

ESSENTIALS OF SURFACE WATER TREATMENT TRAINING

Online Training Part 2 of 2

Exercises #4 - #6

Exercise #4: Calculating Peak Hourly Demand Flow

Directions: Determine what the peak hourly demand flow is based on the graph below and answer the following questions.

Questions:

At what 1-hour interval did PHD occur? _____

What is the peak hourly demand flow (gpm)? _____

What was the peak instantaneous demand flow (gpm)? _____

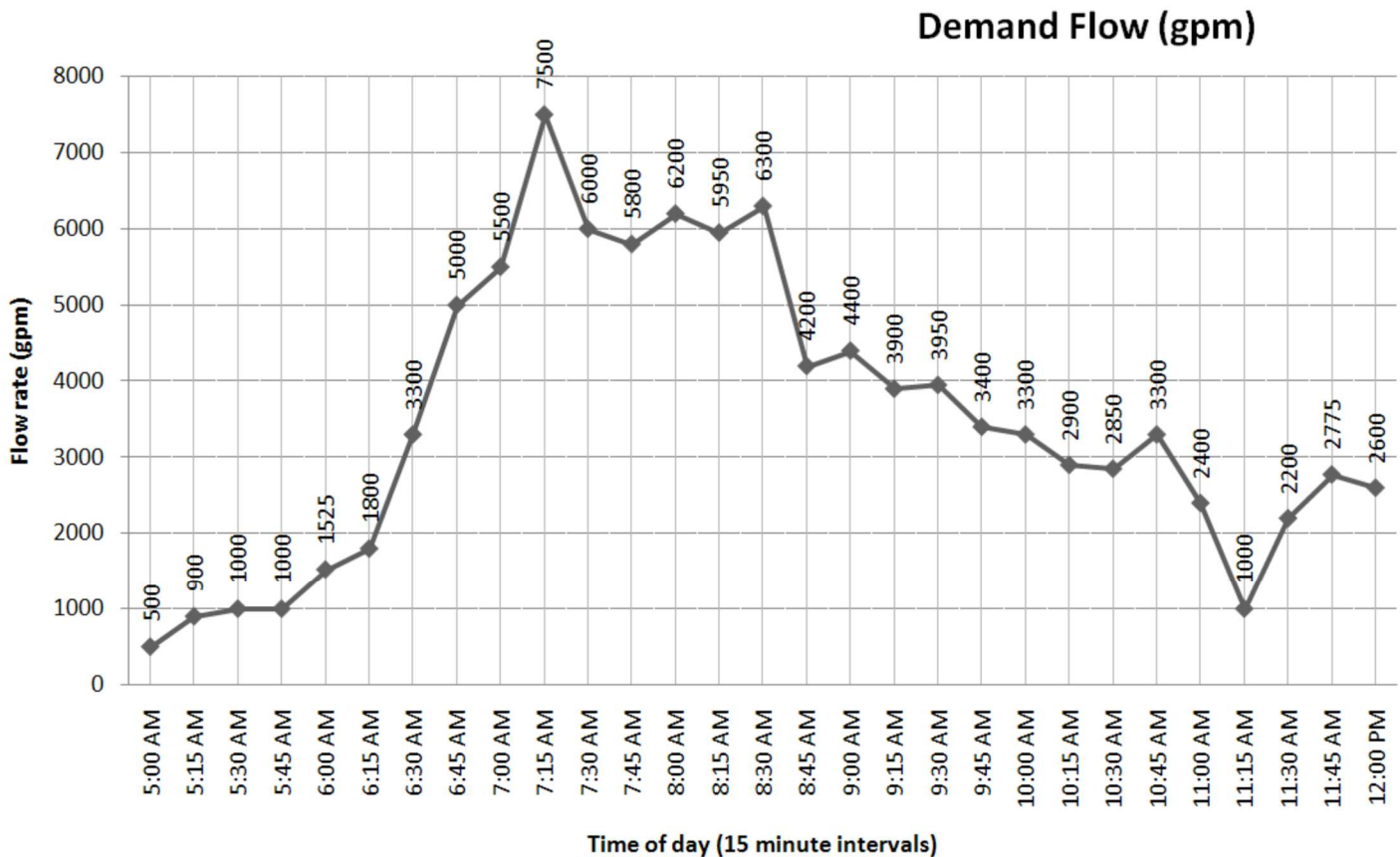
Bonus questions:

Is it ok to use the peak instantaneous flow instead for calculating time T? _____

If so, what are the advantages/disadvantages? _____

Is it ok to use the average daily flow instead for calculating time T? _____

Why or why not? _____



Exercise #5: Using EPA CT tables to calculate CTs required

Directions: Use the data provided in the examples below to determine the CTs required for giardia inactivation at the treatment plant for that day

Example #1: Conventional filter plant (2.5-log)

CT parameters measured at the 1st user as follows:

- Temperature: 10° C
- pH: 7.0
- Free chlorine residual: 0.8 ppm

- Contact time T: 100 minutes

What are the CTs required for that day? _____

What was the CT achieved? _____

Were CTs met? _____

Example #2: Slow sand filter plant (2-log)

CT parameters measured at the 1st user as follows:

- Temperature: 16° C
- pH: 6.6
- Free chlorine residual: 0.5 ppm

- Contact time T: 46 minutes

What are the CTs required for that day? _____

What was the CT achieved? _____

Were CTs met? _____

Example #3: Membrane filter plant (2.5-log)

CT parameters measured at the 1st user as follows:

- Temperature: 8° C
- pH: 7.3
- Free chlorine residual: 1.3 ppm

- Contact time T: 100 minutes

What are the CTs required for that day? _____

What was the CT achieved? _____

Were CTs met? _____

(Over)

Bonus: Use the data provided in the examples below to determine the CTs required for virus inactivation at the treatment plant for that day

Table A-7. CT Values for Inactivation of Viruses by Free Chlorine¹

Temperature (C)	Log Inactivation					
	2.0-log		3.0-log		4.0-log	
	pH=> 6-9	10	6-9	10	6-9	10
0.5	6	45	9	66	12	90
5	4	30	6	44	8	60
10	3	22	4	33	6	45
15	2	15	3	22	4	30
20	1	11	2	16	3	22
25	1	7	1	11	2	15

CT parameters measured at the 1st user as follows:

- Temperature: 10° C
- pH: 7.0

What log inactivation is required for viruses in surface water? _____

What are the CTs required for viruses that day? _____

Assuming a contact time T of 30 minutes, what free chlorine concentration is needed to meet the CT required above? _____

What does this tell you about meeting the CT requirements for viruses compared to meeting the CT requirements for giardia? _____

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? _____
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 should be ≤ 0.3 NTU) _____
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
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) 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
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c

CT Calculations (assume 2.5-log conventional plant)

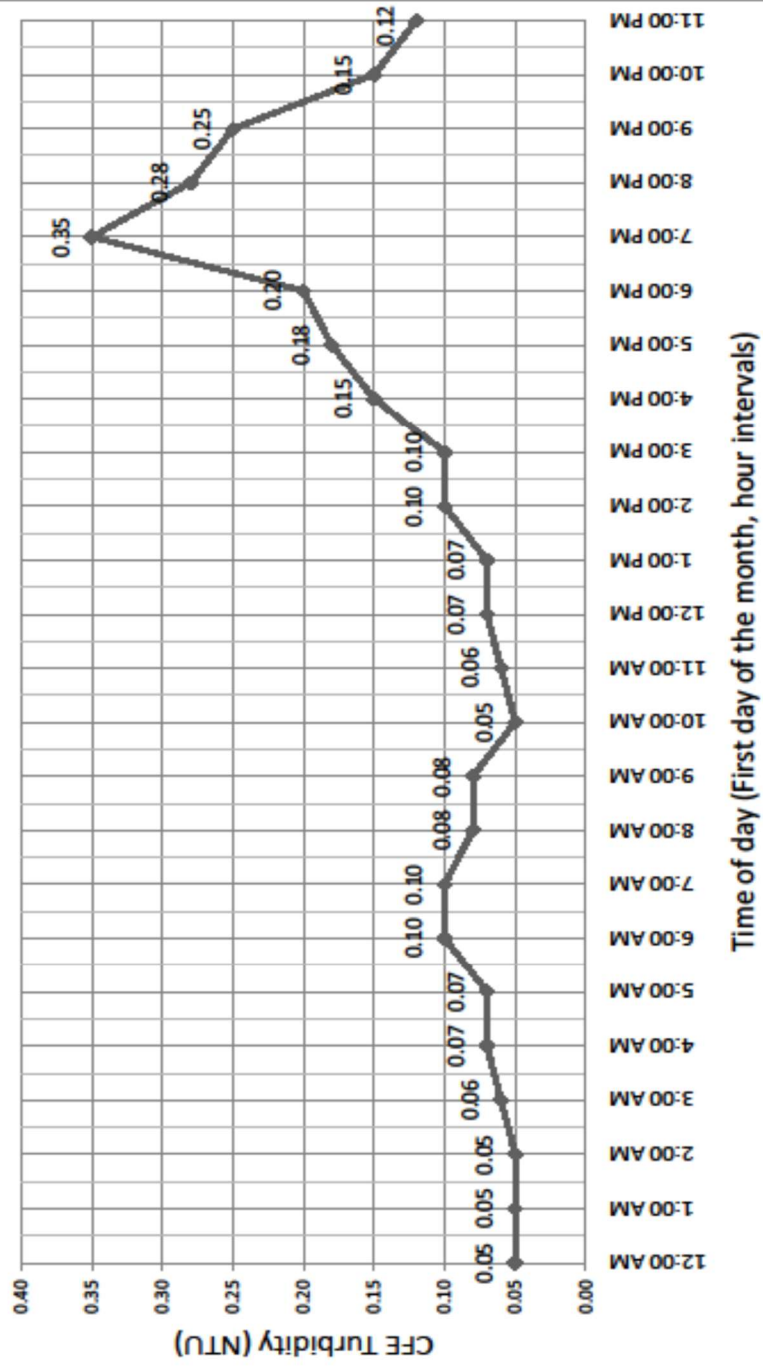
6. Use the following parameters to calculate the CTs achieved at the plant and fill it in on the form on first day of the month:
 - Free chlorine residual: 0.6 ppm
 - Contact time: 100 minutes
7. Use the following parameters to calculate the CTs required using the EPA tables from Exercise 5 and fill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

