

Technical Tips to Help You Avoid Enforcement

Presenter Name

Title

Municipality

Know the Rules

- Federal Regulations – 40 CFR Part 403
- State Regulations – 15A NCAC 02H .0900
- Local Regulations & Policies
 - Industrial User Permit
 - Sewer Use Ordinance
 - Enforcement Response Plan

When Enforcement Occurs

- Monitoring Violations
- Effluent Limit Violations
 - Daily Max
 - Monthly Average
 - 4 Day Average
- Reporting Violations

Monitoring Violations

- Failure to Collect Self-Monitoring Samples as Required by Your Permit
 - Appropriate Sample Location
 - Proper # of Samples
 - Correct Sample Type (Grab/Composite)
 - Improper Sample Collection
 - Improper Sample Analysis

Automatic Samplers - Subsystems



- Typical Auto Sampler Systems:
 - Sample Intake
 - Sample Gathering
 - Sample Transport
 - Sample Storage
 - Controls & Power

Automatic Samplers – Minimum Requirements

- Properly cleaned to avoid cross-contamination
- No plastic or non-stainless steel parts in contact with organics samples
- Special sampler base and glass containers may also be necessary for organics
- Teflon tubing in transport subsystem
- Able to keep samples $\leq 6^{\circ}$ C during sampling period
- Able to collect adequate sample volume for all parameter analyses
- $\geq 100\text{mL}$ collected each time sampler is activated, if peristaltic/suction lift pump used

Automatic Samplers – Minimum Requirements

- Provide lift ≥ 25 ft. & be adjustable so volume is not function of pumping head
- Adequate pumping velocity to transport solids & not allow solids to settle
- Tubing sized to maintain ≥ 2 ft/s velocity
- Minimum intake line inside diameter $3/8$ inch
- Provide line purging after each aliquot collected to avoid contamination of subsequent samples
- Adequate power source available to operate sampler for 48 hrs. at 30-minute sampling interval
- Sample collection vessels constructed of materials suitable for tests to be performed

Automatic Samplers - Maintenance



- Clean!
 - Detergent Wash
 - Tap Water Rinses
 - Distilled Water Rinses
- Equipment Blanks
- Calibrate!

Automatic Sampler Calibration

- Determine relation between input and output and adjust output within a specified accuracy.



Automatic Sampler Calibration

- Press the ENTER/PROGRAM key to enter the interactive state
- Access the program sequence by selecting “PROGRAM”

STANDBY . . .

10:38:50 13-DEC--04

[PROGRAM, CONFIGURE]

SAMPLER

Automatic Sampler Calibration

[*TIME*, FLOW]
PACED SAMPLING

CALIBRATE SAMPLER?
[*YES*, NO]

- Step through the program until the “CALIBRATE SAMPLER?” input display appears
- Select “YES”

Automatic Sampler Calibration

- Before pressing the MANUAL SAMPLE key, make sure a collection container is underneath the pump tube
- The sampler will deliver the programmed sample volume

**PRESS MANUAL SAMPLE
KEY WHEN READY . . .**

**. . . MANUAL SAMPLE . . .
PUMPING 200 ml**

Automatic Sampler Calibration

**200 ml VOLUME
DELIVERED**

**CALIBRATE SAMPLER?
[YES, NO]**

- Measure the actual volume delivered and enter that value here
- Repeat the procedure if desired by selecting "YES".
- When you are satisfied with the calibration, select "NO"
- A value $\pm 10\%$ of the expected is acceptable

Flow Meter Calibration

- Know your permit requirements for flow meter calibration!
 - How often?
 - Who is approved?



Effluent Limit Violations

- Example

- Permit Limit = 0.100 mg/L
- Monitoring Result = 0.101 mg/L

- VIOLATION!

- Close doesn't count

REMEMBER

Minor Violations Can Result in
MAJOR Violations

Significant Noncompliance (SNC)

- IN NC SNC always judged for the following semi-annual periods
 - January 1st – June 30th
 - July 1st – December 31st
- Chronic & TRC SNC based on Percentage
- $\% \text{ Violations} = \frac{\text{Number of Violations} * 100\%}{\text{Number of Samples}}$

Calculating SNC

■ Definition Chronic SNC

- $\geq 66\%$ of measurements taken during 6-month period exceed the daily max or the average limit.

