



Stage 2 Disinfectants and Disinfection Byproducts Rule Operational Evaluation Level (OEL) Report for Surface Water System

PWS Name: _____ PWS ID: OK _____

I certify that the information in this entire report, including any attachments, is true and accurate to the best of my knowledge.

Signature: _____ Date: _____

Printed Name: _____ License Number: _____

Contact Phone Number: _____ County: _____

Send the completed report to DEQ **no later than 90 days after being notified** of the analytical results that caused you to exceed the operational evaluation level. Explanations may need additional documentation. If you have questions regarding the OEL Report, please contact the PWS Compliance Coordinator at (405) 702-8100 or drinkingwater@deq.ok.gov.

Mail form to:	Fax form to:	Email form to:
PWS Compliance DEQ WQD P.O. Box 1677 OKC, OK 73101-1677	405-702-8101 Attn: PWS Compliance	Drinkingwater@deq.ok.gov Subject Line: OEL Report

Acronyms

DBP= Disinfectant By-Products PWS= Public Water Supply TOC= Total Organic Carbon

Section A: Source

- What is your source(s) of water? _____
- Does your system have a source water protection plan? ☐ Yes ☐ No ☐ Don't Know
If yes, when was the last time it was updated? _____
- What potential sources of organic contamination were identified in your source water protection plan?
☐ Abandoned oil/gas well ☐ Abandoned water well ☐ Agricultural practices ☐ Fertilizer/pesticide
☐ Wastewater facility-public or private ☐ Other _____
- Have any of the following events affected your source(s) during the three months prior to the last DBP sampling?
Mark all that may apply and provide detailed information.
☐ Drought- What was the change in the water level? _____
Was there a water restriction due to the drought? _____
☐ Excess rainfall- What was the change in the water level? _____
Were there any problems due to excess rainfall? _____
☐ Algae bloom- Did you add chemicals at the lake or water treatment plant to address the bloom? _____
☐ Fire- How close to the lake was the fire? _____
☐ Other- _____
- Please identify the type of intake: ☐ Fixed-single level ☐ Fixed-multi level ☐ Floating/Moveable
- Did you have any problems at the intake pump? _____
- Have you tested different intake levels to determine the optimal withdrawal level for minimizing raw water TOC?
☐ Yes ☐ No What is the optimum level? _____
- Did you notice an ☐ increase or ☐ decrease in the pump rate during the three months prior to the last DBP sampling?
- Are you testing for turbidity, temperature, pH and alkalinity at the source? ☐ Yes ☐ No If yes, fill out the table with the average of the tests performed during the three months prior to the last DBP sampling or attach sample logs.

Test	1 st Month of Quarter	Average	2 nd Month of Quarter	Average	3 rd Month of Quarter	Average
Turbidity						
Temperature						
pH						
Alkalinity						

Section B: Water Treatment Plant(s)

1. Check all that apply to your plant and provide information:

- ☐ Sedimentation Basins: The water plant has how many sedimentation basins? _____ Detention Time _____
How often are the basins cleaned? _____ When was the last time they were cleaned? _____
Any recent problems? _____
- ☐ Chemical Feed/ Rapid Mix
What chemicals do you add at the plant? _____
Are these chemicals added to address your DBPs formation/TOC removal? ☐ Yes ☐ No ☐ Don't Know
Were there problems with the chemical feed during the three months prior to the last DBP sampling? ☐ Yes ☐ No
If yes, describe _____
- ☐ Clarifiers
How many clarifiers does the plant have? ____ What kind of clarifiers? _____ Detention Time _____
How often are the clarifiers cleaned? _____ When was the last time they were cleaned? _____
Any recent problems? _____
- ☐ Filters: How many filters does the plant have? _____ What kind of filter(s)? _____
What kind of media? ☐ Single, ☐ dual, or ☐ multi What is the surface area of the filter(s)? _____
Does the filter include a layer of GAC? ☐ Yes ☐ No ☐ Don't Know
What is the designed flow rate of the filters? _____ What is the average or max flow rate? _____
How often are the filters backwashed? _____ When was the filter media last replaced? _____
Any recent problems? _____
- ☐ Clearwell: How many clearwells does the plant have? _____ What are their storage capacities? _____
What is the orientation and height of the inlet and outlet pipe(s)? _____
Are they baffled? ☐ Yes ☐ No ☐ Don't Know
When were the clearwells last cleaned? _____
- Please list any other treatment processes that have not already been covered and/or any other maintenance issues.
- _____
- _____

