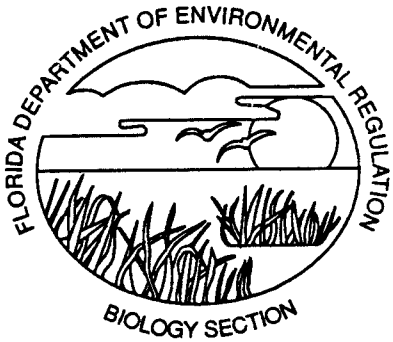



Bioassays of

# Arlington East Sewage Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026441

Sampled 6/11/90

August 13, 1990

**Biology Section**
**Division of Administrative and Technical Services**

Bioassays of

# Arlington East Sewage Treatment Plant

Jacksonville, Duval County, Florida

NPDES #FL0026441

**Biology Section**
**Bureau of Laboratories**
**August 13, 1990**

## Introduction

Arlington East STP, Jacksonville, Duval County, Florida, NPDES #FL0026441, on 12 to 14 June, 1990.

This facility is located at 1555 Millcoe Road in Jacksonville. Treatment of sewage includes screening, grit removal, primary clarification, aeration, secondary clarification, and chlorination. The facility has a design capacity of 10 MGD. The average flow is approximately 3 MGD. Recovered water is discharged to the St. Johns River.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

## Results and Discussion

The Biology Section performed static bioassays on a sample of chlorinated discharge from this facility using the bioassay test organisms, the waterflea, *Ceriodaphnia dubia*, and the fish, *Notropis leedsi*. The sample proved toxic to both test species, producing $LC_{50}$'s of < 100%. The sodium thiosulfate method was used to dechlorinate a portion of the sample. Bioassays performed on the dechlorinated sample indicated that the sample was not toxic to *N. leedsi*. The test using *C. dubia* was invalidated due to excessive control mortality. Deaths occurred in the control and each test concentration. The cause of these deaths was not determined. The control water was not suspect as it came from the same batch that proved satisfactory in prior and subsequent tests.

We attribute the toxicity in the sample to the total residual chlorine concentration of 0.4 mg/l (Hach). The total and unionized ammonia concentrations were 0.78 mg/l and 0.04 mg/l, respectively.

## Conclusion

The sample of discharge from this facility was toxic on 11 June, 1990.

**Table 1. Concentration Series and Volumes Used for These Static Bioassays.**

*Ceriodaphnia dubia* (water flea)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 15.0 ml | 0.0 ml | 15 ml |
| 10.0% | 13.5 ml | 1.5 ml | 15 ml |
| 30.0% | 10.5 ml | 4.5 ml | 15 ml |
| 50.0% | 7.5 ml | 7.5 ml | 15 ml |
| 70.0% | 4.5 ml | 10.5 ml | 15 ml |
| 85.0% | 2.25 ml | 12.75 ml | 15 ml |
| 100.0% | 0.0 ml | 15.0 ml | 15 ml |

*Notropis leedsi* (bannerfin shiner)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 500 ml | 0 ml | 500 ml |
| 10.0% | 450 ml | 50 ml | 500 ml |
| 30.0% | 350 ml | 150 ml | 500 ml |
| 50.0% | 250 ml | 250 ml | 500 ml |
| 70.0% | 150 ml | 350 ml | 500 ml |
| 85.0% | 75 ml | 425 ml | 500 ml |
| 100.0% | 0 ml | 500 ml | 500 ml |

Table 2. Data recorded during the static screening bioassay of a sample of discharge from the Arlington East STP, Jacksonville, Duval County, Florida, NPDES #FL0026441, on 12 to 13 June, 1990.

