104954

**Arlene Henry**

**From:** Jones, Terry <terry.jones@dnr.iowa.gov>
**Sent:** Tuesday, January 29, 2019 1:42 PM
**To:** Olive, Ryan
**Cc:** Arlene Henry; Don Fitting
**Subject:** Re: WETT testing & sampling point

I didn't see anything in 567 IAC 63.4 that would prohibit it and although the NPDES permit specifies "effluent after disinfection", Tox Testing protocols don't limit which months testing has to be done. If the city tests in January when the disinfection system is shut down, I don't see how a sample from the pre-disinfection sampling point would differ from a sample collected at the post-disinfection sampling point. So, unless I'm missing something, I'd think the water quality at both sampling locations would be the same this time of year so it shouldn't matter where the sample is collected. I guess my short answer is I'm okay with it. However, we'd likely have to evaluate other options if the same request were made during the disinfection season.

On Tue, Jan 29, 2019 at 11:20 AM Olive, Ryan <ryan.olive@dnr.iowa.gov> wrote:

I don't have any issue with the sampling taking place prior to disinfection. Terry, do you agree?

On Mon, Jan 28, 2019 at 3:13 PM Arlene Henry <henrya@burlingtoniowa.org> wrote:

Hi, Ryan! I have been trying to get the annual WETT testing of the effluent done this year, but have been running into some problems. We were originally scheduled for testing on January 23rd . The day before the composite was to be initiated the post-disinfection EF pump motor broke down. I rescheduled for the following week and then had to reschedule again because the motor hadn't been fixed yet. The pump motor is now repaired, but I am told we have a broken EF force main line and don't yet have a timeline on repairs. Since it is winter and we are not chlorinating, will it be permissible to use the pre-disinfection EF sampling point for the WETT testing?

*Arlene Henry*

Industrial Pretreatment Coordinator

Wastewater Treatment Facility

Mailing address: 400 Washington St.

Shipping address: 101 South St.

Burlington, IA 52601

Phone: 319-753-8157

Fax: 319-753-8152

henrya@burlingtoniowa.org

Plant by-pass had false reading on 1-20-2019 and 1-22-2019.

Influent sampler not started on 1-27-2019.

False reading for final effluent on 1-29-2019 and 1-30-2019.

Pending results from SHL for final effluent Total Nitrogen on 1-31-2019.

See page two for additional comments.

"Effluent After Disinfection" results for both Temp and pH on 9/2- 9/6 and 9/9 -9/10 were on samples collected "Prior To Disinfection" due to equipment problems.

"Effluent After Disinfection" results for NH3-N Tot-N and Phos on 9/5, 9/10, 9/17 and 9/19 were on samples collected Prior to Disinfection" due to Equipment Problems.

9/15 thru 9/16 bypass at Outfall 015 due to construction sand plugging system.

9/29 Burlington experienced a wet weather event between 6AM Sunday, 9/29, and 6AM Monday, 9/30. The Lucas equalization tank is within the Hawkeye sanitary sewer system. There was sufficient flow in the separated Hawkeye system to begin directing sanitary flow to the equalization tank. The level in the tank reached the overflow point at 6:00 PM Sunday, 9/29 and continued to overflow until 11:20PM at which time bypassing stopped. Public Works reports the bypass meter recorded 148,000 gallons bypassed. The bypass mixes with storm water within the Hawkeye storm sewer and enters the Mississippi River at outfall No. 011.

7-5-2019 South chlorine contact tank's ejector plugged at time sample collected. TRC, lbs/day based on North tank's residual mg/l.

7-23/7-24 South Primary offline for annual preventive maintenance and inspection.

7-24/7-25 North Primary offline for annual preventive maintenance and inspection.

7-27/7-30 #1 Final Clarifier offline for annual preventive maintenance and inspection.

7-30/8-1 #3 Final Clarifier offline for annual preventive maintenance and inspection.

6- 1 thru 6-12 Total effluent values are estimates because effluent parshall flumes operating in "submerged" state due to river level. Values entered are from plant influent's magnetic flow meter.