10. 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
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c

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

Conventional/Direct TP: Turbidity vs. Time



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

System Name:		ID #:		WTP-:		Month/Year:	
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							
2							
3							
4							
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6							
7							
8							
9							
10							
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28							
29							
30							
31							

Conventional or Direct Filtration		Monthly		Monthly Summary (Answer Yes or No)	
Summary					
95% of the 4-hour turbidity readings ≤ 0.3 NTU? Yes / No		CT's met every day? (see back) Yes / No		All Cl ₂ residuals at entry point ≥ 0.2 mg/l? Yes / No	
All the 4-hour turbidity readings ≤ 1 NTU? Yes / No					
All turbidity readings < IFE ² triggers? Yes / No ²					
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			
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 /								
2 /								
3 /								
4 /								
5 /								
6 /								
7 /								
8 /								
9 /								
10 /								
11 /								
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28 /								
29 /								
30 /								
31 /								

³ If Cl₂ at entry point < 0.2 mg/l, OR CT not met, notify DWP by end of next business day.

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? _____
2. What number should be entered in the “Highest Reading of the Day (NTU)” column? _____
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 should be ≤ 1 NTU) _____
4. What should you do if you answer “no” to the turbidity question “All readings ≤ 5 NTU?” on the bottom of the form? _____
 - a) Call the state
 - b) Issue a boil water notice
 - c) Issue a public notice within 30 days
 - d) Both a & c

CT Calculations

5. 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
6. 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
7. Are CTs met at the plant for this day?
8. What number should be entered in the “Peak Hourly Demand Flow” column?
9. 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
 - 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) 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							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
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28							
29							
30							
31							

Slow Sand/Membrane/DE Filtration/Unfiltered <div style="text-align: right; margin-right: 10px;">Monthly</div>	Monthly Summary (Answer Yes or No)	
Summary 95% of daily turbidity readings ≤ 1 NTU? ² Yes / No All daily turbidity readings ≤ 5 NTU? Yes / No	CT's met every day? (see back) Yes / No	All Cl ₂ residual at entry point ≥ 0.2 mg/l? Yes / No
Notes:	PRINTED NAME:	
	SIGNATURE:	DATE:
	PHONE #: ()	CERT #:

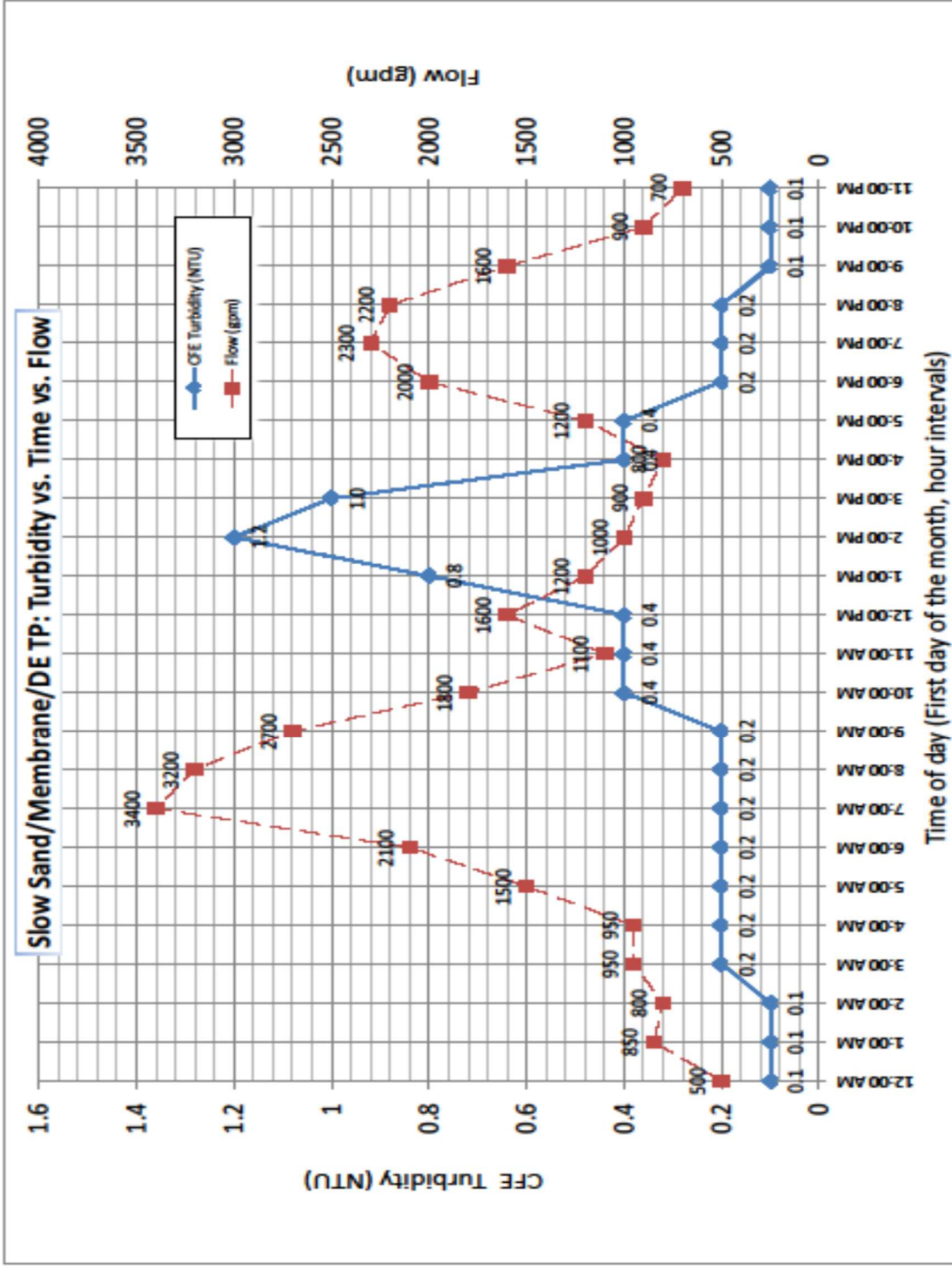
² Including continuous turbidity data, if applicable, for optimization recording purposes. Compliance values in columns "12 AM" through "8 PM" may not correspond to continuous readings' maximum. ² Filtered systems only.

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 /								
2 /								
3 /								
4 /								
5 /								
6 /								
7 /								
8 /								
9 /								
10 /								
11 /								
12 /								
13 /								
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24 /								
25 /								
26 /								
27 /								
28 /								
29 /								
30 /								
31 /								