Facility: **Arlington East Sewage Treatment Plant** NPDES # **FL0026441** Facility Type: **Sewage Treatment**
Location: 1555 Millcoe Rd., Jacksonville Contact/District: K. Gerard
County: Duval Test type: static screen
Sample Collection Date: **6/11/90** Time: 1215 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 6/12/90 Time: 1130 Chlorination Type: **chlorinated**
Test Ending Date: 6/13/90 Time: 1100 **Page 1 of 1**

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
**LC50:** <100%

| Concentrations | SURVIVAL # at 0 hr | Live at 24 hr | Live at 48 hr | Dissolved Oxygen 0 hour | 24 hour | 48 hour | pH 0 hour | 24 hour | 48 hour | Temperature 0 hour | 24 hour | 48 hour | Conductivity 0 hour | 24 hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 5 | 3 | - | 8.4 | 8.4 | - | 8.2 | 8.3 | - | 22.7 | 22.1 | - | - | - |
| Control | 5 | 4 | - | 8.4 | 8.4 | - | 8.2 | 8.3 | - | - | - | - | - | - |
| Control | 5 | 4 | - | 8.4 | 8.4 | - | 8.2 | 8.3 | - | - | - | - | - | - |
| Control | 5 | 2 | - | 8.4 | 8.4 | - | 8.2 | 8.3 | - | - | - | - | 200 | 205 |
| 100% | 5 | 0 | - | 8.3 | 8.5 | - | 7.8 | 8.6 | - | 22.4 | 22.0 | - | - | - |
| 100% | 5 | 0 | - | 8.3 | 8.5 | - | 7.8 | 8.6 | - | - | - | - | - | - |
| 100% | 5 | 0 | - | 8.3 | 8.5 | - | 7.8 | 8.6 | - | - | - | - | - | - |
| 100% | 5 | 0 | - | 8.3 | 8.5 | - | 7.8 | 8.6 | - | - | - | - | 945 | 960 |

Organism: ***Notropis leedsi*** Age: 19 days
**LC50:** <100%

| Concentrations | SURVIVAL # at 0 hr | Live at 24 hr | Live at 48 hr | Dissolved Oxygen 0 hour | 24 hour | 48 hour | pH 0 hour | 24 hour | 48 hour | Temperature 0 hour | 24 hour | 48 hour | Conductivity 0 hour | 24 hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 5 | 5 | - | 8.1 | 7.7 | - | 7.9 | 8.3 | - | 22.3 | 22.9 | - | - | - |
| Control | 5 | 5 | - | 8.1 | 7.7 | - | 7.9 | 8.3 | - | - | - | - | 240 | 250 |
| 100% | 5 | 0 | - | 8.1 | 6.7 | - | 7.6 | 8.1 | - | 22.9 | 23.0 | - | - | - |
| 100% | 5 | 0 | - | 8.2 | 6.5 | - | 7.6 | 8.1 | - | - | - | - | 1000 | 1020 |

| Total Residual Cl2 | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.5 | Hach |
| Lab: | 0.4 | Iodometric |

| Ammonia | Total (mg/l) | Unionized (mg/l) |
|---|---|---|
| Control Water (fish): | 0.00 | 0.00 |
| Cond. Control Water (daphnids): | 0.00 | 0.00 |
| 100% Sample: | 0.78 | 0.04 |

| Alk & Hardness | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 122 |
| Cond. Control Water (daphnids): | 68 | 87 |
| 100% Sample: | 167 | 275 |

| Salinity (ppt) | |
|---|---|
| Control Water: | 0 |
| 100% Sample: | 0 |

Table 3. Data recorded during the static definitive bioassay of a sample of discharge from the Arlington East STP, Jacksonville, Duval County, Florida, NPDES #FL0026441, on 12 to 14 June, 1990.

Facility: **Arlington East Sewage Treatment Plant** NPDES # **FL0026441** Facility Type: **Sewage Treatment**
Location: 1555 Millcoe Rd., Jacksonville Contact/District: K. Gerard
County: Duval Test type: static definitive
Sample Collection Date: **6/11/90** Time: 1215 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 6/12/90 Time: 1130 Chlorination Type: **dechlorinated**
Test Ending Date: 6/14/90 Time: 1100 Dechlor method: lab, sodium thiosulfate **Page 1 of 2**