6-1 Market St Lift Station flooded when temporary HESCO Flood barrier failed. Bypassing 70% of Burlington's Wastewater, mostly through Outfall's 011 and 012. 6-3; 6-5; 6-10 and 6-12 no DAF sludge due to flooding

6-3 no Chlorine Residual samples taken due to flooding of chlorine contact tanks with river water.

6-20 Market St. Lift Station put back in operation. Bypassing due to station being Off-Line stopped.

May 1st thru May 9th Total effluent values are estimates because effluent parshall flumes operating in "submerged" state due to river level. Values entered are from plant influent's magnetic flow meter.

May 3, 2019 and May 31, 2019 Chlorine residual samples not collected due to chlorine contact tanks over-topped due to level of river.

Effluent composite, percent (%) recovery, was undeterminable; excessive volume over-topped sample container due to high effluent totals metered (false reading and/or very high flows); analytical results reported are for "captured" sample: Total P, Ammonia, TSS and BOD for 4-30, 5-1, 5-2, 5-3, 5-4, 5-6, 5-7, 5-21, 5-22, 5-23, 5-27, 5-28 and 5-29.

No DAF samples collected for 5-6, 5-8 and 5-29 due to flood. (DAFs off line)

5-26-19 No Influent sample. (Operator error; sampler not turned on)

5-29-19 through 6-11-19 Effluent sampler mode in TIME rather than FLOW (Parshall flumes "submerged")

5-30-19 Chlorine residual; inner walls of chlorine tanks are submerged (short circuiting taking place).

Bypassing from 5-26 through 5-29: Lucas EQ Tank to Outfall #011-10.13 MG; Gunnison EQ Tank to Outfall #011-7.63 MG; WWTP Influent well to Outfall #022- 11,000 gallons; Golf Lane L. Sta. to Outfall #026 on 5-28/5-29 volume unknown; 14th St. L. Sta. to Outfall #027 on 5-28/5-29 volume unknown; Manhole 91-J-8 on Osborn overflowed on 5-28 volume unknown.

3-11-2019: 2713 Regina reported to Public Works a sewer break. A leak was found in the joint of sanitary sewer line. Line was replaced, the amount of sewage that leaked out was minimal (Report filed with FO6). 3-18-19 Public Works reported 10 to 50 gallons of sewage was coming from a manhole 24J10 to 25J10 due to small pieces of wood holding back solids. (Report filed with FO6).

- 2-18-2019 DAF not operating due to repairs. 2-23-2019 Combination rain event over frozen ground and snow melt/runoff due to warm weather caused wet weather flow conditions. Possible/probable bypassing but unmetered at Lucas EQ Tank. Also experienced brief period of metered bypassing at Outfall No 22 recorded as being (less than or equal to) 12,000 gallons (see file).

  Toxicity report is included with February 2019 report, see attached email.

**Arlene Henry**

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**From:** Jones, Terry <terry.jones@dnr.iowa.gov>
**Sent:** Tuesday, January 29, 2019 1:42 PM
**To:** Olive, Ryan
**Cc:** Arlene Henry; Don Fitting
**Subject:** Re: WETT testing & sampling point

I didn't see anything in 567 IAC 63.4 that would prohibit it and although the NPDES permit specifies "effluent after disinfection", Tox Testing protocols don't limit which months testing has to be done. If the city tests in January when the disinfection system is shut down, I don't see how a sample from the pre-disinfection sampling point would differ from a sample collected at the post-disinfection sampling point. So, unless I'm missing something, I'd think the water quality at both sampling locations would be the same this time of year so it shouldn't matter where the sample is collected. I guess my short answer is I'm okay with it. However, we'd likely have to evaluate other options if the same request were made during the disinfection season.

On Tue, Jan 29, 2019 at 11:20 AM Olive, Ryan <ryan.olive@dnr.iowa.gov> wrote:

I don't have any issue with the sampling taking place prior to disinfection. Terry, do you agree?