2. Have you made any changes to the disinfectant (chlorine, chlorine dioxide or chloramines) during the three months prior to the last DBP sampling? _____
3. Is the water plant in compliance with TOC removal ratio? ☐ Yes ☐ No If no, what are you doing to meet the treatment requirements? _____
4. Is the finished TOC sample being taken before your effluent turbidity meter? ☐ Yes ☐ No ☐ Don't Know
5. Did you recycle water from the backwash pond? ☐ Yes ☐ No ☐ Don't Know
If yes, what was the percentage of recycled water used? _____ ☐ Don't Know
6. Are you testing for turbidity, temperature, chlorine, pH, and alkalinity at the water plant? ☐ Yes ☐ No If yes, fill out the table with the average of the tests performed during the three months prior to the last DBP sampling or attach sample logs:

Test	1 st Month of Quarter	Average	2 nd Month of Quarter	Average	3 rd Month of Quarter	Average
Turbidity						
Temperature						
chlorine						
pH						
Alkalinity						

*Identify the month associated with the average.

7. At your water treatment plant, have you done any the following?
 - a. Consider eliminating pre-filter chlorination. ☐ Yes ☐ No
 - b. Identify and implement a chemical coagulation process that maximizes TOC removal. ☐ Yes ☐ No
 - i. Conduct jar tests to determine the most effective coagulant dose. ☐ Yes ☐ No
 - ii. Find the optimum pH range for organics removal. ☐ Yes ☐ No
 - c. Investigate the use of enhanced coagulation or lime softening to reduce the formation potential of DBPs. ☐ Yes ☐ No
 - d. Conduct regular water quality parameter testing in the distribution system to monitor the effects of enhanced treatment on finished water. ☐ Yes ☐ No
 - e. Consider adjusting pH to reduce formation of TTHMs or HAA5s. ☐ Yes ☐ No
 - f. Consider use of oxidants, other than free chlorine, that could reduce TOC. ☐ Yes ☐ No
 - g. Verify the water treatment plant is operating within its designed capacity. ☐ Yes ☐ No
 - h. Consider operating the plant 24 hours per day, if it is not already. ☐ Yes ☐ No
 - i. Measure and assess the effectiveness of the sedimentation and filtration processes by measuring the TOC before and after each process. ☐ Yes ☐ No (DEQ can assist with this testing with the TOC analyzer.)
 - j. Reduce or eliminate filter backwash recycling to the headwork of the plant. ☐ Yes ☐ No
 - k. Evaluate if the waste treatment has adequate capacity to stop recycling. ☐ Yes ☐ No
 - l. Test for TOC, TTHMs and HAA5s in recycled water. ☐ Yes ☐ No
 - m. Adjust the disinfectant dose to limit the DBP formation potential, while still meeting regulatory contact time (CT) and residual requirements. ☐ Yes ☐ No
 - n. Evaluate the minimum chlorine required to meet CT requirements. ☐ Yes ☐ No
 - o. If less than 1 ppm leaving the plant, the PWS can document that inactivation requirements are met per OAC 252:631-3-3(a)(1) and leave with a lower residual (at least 0.2 ppm).
 - p. Consider using an approved alternative disinfectant (chlorine dioxide, ozone, UV) in the treatment process for CT and only using free chlorine to meet the required residual in distribution. ☐ Yes ☐ No
 - q. Consider the addition of free chlorine before and after the clearwell to minimize the amount of chlorine added into the clearwell (enough to meet CT) and boost chlorine exiting the clearwell. ☐ Yes ☐ No

Section C: Waterlines

1. How many miles of waterlines make up your system? _____ ☐ Don't Know
2. What is the approximate distance between the point of entry and farthest point in the system? _____
3. What is the current water loss of your system? _____ ☐ Don't Know
4. What is the age of the waterlines? Newest: _____ Oldest: _____
5. What type(s) of materials make up your system's waterlines? _____
6. During the three months prior to the last DBP sampling, did you add any new waterlines or meters? ☐ Yes ☐ No
If yes, how much or many? _____
7. Was there an ☐ increase or ☐ decrease in water demand during the three months prior to the last DBP sampling?
Do you know the cause of the change? _____
8. How many waterline breaks did your system have during the three months prior to the last DBP sampling? _____
9. Did any of those waterline breaks cause a loss of water pressure (below 25 psi)? ☐ Yes ☐ No ☐ Don't Know
If yes, for how long? _____
Did you receive any dirty water complaints after the loss of water pressure? ☐ Yes ☐ No ☐ Don't Know
10. When is the last time you flushed all of your system's dead ends? _____ ☐ Don't Know
11. When is the last time you performed a system wide unidirectional flushing? _____ ☐ Don't Know
Attach copy of flush log.
11. How many deadends does your system have? _____ ☐ Don't Know
12. How many deadends have flush valves? _____ ☐ Don't Know
13. Does your system add chemicals to coat or clean waterlines? ☐ Yes ☐ No ☐ Don't Know
If yes, name of chemical(s) _____