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | Dissolved Oxygen | | | pH | | | Temperature | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | Live at 24 hr | Live at 48 hr | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 48 hour |
| Control | 5 | 4 | 1 | 8.5 | - | 8.5 | 8.2 | - | 8.2 | 22.5 | - | 22.8 | - | - |
| Control | 5 | 2 | 2 | 8.5 | - | 8.5 | 8.2 | - | 8.2 | - | - | - | - | - |
| Control | 5 | 5 | 2 | 8.5 | - | 8.5 | 8.2 | - | 8.2 | - | - | - | - | - |
| Control | 5 | 5 | 3 | 8.5 | - | 8.5 | 8.2 | - | 8.2 | - | - | - | 200 | 220 |
| 10% | 5 | 3 | 1 | 8.4 | - | 8.5 | 8.1 | - | 8.3 | 22.5 | - | 22.4 | - | - |
| 10% | 5 | 3 | 1 | 8.5 | - | 8.5 | 8.1 | - | 8.3 | - | - | - | - | - |
| 10% | 5 | 5 | 5 | 8.5 | - | 8.5 | 8.1 | - | 8.3 | - | - | - | - | - |
| 10% | 5 | 5 | 2 | 8.5 | - | 8.5 | 8.1 | - | 8.3 | - | - | - | 280 | 300 |
| 30% | 5 | 2 | 2 | 8.5 | - | 8.5 | 8.1 | - | 8.4 | 22.6 | - | 23.1 | - | - |
| 30% | 5 | 4 | 4 | 8.5 | - | 8.5 | 8.1 | - | 8.4 | - | - | - | - | - |
| 30% | 5 | 4 | 4 | 8.5 | - | 8.5 | 8.1 | - | 8.4 | - | - | - | - | - |
| 30% | 5 | 3 | 2 | 8.5 | - | 8.5 | 8.1 | - | 8.4 | - | - | - | 435 | 470 |
| 50% | 5 | 5 | 2 | 8.4 | - | 8.4 | 8.1 | - | 8.4 | 22.7 | - | 23.2 | - | - |
| 50% | 5 | 5 | 3 | 8.4 | - | 8.4 | 8.1 | - | 8.4 | - | - | - | - | - |
| 50% | 5 | 5 | 5 | 8.4 | - | 8.4 | 8.1 | - | 8.4 | - | - | - | - | - |
| 50% | 5 | 5 | 3 | 8.4 | - | 8.4 | 8.1 | - | 8.4 | - | - | - | 590 | 630 |
| 70% | 5 | 4 | 3 | 8.4 | - | 8.4 | 8.1 | - | 8.5 | 22.8 | - | 23.2 | - | - |
| 70% | 5 | 5 | 4 | 8.2 | - | 8.4 | 8.1 | - | 8.5 | - | - | - | - | - |
| 70% | 5 | 3 | 3 | 8.2 | - | 8.4 | 8.1 | - | 8.5 | - | - | - | - | - |
| 70% | 5 | 4 | 2 | 8.3 | - | 8.4 | 8.1 | - | 8.5 | - | - | - | 740 | 785 |
| 85% | 5 | 4 | 3 | 8.3 | - | 8.4 | 8.0 | - | 8.6 | 22.8 | - | 23.2 | - | - |
| 85% | 5 | 4 | 3 | 8.3 | - | 8.4 | 8.0 | - | 8.6 | - | - | - | - | - |
| 85% | 5 | 4 | 1 | 8.3 | - | 8.4 | 8.0 | - | 8.6 | - | - | - | - | - |
| 85% | 5 | 4 | 4 | 8.3 | - | 8.4 | 8.0 | - | 8.6 | - | - | - | 855 | 905 |
| 100% | 5 | 4 | 3 | 8.3 | - | 8.5 | 8.0 | - | 8.6 | 22.7 | - | 23.0 | - | - |
| 100% | 5 | 3 | 1 | 8.3 | - | 8.5 | 8.0 | - | 8.6 | - | - | - | - | - |
| 100% | 5 | 4 | 3 | 8.3 | - | 8.4 | 8.0 | - | 8.6 | - | - | - | - | - |
| 100% | 5 | 4 | 3 | 8.3 | - | 8.5 | 8.0 | - | 8.6 | - | - | - | 965 | 1005 |

