

ESSENTIALS OF SURFACE WATER TREATMENT TRAINING

Exercise #6: Filling out the monthly surface water report

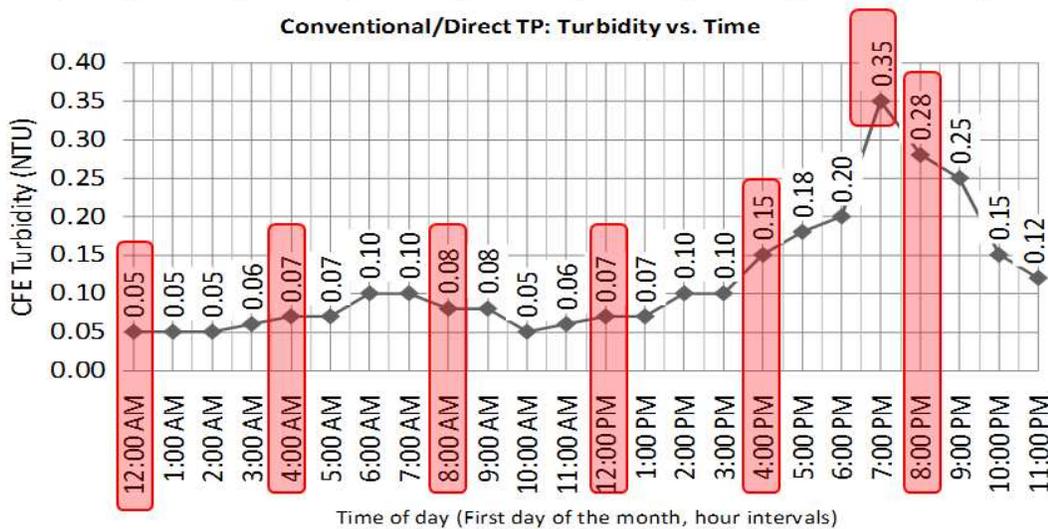
Example #1: Conventional or direct filter plant

Turbidity

1. Use the data in the graph to record the 4-hour daily turbidities on the first day of the month of the Conventional/Direct Filtration monthly reporting form.

2. What number should be entered in the “Highest Reading of the Day (NTU)” column? **0.35 NTU**

DAY	12 AM [NTU]	4 AM [NTU]	8 AM [NTU]	NOON [NTU]	4 PM [NTU]	8 PM [NTU]	Highest Reading of the Day ¹ [NTU]
1	0.05	0.07	0.08	0.07	0.15	0.28	0.35



3. Let’s say your plant runs 24 hours a day and you have turbidity readings filled in for every 4-hour interval for all 31 days of the month. How many readings could you have that were > 0.3 NTU?

(Hint: 95% of readings must be ≤ 0.3 NTU) **9**

(6 readings/day x 31 days = 186 readings total. 5% x 186 = 9.3)

4. What should you do if you answer “no” to the turbidity question “All readings ≤ 1 NTU?” on the bottom of the form? **a**

- Call the state
- Issue a boil water notice
- Issue a public notice within 30 days
- Both a & c

5. What should you do if you answer “no” to the turbidity question “All readings < IFE triggers?” on the bottom of the form? **a**

- Call the state
- Issue a boil water notice
- Issue a public notice within 30 days
- Both a & c

(Over)

CT Calculations (assume 2.5-log conventional plant)

- Use the following parameters to calculate the CTs achieved at the plant and fill it in on the form on first day of the month:
 - Free chlorine residual: 0.6 ppm
 - Contact time: 100 minutes
- Use the following parameters to calculate the CTs required using the EPA tables from Exercise 5 and fill it in on the form:
 - Temp: 12°C
 - pH: 7.2

Date / Time	Minimum Cl ₂ Residual at 1 st User (C) [ppm or mg/L]	Contact Time (T) [min]	Actual CT C X T	Temp [° C]	pH	Required CT	CT Met? Yes / No	Peak Hourly Demand Flow [GPM]
1 /	0.6	100	60	12	7.2	21	Yes	2000