% Violations

$= (\text{Chronic Violations} / \# \text{ Samples}) \times 100\%$

$\geq 66\%$

= CHRONIC SNC!

Calculating SNC

■ TRC SNC

- $\geq 33\%$ of measurements taken during 6-month period equal or exceed the product of the daily max or the average limit multiplied by the applicable TRC value.
- Technical Review Criteria (TRC) Multiplier
 - 1.4 for BOD, TSS, FOG
 - 1.2 for all other pollutants (except pH)

% Violations

$$= (\text{TRC Violations} / \# \text{ Samples}) \times 100\% \geq 33\%$$
$$= \text{TRC SNC!}$$

Calculating SNC – Example #1

- Your permit contains the following BOD limits:
 - Daily Maximum = 1000 mg/L

Calculating SNC – Example #1

- Your facility has obtained the following results for the semi-annual period

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995			
3/5	1400			
3/21	480			
TOTAL				

Calculating SNC – Example #1

■ Number of Samples

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995	1		
3/5	1400	1		
3/21	480	1		
TOTAL		3		

Calculating SNC – Example #1

- Determine Number of Chronic Violations
- Daily Max = 1000 mg/L

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995	1	0	
3/5	1400	1	1	
3/21	480	1	0	
TOTAL		3	1	

Calculating SNC – Example #1

■ Definition Chronic SNC

- $\geq 66\%$ of measurements taken during 6-month period exceed the daily max or the average limit.

% Violations

= (Chronic Violations/# Samples) x 100%

= $(1/3) \times 100\%$

= 33.3%

= NO CHRONIC SNC!

Calculating SNC – Example #1

- Determine Technical Review Criteria (TRC) Multiplier
 - 1.4 for BOD, TSS, FOG
 - 1.2 for all other pollutants (except pH)
- Daily Max TRC Limit = $1000 \text{ mg/L} \times 1.4$
 $= 1400 \text{ mg/L}$

Calculating SNC – Example #1

- Determine Number of TRC Violations
- TRC Daily Max = 1400 mg/L

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995	1	0	0
3/5	1400	1	1	1
3/21	480	1	0	0
TOTAL		3	1	1

Calculating SNC – Example #1

■ TRC SNC

- $\geq 33\%$ of measurements taken during 6-month period equal or exceed the product of the daily max or the average limit multiplied by the applicable TRC value.

% Violations

$$= (\text{TRC Violations} / \# \text{ Samples}) \times 100\%$$

$$= (1/3) \times 100\%$$

$$= 33.3\%$$

$$= \text{TRC SNC!}$$

Calculating SNC – Example #2

- Your permit contains the following BOD limits:
 - Daily Maximum = 1000 mg/L
 - Monthly Average = 600mg/L

Calculating SNC – Example #2

- Your facility has obtained the following results for the semi-annual period

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995			
3/5	1400			
3/21	480			

Calculating SNC – Example #2

- Determine Number of Chronic & TRC Violations
- TRC Daily Max = 1400 mg/L

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
1/17	995	1	0	0
3/5	1400	1	1	1
3/21	480	1	0	0
TOTAL		3	1	1

Calculating SNC – Example #2

■ Chronic SNC

- $\geq 66\%$ of measurements taken during 6-month period exceed the daily max or the average limit.

% Violations

= (Chronic Violations/# Samples) x 100%

= $(1/3) \times 100\%$

= 33.3%

= NO CHRONIC SNC!

Calculating SNC – Example #2

■ TRC SNC

- $\geq 33\%$ of measurements taken during 6-month period equal or exceed the product of the daily max or the average limit multiplied by the applicable TRC value.

% Violations

= (TRC Violations/# Samples) x 100%

= $(1/3) \times 100\%$

= 33.3%

= TRC SNC!