| Total Residual Cl2 | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.5 | Hach |
| Lab: | 0.4 | Iodometric |

| Ammonia | Total (mg/l) | Unionized (mg/l) |
|---|---|---|
| Control Water (fish): | 0.00 | 0.00 |
| Cond. Control Water (daphnids): | 0.00 | 0.00 |
| 100% Sample: | 0.78 | 0.04 |

| Alk & Hardness | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 122 |
| Cond. Control Water (daphnids): | 68 | 87 |
| 100% Sample: | 167 | 275 |

| Salinity (ppt) | |
|---|---|
| Control Water: | 0 |
| 100% Sample: | 0 |

- continued-

Table 3. Continued.

Facility: **Arlington East Sewage Treatment Plant** NPDES # **FL0026441** Facility Type: **Sewage Treatment**
Location: 1555 Millcoe Rd., Jacksonville Contact/District: K. Gerard
County: Duval Test type: static definitive
Sample Collection Date: **6/11/90** Time: 1215 # tests: 2 Receiving Water: St. Johns River
Test Beginning Date: 6/12/90 Time: 1130 Chlorination Type: **dechlorinated**
Test Ending Date: 6/14/90 Time: 1100 Dechlor method: lab, sodium thiosulfate **Page 2 of 2**

Organism: ***Notropis leedsi*** Age: 19 days
**LC50:** - Binomial: - Moving Average: - Probit: -

| Concentrations | SURVIVAL # at 0 hr | Live at 24 hr | Live at 48 hr | Dissolved Oxygen 0 hour | 24 hour | 48 hour | pH 0 hour | 24 hour | 48 hour | Temperature 0 hour | 24 hour | 48 hour | Conductivity 0 hour | 48 hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | 5 | 5 | 5 | 7.9 | 7.6 | 7.7 | 7.8 | 8.2 | 8.2 | 22.8 | 22.8 | 23.3 | - | - |
| Control | 5 | 5 | 5 | 7.9 | 7.6 | 7.8 | 7.8 | 8.2 | 8.2 | - | - | - | 240 | 265 |
| 10% | 5 | 5 | 5 | 8.0 | 7.5 | 7.8 | 7.8 | 8.2 | 8.2 | 22.8 | 22.8 | 23.1 | - | - |
| 10% | 5 | 5 | 5 | 8.0 | 7.6 | 7.8 | 7.8 | 8.2 | 8.3 | - | - | - | 320 | 340 |
| 30% | 5 | 5 | 5 | 8.2 | 7.5 | 7.9 | 7.8 | 8.2 | 8.2 | 22.7 | 22.7 | 23.0 | - | - |
| 30% | 5 | 5 | 5 | 8.2 | 7.5 | 7.9 | 7.7 | 8.2 | 8.2 | - | - | - | 475 | 500 |
| 50% | 5 | 5 | 5 | 8.2 | 7.5 | 7.7 | 7.7 | 8.2 | 8.3 | 22.7 | 22.7 | 22.9 | - | - |
| 50% | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | - | - | - | 630 | 665 |
| 70% | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | 22.8 | 22.8 | 22.9 | - | - |
| 70% | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | - | - | - | 785 | 825 |
| 85% | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | 22.8 | 22.9 | 23.0 | - | - |
| 85% | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | - | - | - | 895 | 935 |
| 100% | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | 22.9 | 23.0 | 23.1 | - | - |
| 100% | 5 | 5 | 5 | 8.2 | 7.5 | 7.6 | 7.7 | 8.2 | 8.3 | - | - | - | 1010 | 1060 |

| Total Residual Cl2 | mg/l | Method |
|---|---|---|
| Field: | - | - |
| Lab: | 0.5 | Hach |
| Lab: | 0.4 | Iodometric |