On Mon, Jan 28, 2019 at 3:13 PM Arlene Henry <henrya@burlingtoniowa.org> wrote:

Hi, Ryan! I have been trying to get the annual WETT testing of the effluent done this year, but have been running into some problems. We were originally scheduled for testing on January 23rd. The day before the composite was to be initiated the post-disinfection EF pump motor broke down. I rescheduled for the following week and then had to reschedule again because the motor hadn't been fixed yet. The pump motor is now repaired, but I am told we have a broken EF force main line and don't yet have a timeline on repairs. Since it is winter and we are not chlorinating, will it be permissible to use the pre-disinfection EF sampling point for the WETT testing?

*Arlene Henry*

Industrial Pretreatment Coordinator

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THE UNIVERSITY OF IOWA

**State Hygienic Laboratory**
Iowa's Environmental and
Public Health Laboratory
www.shl.uiowa.edu

February 15, 2019

Arlene Henry
Burlington WWTP
400 Washington St.
Burlington, IA 52601

RE: SHL Sample Number: 767662

Dear Ms. Henry:

Analytical and toxicity test results for the sample listed above are enclosed. This sample was received by our Laboratory for effluent toxicity testing on February 6, 2019.

As required by the Iowa Department of Natural Resources, statistical analyses were performed on the 48 hour mortality data. These statistical analyses determined there was no significant difference in survival between the effluent dilution and the control.

As a result, your sample, SHL Lab No. 767662, "passed" the toxicity tests.

The State Hygienic Laboratory appreciates this opportunity to provide you with our services. Questions regarding the test or results should be directed to Tim Blake, Jim Luzier, or Lizzy Oberhoffer. Test analysts can be contacted on the dedicated WETT program phone line, (515) 725-1648.

Sincerely,

Jim Luzier
Limnologist

# Iowa Department of Natural Resources
# Effluent Toxicity Testing Report Form
# 48-Hour Acute Test

## FACILITY DATA

| | | | |
|---|---|---|---|
| Facility Name: | Burlington WWTP | NPDES # IA: | 2909001 |
| Address: | 400 Washington St. | | |
| City/State/Zip: | Burlington, IA 52601 | | |
| Lab Sample #: | 767662 | Date Collected: | 2/5/2019 7:33:00 AM |
| Sampling Location: | effluent | | |
| Diluted effluent sample ratio (from permit): | 5.3% | | |
| Date Received: | 2/6/2019 10:23:00 AM | Temperature Upon Receipt: | 0.1 °C |

## ORGANISM DATA

| | | | |
|---|---|---|---|
| Pimephales promelas age: | 6 Days | Ceriodaphnia dubia age: | < 24 Hours |
| Reference Toxicant: | Sodium Chloride | Reference Toxicant: | Sodium Chloride |
| Reference LC50 (95% Conf. Interval): | 8.39 (7.99-8.82) gm/L | Reference LC50 (95% Conf. Interval): | 1.86 (1.72-2.00) gm/L |

## SAMPLE DATA (100% EFFLUENT)

| | | | | | |
|---|---|---|---|---|---|
| Temperature | 24 | °C | Ammonia Nitrogen (as N) | 0.62 | mg/L |
| Initial D.O. | 8.5 | mg/L | D.O. (end of test) | 7.4 | mg/L |
| pH (start of test) | 7.5 | Units | pH (end of test) | 8.6 | Units |
| Total Ammonia (as NH3) | 0.75 | mg/L | Unionized Ammonia (calculated as NH3) | 0.01 | mg/L |
| Total Residual Chlorine | <0.1 | mg/L | Specific Conductance | 950 | µmhos |