³ If 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

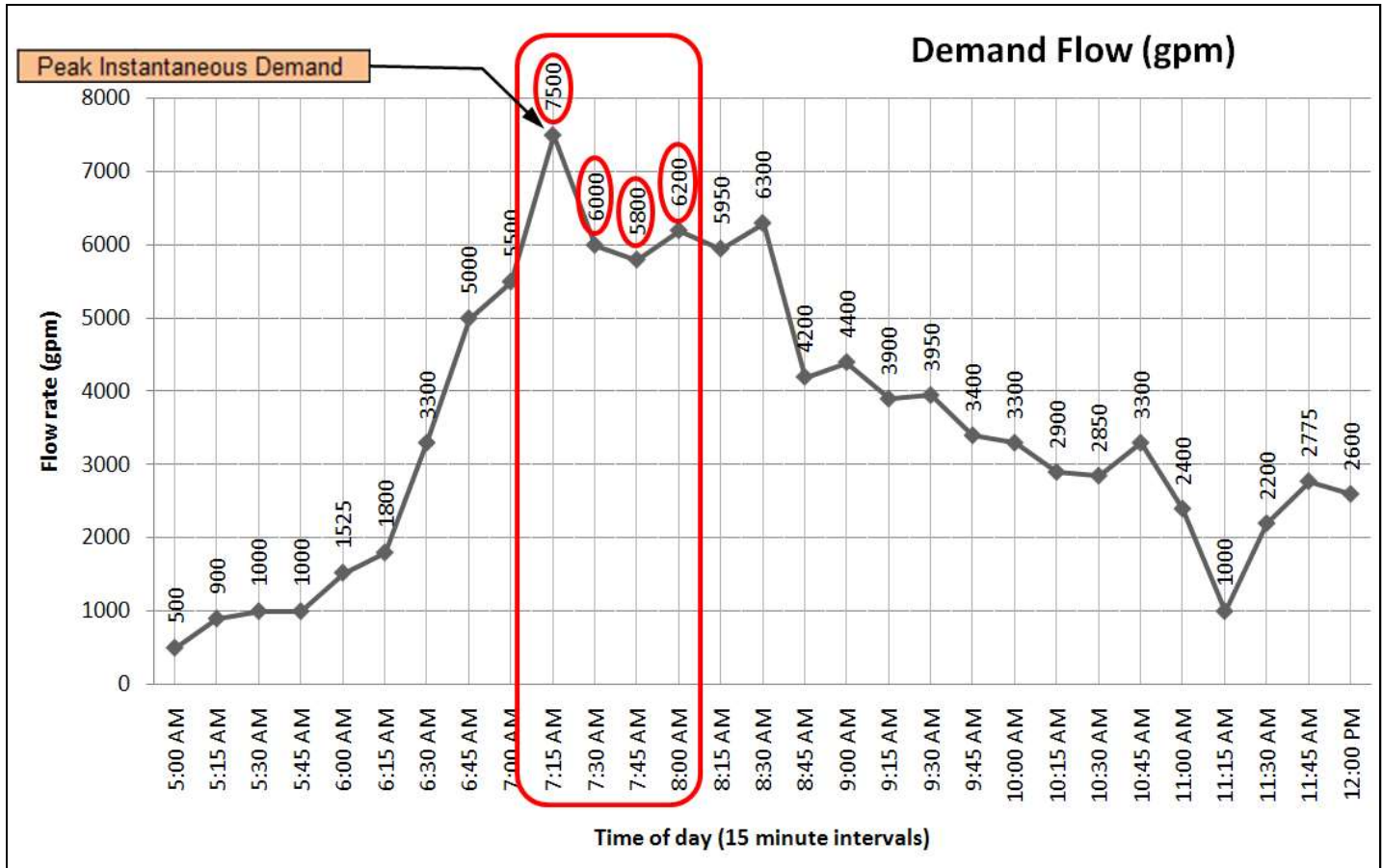


Answer Key

Exercises #4 - #6

Exercise #4: Calculating Peak Hourly Demand Flow

Directions: Determine what the peak hourly demand flow is based on the graph below and answer the following questions.



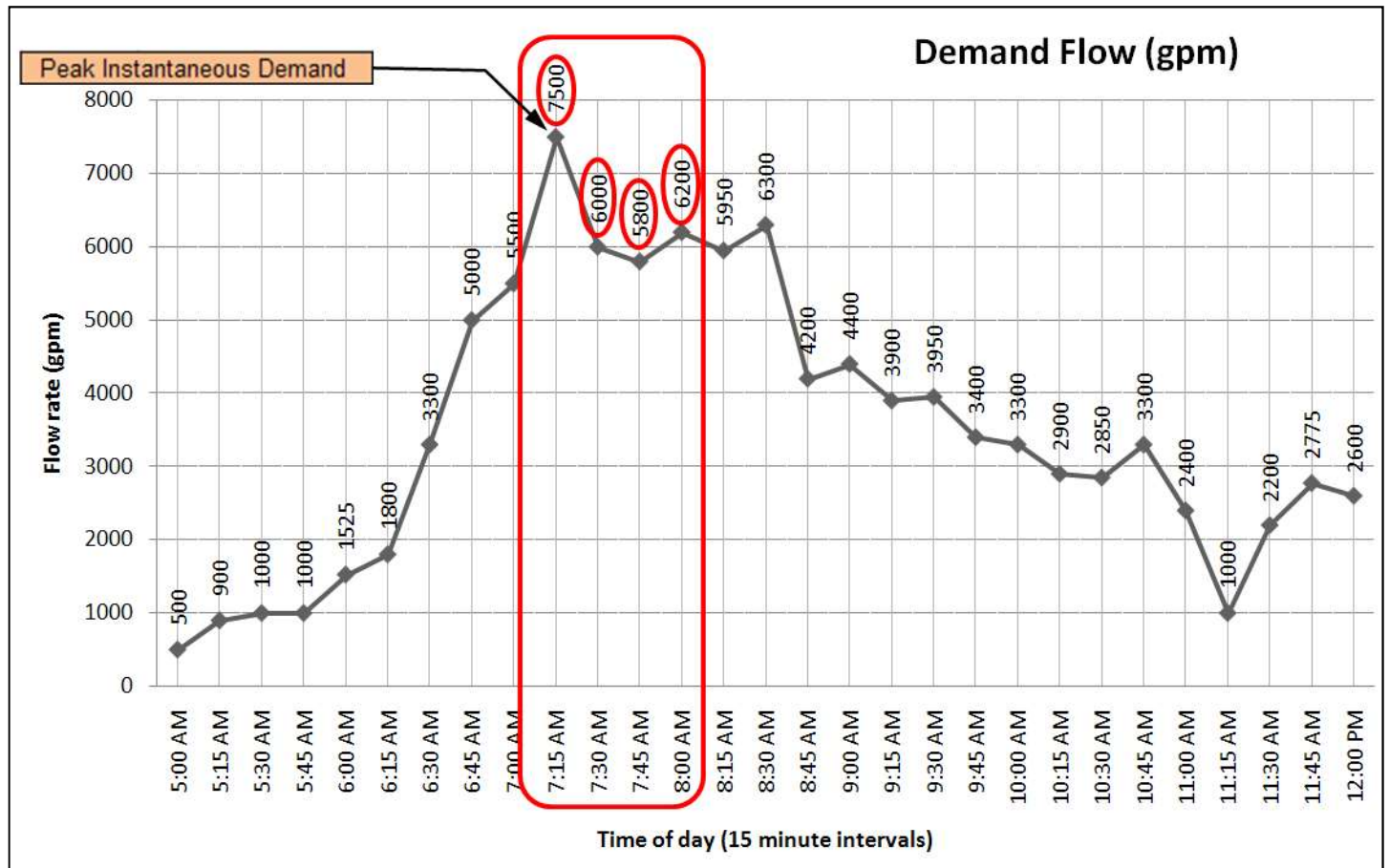
Questions:

At what 1-hour interval did PHD occur?