| Ammonia | Total (mg/l) | Unionized (mg/l) |
|---|---|---|
| Control Water (fish): | 0.00 | 0.00 |
| Cond. Control Water (daphnids): | 0.00 | 0.00 |
| 100% Sample: | 0.78 | 0.04 |

| Alk & Hardness | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 115 | 122 |
| Cond. Control Water (daphnids): | 68 | 87 |
| 100% Sample: | 167 | 275 |

| Salinity (ppt) | |
|---|---|
| Control Water: | 0 |
| 100% Sample: | 0 |

**Table 4. $LC_{50}$ Data for Bioassay of Arlington East STP, NPDES #FL0026441 on12 to 14 June, 1990.**

| Organism | Method of Data Analysis | 48 Hour $LC_{50}$ (95% Confidence Intervals) |
|---|---|---|
| **Chlorinated discharge** | | |
| *Ceriodaphnia dubia* | none | <100% [a] |
| *Notropis leedsi* | none | <100% [a] |

a The $LC_{50}$ is < 100% since all the organisms died in the lowest test concentration (100%).

# DER Biology Section — Acute-bioassay Bench Sheet

**Sample Source:** ARLINGTON EAST STP
**Address/City:** 1555 HILLCOE RD., JACKSONVILLE
**County:** DUVAL
**Contact/District:** KATHLEEN GERARD
**NPDES Permit #:** FLCO 26441 **Outfall #:** CO1

**Sample Collection:** Date 6/11/90 Time 1215
**Test Beginning:** Date 6/12/90 Time 1130
**Test Ending:** Date 6/14/90 Time 1100
**Test Organism:** Ceriodaphnia dubia
**Life Stage/Age:** <24 hr

**Test Number:** 1 of 4 **Test Type:** Screening (Definitive) (Static) Static Renewal | Flow-through

**Remarks:** Dechlor

**Instrument Calibrations:**

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | 7@7; 9@9 | 8.5@24°C | 1381@23.9 | 21.7@22.5 |
| 24 hr | 7@7; 9@9 | 8.7@23°C | 1379@23.9 | 22.8@23.6°C |
| 48 hr | 7@7; 9@9 | 8.7@23°C | 1374@23.9 | 22.4@23.7 |