## MORTALITY DATA

Laboratory (Name): State Hygienic Laboratory at the University of Iowa

Test begun (Date): 2/6/2019 11:10:00 AM Test ended (date): 2/8/2019 11:10:00 AM

| Conc. | Pimephales promelas Mortality (Number Dead/Number Tested) | | | | | | Ceriodaphnia dubia Mortality (Number Dead/Number Tested) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bk. 1 | Bk. 2 | Bk. 3 | Bk. 4 | Pass | Fail | Bk. 1 | Bk. 2 | Bk. 3 | Bk. 4 | Pass | Fail |
| Control | 0/5 | 0/5 | 0/5 | 0/5 | | | 0/5 | 0/5 | 0/5 | 0/5 | | |
| 5.3% | 0/6 | 0/5 | 0/5 | 0/5 | (☒) | (☐) | 0/5 | 0/5 | 0/5 | 0/5 | (☒) | (☐) |
| 100% | 0/5 | 0/5 | 0/5 | 0/5 | (☒) | (☐) | 0/5 | 0/5 | 0/5 | 0/5 | (☒) | (☐) |

EFFLUENT TOXICITY TESTING RESULTS: PASS (☒) FAIL (☐)

Comments: Total Residual Chlorine analyzed by Hach Colorimeter.
Sample filtered for removal of indigenous organisms or large particulates.

Date Reported: FEB 15 2019

Ceriodaphnia 48-h Acute Survival Test — University of Iowa-Hygienic Laboratory

| | | | | | |
|---|---|---|---|---|---|
| Analysis ID: | 15-1435-2748 | Endpoint: | 48h Survival Rate | CETIS Version: | CETISv1.8.4 |
| Analyzed: | 08 Feb-19 13:31 | Analysis: | Nonparametric-Two Sample | Official Results: | Yes |
| Batch ID: | 08-6295-5616 | Test Type: | Survival (48h) | Analyst: | |
| Start Date: | 06 Feb-19 11:10 | Protocol: | EPA/821/R-02-012 (2002) | Diluent: | Hard-Mod. Hard Synthetic Water |
| Ending Date: | 08 Feb-19 11:10 | Species: | Ceriodaphnia dubia | Brine: | |
| Duration: | 48h | Source: | Aquatic Biosystems, CO | Age: | |
| Sample ID: | 08-2454-7877 | Code: | 767662 | Client: | Burlington Waste Water Treatment Pl |
| Sample Date: | 05 Feb-19 07:33 | Material: | WWTP Effluent | Project: | Iowa WET Test |
| Receive Date: | 06 Feb-19 10:23 | Source: | NPDES Permit # | | |
| Sample Age: | 28h (0.1 °C) | Station: | 2909001 | | |

| Data Transform | Zeta | Alt Hyp | Trials | Seed | Test Result |
|---|---|---|---|---|---|
| Angular (Corrected) | NA | C > T | NA | NA | Sample passes 48h survival rate endpoint |

**Wilcoxon Rank Sum Two-Sample Test**

| Control | vs | C-% | Test Stat | Critical | Ties | DF | P-Value | P-Type | Decision(α:5%) |
|---|---|---|---|---|---|---|---|---|---|
| Dilution Water | | 5.3 | 18 | NA | 1 | 6 | 1.0000 | Exact | Non-Significant Effect |

**Test Acceptability Criteria**

| Attribute | Test Stat | TAC Limits | Overlap | Decision |
|---|---|---|---|---|
| Control Resp | 1 | 0.9 - NL | Yes | Passes Acceptability Criteria |

**ANOVA Table**

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---|---|---|---|---|---|---|
| Between | 0 | 0 | 1 | 65540 | <0.0001 | Significant Effect |
| Error | 0 | 0 | 6 | | | |
| Total | 0 | | 7 | | | |

**48h Survival Rate Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |
| 5.3 | | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |

**Angular (Corrected) Transformed Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |
| 5.3 | | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |

**48h Survival Rate Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1 | 1 | 1 | 1 |
| 5.3 | | 1 | 1 | 1 | 1 |

**Angular (Corrected) Transformed Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1.345 | 1.345 | 1.345 | 1.345 |
| 5.3 | | 1.345 | 1.345 | 1.345 | 1.345 |

**48h Survival Rate Binomials**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 5/5 | 5/5 | 5/5 | 5/5 |
| 5.3 | | 5/5 | 5/5 | 5/5 | 5/5 |