7:00 am to 8:00 am (7:01 am – 8:00 am, exludes 7 am reading)What is the peak hourly demand flow (gpm)? **6375 gpm (sum 4 data pts & divide by 4)**

Time (min)	Demand Flow (gpm)	Running Hourly Average Flow (gpm)
5:00 AM	500	
5:15 AM	900	
5:30 AM	1000	
5:45 AM	1000	
6:00 AM	1525	850.0
6:15 AM	1800	1,106.3
6:30 AM	3300	1,331.3
6:45 AM	5000	1,906.3
7:00 AM	5500	2,906.3
7:15 AM	7500	3,900.0
7:30 AM	6000	5,325.0
7:45 AM	5800	6,000.0
8:00 AM	6200	6,200.0
8:15 AM	5950	6,375.0 <= Peak Hour Demand
8:30 AM	6300	5,987.5
8:45 AM	4200	6,062.5
9:00 AM	4400	5,662.5
9:15 AM	3900	5,212.5
9:30 AM	3950	4,700.0
9:45 AM	3400	4,112.5
10:00 AM	3300	3,912.5
10:15 AM	2900	3,637.5
10:30 AM	2850	3,387.5
10:45 AM	3300	3,112.5
11:00 AM	2400	3,087.5
11:15 AM	1000	2,862.5
11:30 AM	2200	2,387.5
11:45 AM	2775	2,225.0
12:00 PM	2600	2,093.8
		2,143.8

What was the peak instantaneous demand flow (gpm)? **7500 gpm**



Bonus questions:

Is it ok to use the peak instantaneous flow instead for calculating time T?

Yes; it's more conservative

If so, what are the advantages/disadvantages?

Advantage: easy to determine. Disadvantage: it may exceed the tracer study flow by more than 10%

Is it ok to use the average daily flow instead for calculating time T? **No**

Why or why not? **Averaging the whole day would not be conservative enough (it would not account for sustained period of high flow which is when it is important for CTs to be met)**

Exercise #5: Using EPA CT tables to calculate CTs required

Directions: Use the data provided in the examples below to determine the CTs required for giardia inactivation at the treatment plant for that day

Example #1: Conventional filter plant (2.5-log)

CT parameters measured at the 1st user as follows:

- Temperature: 10° C
- pH: 7.0
- Free chlorine residual: 0.8 ppm
- Contact time T: 100 minutes

What are the CTs required for that day? **18**

What was the CT achieved? **80**

Were CTs met? **Yes**

Example #2: Slow sand filter plant (2-log)

CT parameters measured at the 1st user as follows:

- Temperature: 16° C
- pH: 6.6
- Free chlorine residual: 0.5 ppm
- Contact time T: 46 minutes

What are the CTs required for that day? **24**

What was the CT achieved? **23**

Were CTs met? **No**

Example #3: Membrane filter plant (2.5-log)

CT parameters measured at the 1st user as follows:

- Temperature: 8° C
- pH: 7.3
- Free chlorine residual: 1.3 ppm
- Contact time T: 100 minutes

What are the CTs required for that day? **31**

What was the CT achieved? **130**

Were CTs met? **Yes**

Bonus: Use the data provided in the examples below to determine the CTs required for virus inactivation at the treatment plant for that day

Table A-7. CT Values for Inactivation of Viruses by Free Chlorine¹

Temperature (C)	Log Inactivation					
	2.0-log		3.0-log		4.0-log	
pH=> 6-9	10	6-9	10	6-9	10	
0.5	6	45	9	66	12	90
5	4	30	6	44	8	60
10	3	22	4	33	6	45
15	2	15	3	22	4	30
20	1	11	2	16	3	22
25	1	7	1	11	2	15

CT parameters measured at the 1st user as follows:

- Temperature: 10° C
- pH: 7.0

What log inactivation is required for viruses in surface water? **4.0-log**

What are the CTs required for viruses that day? **6**

Assuming a contact time T of 30 minutes, what free chlorine concentration is needed to meet the CT required above? **0.2 ppm**

What does this tell you about meeting the CT requirements for viruses compared to meeting the CT requirements for giardia?