| | | Number Live | | | DO (mg/l) | | | pH | | | Temp. (°C) | | | Cond. (µmhos/cm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conc. | Chamber # | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 |
| Cont | | 5 | 4 | 1 | 8.5 | | 8.5 | 8.2 | | 8.2 | 22.5 | | 22.8 | | | |
| " | | 5 | 2 | 2 | 8.5 | | 8.5 | 8.2 | | 8.2 | | | | | | |
| " | | 5 | 5 | 2 | 8.5 | | 8.5 | 8.2 | | 8.2 | | | | | | |
| " | | 5 | 5 | 3 | 8.5 | | 8.5 | 8.2 | | 8.2 | | | | 200 | | 220 |
| 10% | | 5 | 3 | 1 | 8.4 | | 8.5 | 8.1 | | 8.3 | 22.5 | | 22.9 | | | |
| " | | 5 | 3 | 1 | 8.5 | | 8.5 | 8.1 | | 8.3 | | | | | | |
| " | | 5 | 5 | 5 | 8.5 | | 8.5 | 8.1 | | 8.3 | | | | | | |
| " | | 5 | 5 | 2 | 8.5 | | 8.5 | 8.1 | | 8.3 | | | | 280 | | 300 |
| 30% | | 5 | 2 | 2 | 8.5 | | 8.5 | 8.1 | | 8.4 | 22.6 | | 23.1 | | | |
| " | | 5 | 4 | 4 | 8.5 | | 8.5 | 8.1 | | 8.4 | | | | | | |
| " | | 5 | 4 | 4 | 8.5 | | 8.5 | 8.1 | | 8.4 | | | | | | |
| " | | 5 | 3 | 2 | 8.5 | | 8.5 | 8.1 | | 8.4 | | | | 435 | | 510 |
| 50% | | 5 | 5 | 2 | 8.4 | | 8.4 | 8.1 | | 8.4 | 22.7 | | 23.2 | | | |
| " | | 5 | 5 | 3 | 8.4 | | 8.4 | 8.1 | | 8.4 | | | | | | |
| " | | 5 | 5 | 5 | 8.4 | | 8.4 | 8.1 | | 8.4 | | | | | | |
| " | | 5 | 5 | 3 | 8.4 | | 8.4 | 8.1 | | 8.4 | | | | 590 | | 630 |
| 70% | | 5 | 4 | 3 | 8.2 | | 8.4 | 8.1 | | 8.5 | 22.8 | | 23.2 | | | |
| " | | 5 | 5 | 4 | 8.2 | | 8.4 | 8.1 | | 8.5 | | | | | | |
| " | | 5 | 3 | 3 | 8.3 | | 8.4 | 8.1 | | 8.5 | | | | | | |
| " | | 5 | 4 | 2 | 8.3 | | 8.4 | 8.1 | | 8.5 | | | | 740 | | 755 |
| 85% | | 5 | 4 | 3 | 8.3 | | 8.4 | 8.0 | | 8.6 | 22.8 | | 23.2 | | | |
| " | | 5 | 4 | 3 | 8.3 | | 8.4 | 8.0 | | 8.6 | | | | | | |
| " | | 5 | 4 | 1 | 8.3 | | 8.4 | 8.0 | | 8.6 | | | | | | |
| " | | 5 | 4 | 4 | 8.3 | | 8.4 | 8.0 | | 8.6 | | | | 855 | | 905 |
| 100% | | 5 | 4 | 3 | 8.3 | | 8.5 | 8.0 | | 8.6 | 22.7 | | 23.0 | | | |
| " | | 5 | 3 | 1 | 8.3 | | 8.5 | 8.0 | | 8.6 | | | | | | |
| " | | 5 | 4 | 3 | 8.3 | | 8.4 | 8.0 | | 8.6 | | | | | | |
| " | | 5 | 4 | 3 | 8.3 | | 8.5 | 8.0 | | 8.6 | | | | 965 | | 1005 |
| Measured by: | | MF | MF | MF | SW | | ME | MF | | MP | SW | | MF | SW | | ME |
| Recorded by: | | MF | MF | MF | TH | | MGC | MF | | MGC | TH | | MGC | TH | | MGC |

**Investigators' Signatures**

Steven H Wolfe
Marshall Faulkner
Monya Harrington
Cliff Cameron
Reviewer

**Water-quality Parameters**

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | — | — | — |
| Lab Tot. Resid. Cl2: | | | 0.04 | Hach/Colo | SW |
| Alkalinity: | 115 | 68 | 167 | Hach | TH |
| Hardness: | 122 | 87 | 275 | Hach | TH |
| Total Ammonia: | 0.0 | 0.0 | 0.781 | Orion | MF |

slope = -56.9

# DER Biology Section — Acute-bioassay Bench Sheet

**Sample Source:** ARLINGTON EAST STP
**Address/City:**
**County:**
**Contact/District:**
**NPDES Permit #:** **Outfall #:**

**Sample Collection:** Date 6/11/90 Time 1215
**Test Beginning:** Date 6/12/90 Time 1130
**Test Ending:** Date 6/14/90 Time 1100
**Test Organism:** Notropis [illegible]si
**Life Stage/Age:** 19 days

**Test Number:** 2 of 4 **Test Type:** Screening (Definitive) (Static) Static Renewal | Flow-through

**Remarks:** Declor

**Instrument Calibrations:**

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | | | | |
| 24 hr | | | | |
| 48 hr | | | | |