- Are CTs met at the plant for this day? **Yes - CT achieved (60) is > CT required (21)**
- Let's say the Peak Hourly Demand Flow for the day was 2000 gpm. If the Peak Hourly Demand Flow during the tracer study was 1750 gpm, is this a problem? Why or why not? **Yes this is a problem – flow cannot exceed 10% of tracer study flow. 10% x 1750 gpm = 175 gpm. 1750 + 175 = 1925 gpm. Therefore flow cannot be >1925 gpm or else a new tracer study is needed.**
- What should you do if you answer “no” to either of the CT questions on the turbidity side of form?
 - “CTs met at all times?” **a**
 - Call the state
 - Issue a boil water notice
 - Issue a public notice within 30 days
 - Both a & c
 - “Residual at EP \geq 0.2 ppm at all times?” **a**
 - Call the state
 - Issue a boil water notice
 - Issue a public notice within 30 days
 - Both a & c

**OHA - Drinking Water Program – Turbidity Monitoring Report Form County:
Conventional or Direct Filtration**

System Name:	ID #:	WTP-:	Month/Year:
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DAY	12 AM [NTU]	4 AM [NTU]	8 AM [NTU]	NOON [NTU]	4 PM [NTU]	8 PM [NTU]	Highest Reading of the Day ¹ [NTU]
1	0.05	0.07	0.08	0.07	0.15	0.28	0.35
2							
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Conventional or Direct Filtration	Monthly Summary (Answer Yes or No)	
95% of the 4-hour turbidity readings ≤ 0.3 NTU? Yes / No All the 4-hour turbidity readings ≤ 1 NTU? Yes / No All turbidity readings < IFE ² triggers? Yes / No ²	CT's met everyday? (see back) Yes / No	All Cl ₂ residuals at entry point ≥ 0.2 mg/l? Yes / No
Notes:	PRINTED NAME:	
	SIGNATURE:	DATE:
	PHONE #: ()	CERT #:

¹ Including continuous turbidity data, if applicable, for optimization recording purposes. Compliance values in columns "12 AM" through "8 PM" may not correspond to continuous readings' maximum. ² IFE = Individ. Filter Effl. (OAR 333-061-0040(1)(e)(B&C))

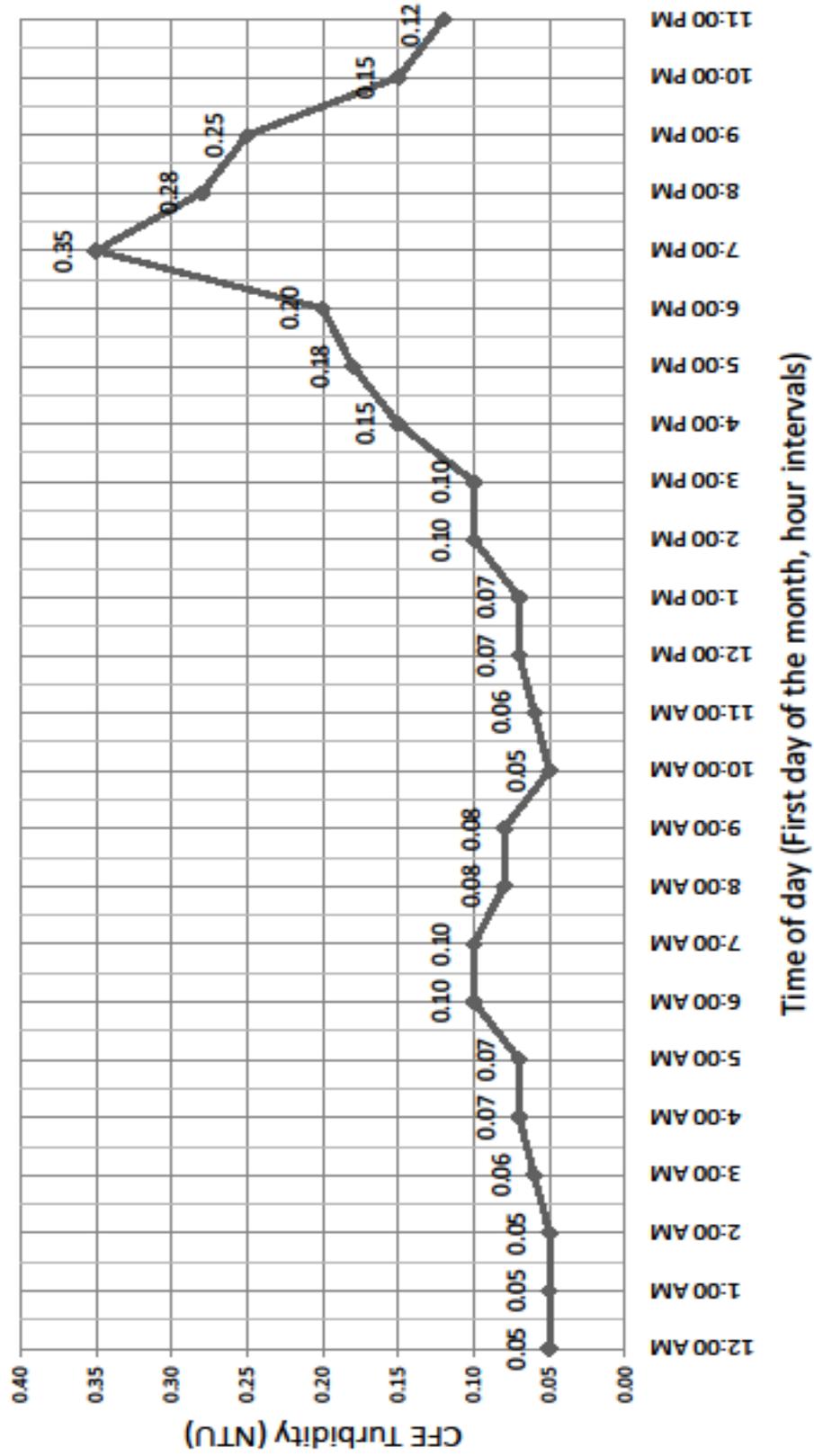
OHA - Drinking Water Program – Surface Water Quality Data Form - *Giardia* Inactivation