If you meet CT requirements for giardia, then you automatically meet them for viruses (i.e. it takes more CTs to inactivate Giardia than it does for viruses)

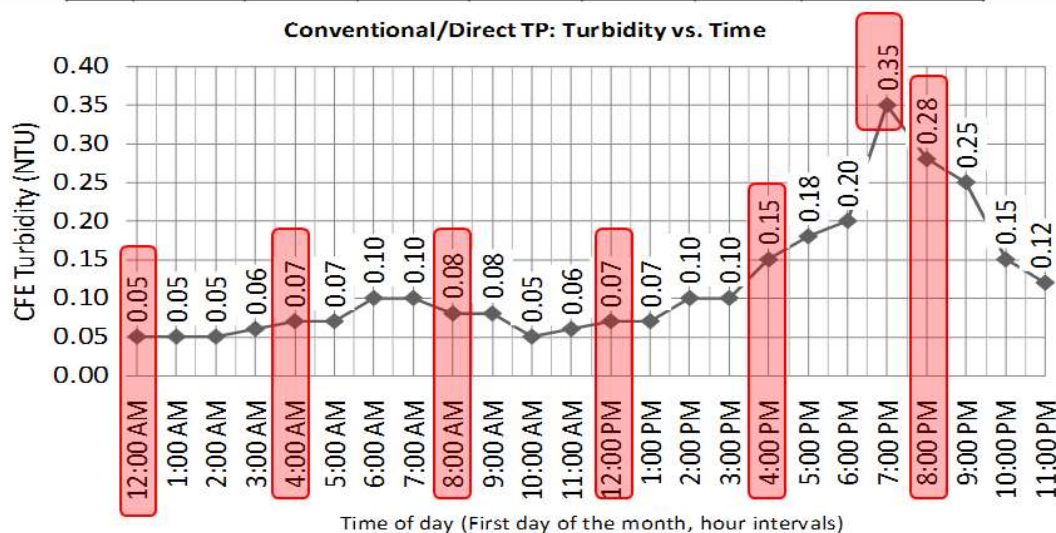
Exercise #6: Filling out the monthly surface water report

Example #1: Conventional or direct filter plant

Turbidity

- 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.
- 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



- 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)
- 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
- 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

CT Calculations (assume 2.5-log conventional plant)

6. 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
7. 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

8. Are CTs met at the plant for this day? **Yes - CT achieved (60) is > CT required (21)**
9. 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.**
10. 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:
Conventional or Direct Filtration

System Name:		ID #:		WTP-:		Month/Year:	
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							
3							
4							
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28							
29							
30							
31							

Conventional or Direct Filtration		Monthly Summary (Answer Yes or No)	
Summary		Monthly	
95% of the 4-hour turbidity readings ≤ 0.3 NTU?	Yes / No	CT's met every day? (see back)	All Cl ₂ residuals at entry point ≥ 0.2 mg/l?
All the 4-hour turbidity readings ≤ 1 NTU?	Yes / No	Yes / No	Yes / No
All turbidity readings < IFE ² triggers?	Yes / No ²		
Notes:		PRINTED NAME:	
		SIGNATURE:	DATE:
		PHONE #: ()	CERT #:

³ 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 Eff. (OAR 333-061-0040(1)(e)(B&C))