Ceriodaphnia 48-h Acute Survival Test — University of Iowa-Hygienic Laboratory

| | | | | | |
|---|---|---|---|---|---|
| Analysis ID: | 00-8214-5287 | Endpoint: | 48h Survival Rate | CETIS Version: | CETISv1.8.4 |
| Analyzed: | 08 Feb-19 13:31 | Analysis: | Nonparametric-Two Sample | Official Results: | Yes |
| Batch ID: | 08-6295-5616 | Test Type: | Survival (48h) | Analyst: | |
| Start Date: | 06 Feb-19 11:10 | Protocol: | EPA/821/R-02-012 (2002) | Diluent: | Hard-Mod. Hard Synthetic Water |
| Ending Date: | 08 Feb-19 11:10 | Species: | Ceriodaphnia dubia | Brine: | |
| Duration: | 48h | Source: | Aquatic Biosystems, CO | Age: | |
| Sample ID: | 08-2454-7877 | Code: | 767662 | Client: | Burlington Waste Water Treatment Pl |
| Sample Date: | 05 Feb-19 07:33 | Material: | WWTP Effluent | Project: | Iowa WET Test |
| Receive Date: | 06 Feb-19 10:23 | Source: | NPDES Permit # | | |
| Sample Age: | 28h (0.1 °C) | Station: | 2909001 | | |

| Data Transform | Zeta | Alt Hyp | Trials | Seed | Test Result |
|---|---|---|---|---|---|
| Angular (Corrected) | NA | C > T | NA | NA | Sample passes 48h survival rate endpoint |

**Wilcoxon Rank Sum Two-Sample Test**

| Control | vs | C-% | Test Stat | Critical | Ties | DF | P-Value | P-Type | Decision(α:5%) |
|---|---|---|---|---|---|---|---|---|---|
| Dilution Water | | 100 | 18 | NA | 1 | 6 | 1.0000 | Exact | Non-Significant Effect |

**Test Acceptability Criteria**

| Attribute | Test Stat | TAC Limits | Overlap | Decision |
|---|---|---|---|---|
| Control Resp | 1 | 0.9 - NL | Yes | Passes Acceptability Criteria |

**ANOVA Table**

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---|---|---|---|---|---|---|
| Between | 0 | 0 | 1 | 65540 | <0.0001 | Significant Effect |
| Error | 0 | 0 | 6 | | | |
| Total | 0 | | 7 | | | |

**48h Survival Rate Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |
| 100 | | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |

**Angular (Corrected) Transformed Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |
| 100 | | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |

**48h Survival Rate Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1 | 1 | 1 | 1 |
| 100 | | 1 | 1 | 1 | 1 |

**Angular (Corrected) Transformed Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1.345 | 1.345 | 1.345 | 1.345 |
| 100 | | 1.345 | 1.345 | 1.345 | 1.345 |

**48h Survival Rate Binomials**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 5/5 | 5/5 | 5/5 | 5/5 |
| 100 | | 5/5 | 5/5 | 5/5 | 5/5 |

Fathead Minnow 48-h Acute Survival Test — University of Iowa-Hygienic Laboratory

| | | | | | |
|---|---|---|---|---|---|
| Analysis ID: | 07-5492-2734 | Endpoint: | 48h Survival Rate | CETIS Version: | CETISv1.8.4 |
| Analyzed: | 08 Feb-19 13:36 | Analysis: | Nonparametric-Two Sample | Official Results: | Yes |
| Batch ID: | 19-2070-7061 | Test Type: | Survival (48h) | Analyst: | |
| Start Date: | 06 Feb-19 11:10 | Protocol: | EPA/821/R-02-012 (2002) | Diluent: | Hard-Mod. Hard Synthetic Water |
| Ending Date: | 08 Feb-19 11:10 | Species: | Pimephales promelas | Brine: | |
| Duration: | 48h | Source: | Environmental Consulting & Testing, WI | Age: | 6 |
| Sample ID: | 08-2454-7877 | Code: | 767662 | Client: | Burlington Waste Water Treatment Pl |
| Sample Date: | 05 Feb-19 07:33 | Material: | WWTP Effluent | Project: | Iowa WET Test |
| Receive Date: | 06 Feb-19 10:23 | Source: | NPDES Permit # | | |
| Sample Age: | 28h (0.1 °C) | Station: | 2909001 | | |

| Data Transform | Zeta | Alt Hyp | Trials | Seed | Test Result | PMSD |
|---|---|---|---|---|---|---|
| Angular (Corrected) | NA | C > T | NA | NA | Sample passes 48h survival rate endpoint | 5.43% |