Calculating SNC – Example #2

- Calculate Monthly Averages
- ❖ EPA Says ONE SAMPLE CAN BE A MONTHLY AVERAGE

Date	BOD (mg/L)	BOD (mg/L)	Chronic?	TRC?
1/17	995			
	Jan AVG	995		
3/5	1400			
3/21	480			
	Mar AVG	940		

Calculating SNC – Example #2

- Determine Number of Chronic Violations
- Monthly AVG = 600 mg/L

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
Jan AVG	995	1	1	
Mar AVG	940	1	1	
TOTAL		2	2	

Calculating SNC – Example #2

■ Chronic SNC

- $\geq 66\%$ of measurements taken during 6-month period exceed the daily max or the average limit.

% Violations

= (Chronic Violations / # Samples) x 100%

= (2/2) x 100%

= 100%

= CHRONIC SNC!

Calculating SNC – Example #2

- Determine Technical Review Criteria (TRC) Multiplier
 - 1.4 for BOD, TSS, FOG
 - 1.2 for all other pollutants (except pH)
- Monthly AVG Limit = $600\text{mg/L} \times 1.4 = 840 \text{ mg/L}$

Calculating SNC – Example #2

- Determine Number of TRC Violations
- TRC Monthly AVG = 840 mg/L

Date	BOD (mg/L)	# Samples	Chronic?	TRC?
Jan AVG	995	1	1	1
Mar AVG	940	1	1	1
TOTAL		2	2	2

Calculating SNC – Example #2

■ TRC SNC

- $\geq 33\%$ of measurements taken during 6-month period equal or exceed the product of the daily max or the average limit multiplied by the applicable TRC value.

% Violations

$$= (\text{TRC Violations} / \# \text{ Samples}) \times 100\%$$

$$= (2/2) \times 100\%$$

$$= 100\%$$

$$= \text{TRC SNC!}$$

Calculating SNC – Example #2

Summary

- Daily Max Limit
 - Chronic Violations = 33.3% = Not SNC
 - TRC Violations = 33.3% = TRC SNC!

- Monthly Average Limit
 - Chronic Violations = 100% = Chronic SNC!
 - TRC Violations = 100% - TRC SNC!

Sampling Out of Chronic SNC [66%]

- You have a daily max limit and collected 4 samples
 - 1 Violation/4 Samples = 25% (No SNC)
 - 2 Violations/4 Samples = 50% (No SNC)
 - 3 Violations/4 Samples = 75% (SNC)
 - But take ONE MORE compliant sample
- 3 Violations/5 Samples = 60% (No SNC)

Sampling Out of Chronic SNC [66%]

- You have exceeded your monthly average limit for January
 - 1 Violation/1 Result = 100% (SNC)
 - Samples in February are compliant with MA limit
 - +1 Result
 - =1 Violation/2 Results = 50% (NO SNC)

Sampling Out of TRC SNC [33%]

- You have a daily max limit and collected 4 samples
 - 1 TRC Violation/4 Samples = 25% (No SNC)
 - 2 TRC Violations/4 Samples = 50% (SNC)
 - Take 3 more compliant samples
 - 2 TRC Violations/7 Samples = 28.6% (No SNC)
 - 3 Violations/4 Samples = 75% (SNC)
 - Take 6 more compliant samples
 - 3 TRC Violations/10 Samples = 30% (No SNC)

Sampling Out of TRC SNC [33%]

- You have exceeded your monthly average TRC limit for January and February
 - 2 TRC Violation/2 Results = 100% (SNC)
 - The remainder of your monthly averages are compliant for the 6-month reporting period = +4 Results
 - 2 TRC Violations/6 Results = 33.3% (**SNC** and you get no more chances this reporting period!)

A Few Notes about BDL

- BDL = Below Detection Level
- If detection level is $\leq$ permit limit
 - Compliance has been demonstrated
- If detection level is $>$ permit limit
 - Compliance has NOT been demonstrated
 - Sampling/Reporting Violation!

A Few Notes about BDL

- How do you calculate an average with a BDL value?
 - Can use zero, $\frac{1}{2}$ Detection Level, or Detection Level
 - State NPDES Compliance Group uses zero when determining compliance with average permit limits.

From the NCPC to You!



QUESTIONS?

Presenter Contact Info

Phone

Email