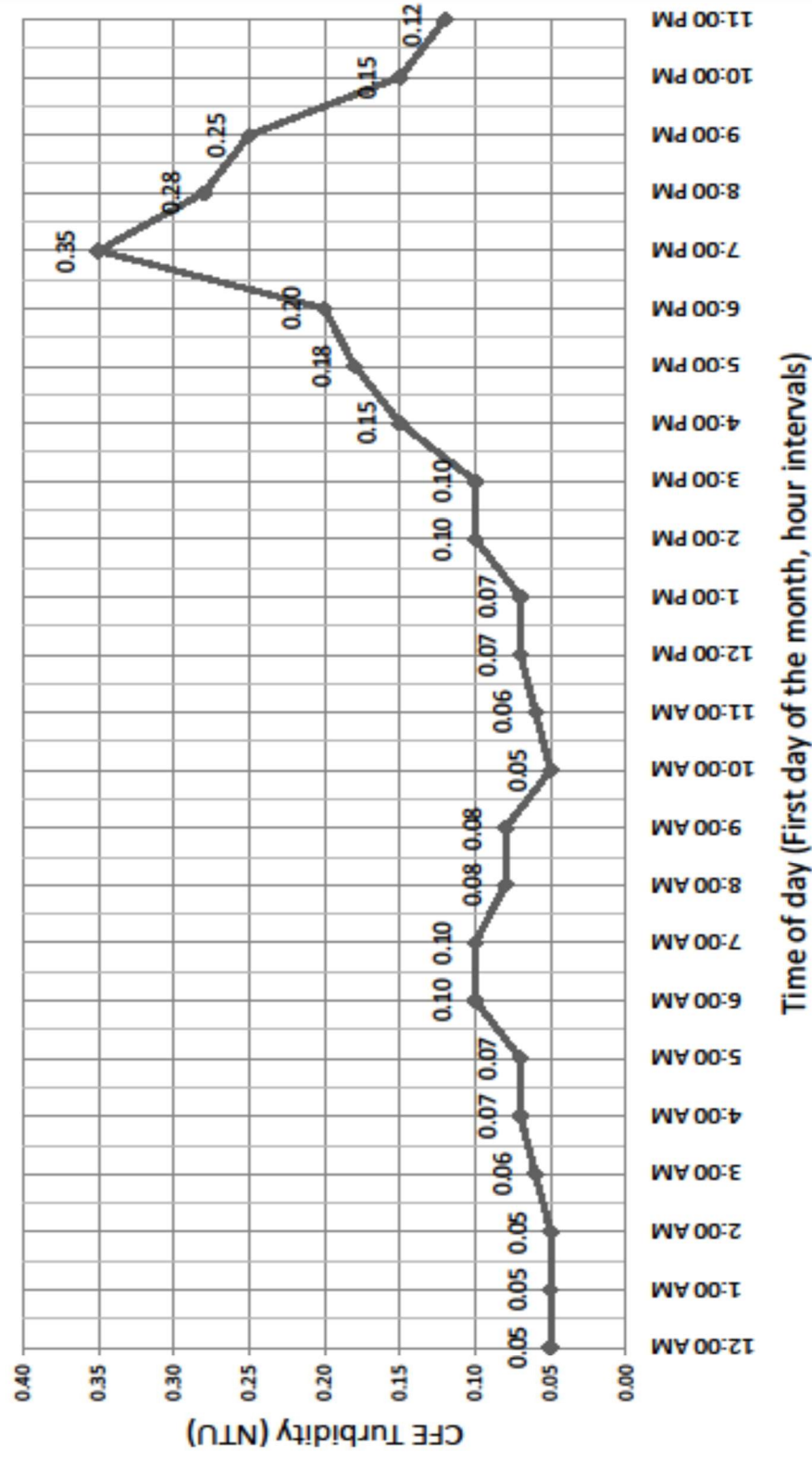
OHA - Drinking Water Program – Surface Water Quality Data Form - *Giardia* Inactivation

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
2 /								
3 /								
4 /								
5 /								
6 /								
7 /								
8 /								
9 /								
10 /								
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12 /								
13 /								
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27 /								
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29 /								
30 /								
31 /								

³ If 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-conv-direct.pdf

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

5. 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

6. 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

7. 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 C X T	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	

8. What number should be entered in the “Peak Hourly Demand Flow” column?

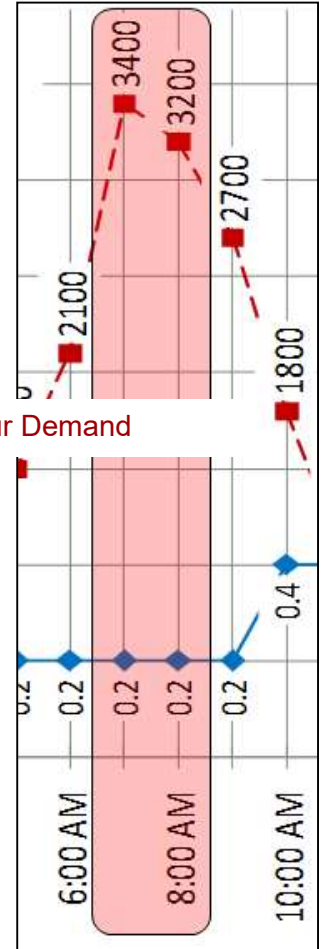
3300 gpm.

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

<= Peak Hour Demand



Date / Time	Minimum Cl ₂ Residual at 1 st User (C) [ppm or mg/L]	Contact Time (T) [minutes]	Actual CT C X T	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

9. 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 ≥ 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:
Slow Sand, Membrane, Diatomaceous Earth Filtration, or Unfiltered Systems

System Name:			ID #:		WTP-:		Month/Year:
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
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

Slow Sand/Membrane/DE Filtration/Unfiltered		Monthly		Monthly Summary (Answer Yes or No)	
Summary					
95% of daily turbidity readings ≤ 1 NTU? ² Yes / No All daily turbidity readings ≤ 5 NTU? Yes / No		CT's met every day? (see back) Yes / No		All Cl ₂ residual at entry point ≥ 0.2 mg/l? Yes / No	
Notes:		PRINTED NAME:			
		SIGNATURE:		DATE:	
		PHONE #: ()		CERT #:	

⁴ 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
2 /								
3 /								
4 /								
5 /								
6 /								
7 /								
8 /								
9 /								
10 /								
11 /								
12 /								
13 /								
14 /								
15 /								
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21 /								
22 /								
23 /								
24 /								
25 /								
26 /								
27 /								
28 /								
29 /								
30 /								
31 /								

⁴ If 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