**Wilcoxon Rank Sum Two-Sample Test**

| Control | vs | C-% | Test Stat | Critical | Ties | DF | P-Value | P-Type | Decision(α:5%) |
|---|---|---|---|---|---|---|---|---|---|
| Dilution Water | | 5.3 | 18 | NA | 1 | 6 | 1.0000 | Exact | Non-Significant Effect |

**ANOVA Table**

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---|---|---|---|---|---|---|
| Between | 4.972276E-05 | 4.972276E-05 | 1 | 1 | 0.3559 | Non-Significant Effect |
| Error | 0.0002983366 | 4.972276E-05 | 6 | | | |
| Total | 0.0003480593 | | 7 | | | |

**Distributional Tests**

| Attribute | Test | Test Stat | Critical | P-Value | Decision(α:1%) |
|---|---|---|---|---|---|
| Variances | Mod Levene Equality of Variance | 1 | 13.75 | 0.3559 | Equal Variances |
| Variances | Levene Equality of Variance | 9 | 13.75 | 0.0240 | Equal Variances |
| Distribution | Shapiro-Wilk W Normality | 0.7065 | 0.6451 | 0.0027 | Non-normal Distribution |
| Distribution | Kolmogorov-Smirnov D | 0.375 | 0.3313 | 0.0015 | Non-normal Distribution |
| Distribution | Anderson-Darling A2 Normality | 1.162 | 3.878 | 0.0049 | Non-normal Distribution |

**48h Survival Rate Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |
| 5.3 | | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |

**Angular (Corrected) Transformed Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |
| 5.3 | | 4 | 1.35 | 1.334 | 1.366 | 1.345 | 1.345 | 1.365 | 0.004985 | 0.74% | -0.37% |

**48h Survival Rate Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1 | 1 | 1 | 1 |
| 5.3 | | 1 | 1 | 1 | 1 |

**Angular (Corrected) Transformed Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1.345 | 1.345 | 1.345 | 1.345 |
| 5.3 | | 1.365 | 1.345 | 1.345 | 1.345 |

**48h Survival Rate Binomials**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 5/5 | 5/5 | 5/5 | 5/5 |
| 5.3 | | 6/6 | 5/5 | 5/5 | 5/5 |

Fathead Minnow 48-h Acute Survival Test — University of Iowa-Hygienic Laboratory

| | | | | | |
|---|---|---|---|---|---|
| Analysis ID: | 17-2580-4983 | Endpoint: | 48h Survival Rate | CETIS Version: | CETISv1.8.4 |
| Analyzed: | 08 Feb-19 13:36 | Analysis: | Nonparametric-Two Sample | Official Results: | Yes |
| Batch ID: | 19-2070-7061 | Test Type: | Survival (48h) | Analyst: | |
| Start Date: | 06 Feb-19 11:10 | Protocol: | EPA/821/R-02-012 (2002) | Diluent: | Hard-Mod. Hard Synthetic Water |
| Ending Date: | 08 Feb-19 11:10 | Species: | Pimephales promelas | Brine: | |
| Duration: | 48h | Source: | Environmental Consulting & Testing, WI | Age: | 6 |
| Sample ID: | 08-2454-7877 | Code: | 767662 | Client: | Burlington Waste Water Treatment Pl |
| Sample Date: | 05 Feb-19 07:33 | Material: | WWTP Effluent | Project: | Iowa WET Test |
| Receive Date: | 06 Feb-19 10:23 | Source: | NPDES Permit # | | |
| Sample Age: | 28h (0.1 °C) | Station: | 2909001 | | |

| Data Transform | Zeta | Alt Hyp | Trials | Seed | Test Result |
|---|---|---|---|---|---|
| Angular (Corrected) | NA | C > T | NA | NA | Sample passes 48h survival rate endpoint |