Section D: Testing Within the Distribution System

1. Are you testing for TTHMs or HAA5s at other locations beside what is required for compliance? ☐ Yes ☐ No
If yes, please list recent results, dates, and general locations in the system: _____
2. Are you testing for chlorine residual, temperature, pH and alkalinity in the distribution system? ☐ Yes ☐ No If yes, fill out the table or attach sample logs.

Test	Date	Beginning	Middle	End
Chlorine residual				
Temperature				
pH				
Alkalinity				

*Please include sample results from the same day at different parts of the distribution system so that the results can be compared.

3. Are you tracking water age? ☐ Yes ☐ No
If yes, what was the average water age at the farthest point in the system during the three months prior to the last DBP sampling? _____

Section E: Chlorine Booster Station

1. Does your system have a chlorine booster station in the distribution system? ☐ Yes ☐ No
If no, please skip to section F. If yes, how many? _____ Any recent addition? ☐ Yes ☐ No
2. On average, what was the chlorine residual before the booster station(s)? _____ mg/L ☐ Free or ☐ Total
On average, what was the chlorine residual after the booster station(s)? _____ mg/L ☐ Free or ☐ Total
3. Did you test for DBPs directly before and after the booster station(s)? ☐ Yes ☐ No If yes, what was the result before the station _____ and after the station _____
4. Did you need to ☐ increase or ☐ decrease the amount of chlorine being added during the three months prior to the last DBP sampling?

Section F: Finished Water Storage

1. Does your system have finished water storage in the distribution system? ☐ Yes ☐ No
If no, please skip the following section. If yes, how many? _____ Any recent addition? ☐ Yes ☐ No
2. Please provide information about each finished water storage(s):

Tower Name	Date of Last Inspection	Date of Last Cleaning	Single Inlet/Outlet pipe	Drained Recently?	Tower height or Storage capacity	Is there aeration or mixing?
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No

3. Did you test for DBPs before or after the finished water storage(s)? ☐ Yes ☐ No If yes, what were the results before _____ or after _____

Section G: Groundwater Wells

1. Does your system have groundwater well(s)? ☐ Yes ☐ No
If no, please skip to section H. If yes, how many? _____ Any recent addition? ☐ Yes ☐ No
2. Does your system have a Wellhead Protection Plan? ☐ Yes ☐ No When was it last updated? _____
3. What is the name of the aquifer the well(s) pull from? _____ ☐ Don't Know
4. Were there problems with the well(s) due to weather changes during the three months prior to the last DBP sampling? ☐ Yes ☐ No If yes, what? _____
5. Was there an ☐ increase or ☐ decrease in the well(s) pump rate? Why? _____
6. What potential sources of organic contamination were identified in your wellhead protection plan? _____

7. Fill out the following table with information about each well:

Well Name	Age (Yrs.)	Depth	Cl2 Added	Construction Defects
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	

Section H: Alternative Treatment

1. Does your system have other treatment processes, which were not covered in previous sections? ☐ Yes ☐ No.
If yes, please list the type: _____

Section I: Minimizing Future DBP Formation and Returning to Compliance

1. What is your system's plan to decrease DBP formation and return to compliance? _____

Section J: Communication

1. Since your PWS exceedance, has your PWS communicated with your purchase water systems about any of following topics (list the PWSs and when):
 - a. Sampling Methods or Schedules _____
 - b. System-wide unilateral flushing _____
 - c. Disinfectant levels in distribution system _____
 - d. Current problems within your system _____

Section K: Technical Assistance

Do you need technical assistance from DEQ for any of the following:

- | | | |
|---|---|---|
| <input type="checkbox"/> Disinfectant Control/ Monitoring | <input type="checkbox"/> TOC Removal/ Treatment Plant | <input type="checkbox"/> Storage Tank Maintenance |
| <input type="checkbox"/> Flushing Program | <input type="checkbox"/> Financial/ Rate Analysis | <input type="checkbox"/> Sample Point/Schedule |
| <input type="checkbox"/> Water Age | <input type="checkbox"/> Asset Management | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> O & M Plan Development | <input type="checkbox"/> Source Water Protection Plan Development | |