System Name:	ID #:	WTP-:	Month/Year:	Log Requirement (Circle One): 0.5 / 1.0
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Date / Time	Minimum Cl ₂ Residual at 1 st User (C) ³	Contact Time (T)	Actual CT	Temp	pH	Required CT	CT Met? ³	Peak Hourly Demand Flow
	[ppm or mg/L]	[minutes]	C X T	[°C]		Use tables	Yes / No	[GPM]
1 /	0.6	100	60	12	7.2	21	Yes	2000
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³ If Cl₂ at entry point < 0.2 mg/l, OR CT not met, notify DWP by end of next business day.

Conventional/Direct TP: Turbidity vs. Time



Example #2: Slow sand, Membrane, or DE filter plant (2-log)

Turbidity

1. Use the data in the graph to record the daily CFE turbidity on the first day of the month of the Slow Sand/Membrane/DE Filtration monthly reporting form. Which 4-hour column should it be recorded in? Why? **Any of the columns is fine to use. Most people use the column that is closest to the time they observed the turbidity**
2. What number should be entered in the “Highest Reading of the Day (NTU)” column?_ **1.2 NTU**

DAY	12 AM [NTU]	4 AM [NTU]	8 AM [NTU]	NOON [NTU]	4 PM [NTU]	8 PM [NTU]	Highest Reading of the Day [NTU]
1			0.2				1.2
2							

3. Let’s say your plant runs every day and you have turbidity readings filled in once a day for all 31 days of the month. How many readings could you have that were > 1 NTU? (Hint: 95% of readings must be ≤ 1 NTU). **Only 1 (5% of 31 readings = 1.6)**
4. What should you do if you answer “no” to the turbidity question “All readings ≤ 5 NTU?” on the bottom of the form? **a**
 - a) Call the state
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c

CT Calculations

1. Use the following parameters to calculate the CTs achieved at the plant and fill it in on the form on first day of the month:
 - Free chlorine residual: 0.3 ppm
 - Contact time: 60 minutes
2. Use the following parameters to calculate the CTs required using the EPA tables from Exercise 5 and fill it in on the form:
 - Temp: 9°C
 - pH: 7.8
3. Are CTs met at the plant for this day? **No - CT achieved (18) is < CT required (66)**

