contact basin);
 - d. The *Giardia*, *Cryptosporidium* and virus results from the monthly sampling at the RRWWTP effluent;
 - e. The daily *E. coli* results from the RRWWTP effluent;
 - f. Any CIP that has been performed on a RO membrane unit;
 - g. The total daily flow to each of the RO membrane units;
 - h. The average daily and monthly average salt rejection for each RO membrane unit;
 - i. The nitrate results found in each of the active RO unit effluent each day;
 - j. The highest daily 15-minute instantaneous maximum ratio of partially treated RRWWTP effluent to lake water;
 - k. If the daily 15-minute instantaneous maximum ratio is greater than 50.00% also include the 2-hour averages of the ratio. For example 12:01 am to 2:00 am; 2:01 am to 4:00 am, etc.;
 - l. The daily minimum operation level in the Cypress 10 MG Storage Tank expressed as percentage;
 - m. The nitrate and nitrite results found at the entry point to the distribution system from the temporary DPR WTP each week;
 - n. The weekly *E. coli* concentration at the entry point to the distribution system from the City's temporary DPR WTP;
 - o. The twice monthly *Cryptosporidium* or *Giardia* sample results at the entry point to the distribution system from the City's temporary DPR WTP;
 - p. The highest daily confirmed conductivity or total dissolved solids for each RO membrane unit; and

- q. The results of all chemical analyses.

MF MEMBRANE FORMULA

61. The following formula shall be used to determine filtrate flux:

$$\text{filtrate flux}_{\text{at feed water temperature}} = \frac{(\text{filtrate flux}_{\text{at } 20^{\circ}\text{C}})}{[1.784 - (0.0757 * T) + (0.0011 * T^2) - (10^{-5} * T^3)]}$$

Where T is the HF MF membranes' feed water temperature in degrees centigrade, and filtrate flux at 20°C is 19.6 gfd.

DECOMMISSIONING OR MODIFYING THE TEMPORARY DPR WTP

62. After the temporary DPR WTP is no longer treating RRWWTP effluent, the City may not return the Cypress 2008 MF/RO WTP and the Cypress 2010 WTP to their traditional source waters and operational practices without the prior written approval of the TCEQ.
63. The City may not change the source water for the temporary DPR WTP or the Cypress 2010 WTP plants without prior written approval of the TCEQ.
64. At least 30 days before the conclusion of the temporary DPR project, the City must prepare and submit a sealed engineering report describing the plan for converting the plants back to untreated surface water. The proposal must describe in detail how the City will:
- a. decommission the temporary wastewater effluent line from the RRWWTP;
 - b. flush and disinfect the raw water line from Lake Kemp;
 - c. ensure that all of the treatment units and equipment at the two plants have been cleaned, disinfected, and show no evidence of contamination by RRWWTP effluent;
 - d. transition back to the original piping configurations at the Cypress 2010 WTP; and
 - e. prepare to reactivate the facilities at the Cypress 1961 and the Cypress 1987 WTPs.