**Wilcoxon Rank Sum Two-Sample Test**

| Control | vs | C-% | Test Stat | Critical | Ties | DF | P-Value | P-Type | Decision(α:5%) |
|---|---|---|---|---|---|---|---|---|---|
| Dilution Water | | 100 | 18 | NA | 1 | 6 | 1.0000 | Exact | Non-Significant Effect |

**ANOVA Table**

| Source | Sum Squares | Mean Square | DF | F Stat | P-Value | Decision(α:5%) |
|---|---|---|---|---|---|---|
| Between | 0 | 0 | 1 | 65540 | <0.0001 | Significant Effect |
| Error | 0 | 0 | 6 | | | |
| Total | 0 | | 7 | | | |

**48h Survival Rate Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |
| 100 | | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.0% | 0.0% |

**Angular (Corrected) Transformed Summary**

| C-% | Control Type | Count | Mean | 95% LCL | 95% UCL | Median | Min | Max | Std Err | CV% | %Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Dilution Water | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |
| 100 | | 4 | 1.345 | 1.345 | 1.346 | 1.345 | 1.345 | 1.345 | 0 | 0.0% | 0.0% |

**48h Survival Rate Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1 | 1 | 1 | 1 |
| 100 | | 1 | 1 | 1 | 1 |

**Angular (Corrected) Transformed Detail**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 1.345 | 1.345 | 1.345 | 1.345 |
| 100 | | 1.345 | 1.345 | 1.345 | 1.345 |

**48h Survival Rate Binomials**

| C-% | Control Type | Rep 1 | Rep 2 | Rep 3 | Rep 4 |
|---|---|---|---|---|---|
| 0 | Dilution Water | 5/5 | 5/5 | 5/5 | 5/5 |
| 100 | | 5/5 | 5/5 | 5/5 | 5/5 |

Plant by-pass had false reading on 1-20-2019 and 1-22-2019.

Influent sampler not started on 1-27-2019.

False reading for final effluent on 1-29-2019 and 1-30-2019.

See page two for additional comments.

**Arlene Henry**

**From:** Jones, Terry <terry.jones@dnr.iowa.gov>
**Sent:** Tuesday, January 29, 2019 1:42 PM
**To:** Olive, Ryan
**Cc:** Arlene Henry; Don Fitting
**Subject:** Re: WETT testing & sampling point

I didn't see anything in 567 IAC 63.4 that would prohibit it and although the NPDES permit specifies "effluent after disinfection", Tox Testing protocols don't limit which months testing has to be done. If the city tests in January when the disinfection system is shut down, I don't see how a sample from the pre-disinfection sampling point would differ from a sample collected at the post-disinfection sampling point. So, unless I'm missing something, I'd think the water quality at both sampling locations would be the same this time of year so it shouldn't matter where the sample is collected. I guess my short answer is I'm okay with it. However, we'd likely have to evaluate other options if the same request were made during the disinfection season.

On Tue, Jan 29, 2019 at 11:20 AM Olive, Ryan <ryan.olive@dnr.iowa.gov> wrote:

I don't have any issue with the sampling taking place prior to disinfection. Terry, do you agree?

On Mon, Jan 28, 2019 at 3:13 PM Arlene Henry <henrya@burlingtoniowa.org> wrote:

Hi, Ryan! I have been trying to get the annual WETT testing of the effluent done this year, but have been running into some problems. We were originally scheduled for testing on January 23rd. The day before the composite was to be initiated the post-disinfection EF pump motor broke down. I rescheduled for the following week and then had to reschedule again because the motor hadn't been fixed yet. The pump motor is now repaired, but I am told we have a broken EF force main line and don't yet have a timeline on repairs. Since it is winter and we are not chlorinating, will it be permissible to use the pre-disinfection EF sampling point for the WETT testing?

*Arlene Henry*

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