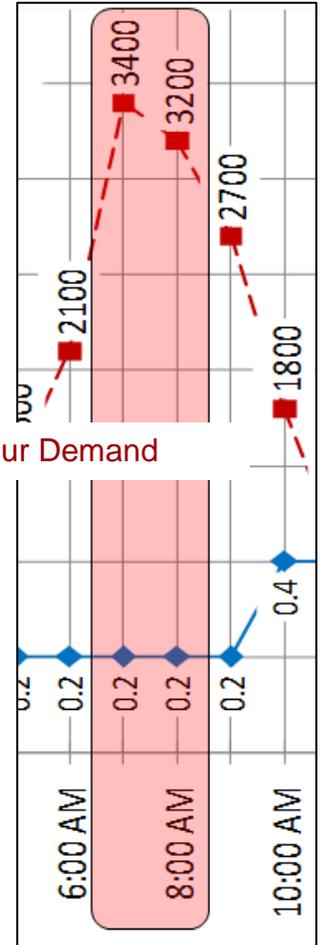
Date / Time	Minimum Cl ₂ Residual at 1 st User (C) [ppm or mg/L]	Contact Time (T) [minutes]	Actual CT CXT	Temp [° C]	pH	Required CT Use tables	CT Met? Yes / No	Peak Hourly Demand Flow [GPM]
1 /	0.3	60	18	9	7.8	66	No	

4. What number should be entered in the “Peak Hourly Demand Flow” column?_ **3300 gpm.**

Average of flows between 7 am and 8 am.

Exercise #6, Example #2 Slow Sand - Peak Hour Demand Determination

Time	Flow Reading (gpm)	Running hourly average of demand flow readings (gpm)
12:00 AM	500	
1:00 AM	850	675
2:00 AM	800	825
3:00 AM	950	875
4:00 AM	950	950
5:00 AM	1500	1225
6:00 AM	2100	1800
7:00 AM	3400	2750
8:00 AM	3200	3300
9:00 AM	2700	2950
10:00 AM	1800	2250
11:00 AM	1100	1450
12:00 PM	1600	1350
1:00 PM	1200	1400
2:00 PM	1000	1100
3:00 PM	900	950
4:00 PM	800	850
5:00 PM	1200	1000
6:00 PM	2000	1600
7:00 PM	2300	2150
8:00 PM	2200	2250
9:00 PM	1600	1900
10:00 PM	900	1250
11:00 PM	700	800



Date / Time	Minimum Cl ₂ Residual at 1 st User (C) [ppm or mg/L]	Contact Time (T) [minutes]	Actual CT CXT	Temp [° C]	pH	Required CT Use tables	CT Met? Yes / No	Peak Hourly Demand Flow [GPM]
1 /	0.3	60	18	9	7.8	66	No	3300

5. What should you do if you answer “no” to either of the CT questions on the turbidity side of form?

- “CTs met at all times?” **a**
 - a) Call the state
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c
- “Residual at EP ≥ 0.2 ppm at all times?” **a**
 - a) Call the state
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c

**OHA - Drinking Water Program – Turbidity Monitoring Report Form County:
Slow Sand, Membrane, Diatomaceous Earth Filtration, or Unfiltered Systems**

System Name:	ID #:	WTP-:	Month/Year:
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DAY	12 AM [NTU]	4 AM [NTU]	8 AM [NTU]	NOON [NTU]	4 PM [NTU]	8 PM [NTU]	Highest Reading of the Day ¹ [NTU]
1			0.2				1.2
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Slow Sand/Membrane/DE Filtration/Unfiltered	Monthly Summary (Answer Yes or No)	
95% of daily turbidity readings ≤ 1 NTU? ² Yes / No All daily turbidity readings ≤ 5 NTU? Yes / No	CT's met everyday? (see back) Yes / No	All Cl ₂ residual at entry point ≥ 0.2 mg/l? Yes / No
Notes:	PRINTED NAME:	
	SIGNATURE:	DATE:
	PHONE #: ()	CERT #:

² Including continuous turbidity data, if applicable, for optimization recording purposes. Compliance values in columns "12 AM" through "8 PM" may not correspond to continuous readings' maximum. ² Filtered systems only.

OHA - Drinking Water Program – Surface Water Quality Data Form

System Name:	ID #:	WTP-:	Month/Year:
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Date / Time	Minimum Cl ₂ Residual at 1 st User (C) ³	Contact Time (T)	Actual CT	Temp	pH	Required CT	CT Met? ³	Peak Hourly Demand Flow
	[ppm or mg/L]	[minutes]	C X T	[°C]		Use tables	Yes / No	[GPM]
1 /	0.3	60	18	9	7.8	66	No	3300
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³If Cl₂ at entry point < 0.2 mg/l OR CT not met, notify DWP by end of next business day. Revised February 2012
 Download form at: public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Monitoring/Documents/turb-alt-unfiltered.pdf