| | | Number Live | | | DO (mg/l) | | | pH | | | Temp. (°C) | | | Cond. (µmhos/cm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conc. | Chamber # | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 |
| CONT | 43 | 5 | 5 | 5 | 7.9 | 7.6 | 7.7 | 7.8 | 8.2 | 8.2 | 22.8 | 22.8 | 23.3 | | | |
| " | 86 | 5 | 5 | 5 | 7.9 | 7.6 | 7.8 | 7.8 | 8.2 | 8.2 | | | | 240 | | 265 |
| 10% | 12 | 5 | 5 | 5 | 8.0 | 7.5 | 7.8 | 7.8 | 8.2 | 8.2 | 22.8 | 22.8 | 23.1 | | | |
| " | 20 | 5 | 5 | 5 | 8.0 | 7.6 | 7.8 | 7.8 | 8.2 | 8.3 | | | | 320 | | 340 |
| 30% | 69 | 5 | 5 | 5 | 8.2 | 7.5 | 7.9 | 7.8 | 8.2 | 8.2 | 22.7 | 22.7 | 23.0 | | | |
| " | 39 | 5 | 5 | 5 | 8.2 | 7.5 | 7.9 | 7.7 | 8.2 | 8.2 | | | | 475 | | 500 |
| 50% | 93 | 5 | 5 | 5 | 8.2 | 7.5 | 7.7 | 7.7 | 8.2 | 8.3 | 22.7 | 22.7 | 22.4 | | | |
| " | 41 | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | | | | 630 | | 665 |
| 70% | 50 | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | 22.8 | 22.8 | 22.4 | | | |
| " | 94 | 5 | 5 | 5 | 8.2 | 7.5 | 7.8 | 7.7 | 8.2 | 8.3 | | | | 785 | | 835 |
| 85% | 183 | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | 22.8 | 22.9 | 23.0 | | | |
| " | 271 | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | | | | 895 | | 935 |
| 100% | 83 | 5 | 5 | 5 | 8.2 | 7.4 | 7.6 | 7.7 | 8.2 | 8.3 | 22.9 | 23.0 | 23.1 | | | |
| " | 164 | 5 | 5 | 5 | 8.2 | 7.5 | 7.6 | 7.7 | 8.2 | 8.3 | | | | 1010 | | 1060 |
| Measured by: | | TMF | MF | ME | SW | MF | ME | MF | MF | ME | SW | MF | ME | SW | | MF |
| Recorded by: | | MF | MF | MGC | TH | MGC | MGC | MF | MGC | MGC | TH | MGC | MGC | TH | | MGC |

**Investigators' Signatures**

Steven H Wolfe
Marshall Faucett
Tonya Pennington
Mike Crayton
Reviewer

**Water-quality Parameters**

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | | | |
| Lab Tot. Resid. Cl2: | | | | | |
| Alkalinity: | | | | | |
| Hardness: | | | | | |
| Total Ammonia: | | | | | |

# DER Biology Section — Acute-bioassay Bench Sheet

**Sample Source:** ARLINGTON EAST STP
**Address/City:**
**County:**
**Contact/District:**
**NPDES Permit #:** _____ **Outfall #:** _____

**Sample Collection:** Date 6/11/90 Time 1215
**Test Beginning:** Date 6/12/90 Time 1130
**Test Ending:** Date 6/13/90 Time 1100
**Test Organism:** C. dubia
**Life Stage/Age:** < 24 hr

**Test Number:** 3 of 4 **Test Type:** (Screening) Definitive (Static) Static Renewal | Flow-through

**Remarks:** Chlor

**Instrument Calibrations:**

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | | | | |
| 24 hr | | | | |
| 48 hr | | | | |

| Conc. | Chamber # | Number Live | | | DO (mg/l) | | | pH | | | Temp. (°C) | | | Cond. (µmhos/cm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 |
| CONT | | 5 | 3 | | 8.4 | 8.4 | | 8.2 | 8.3 | | 22.7 | ~~22.1~~ | 22.1 | | | |
| " | | 5 | 4 | | 8.4 | 8.4 | | 8.2 | 8.3 | | | | | | | |
| " | | 5 | 4 | | 8.4 | 8.4 | | 8.2 | 8.3 | | | | | | | |
| " | | 5 | 2 | | 8.4 | 8.4 | | 8.2 | 8.3 | | | | | 200 | 205 | |
| 100% | | 5 | 0 | | 8.3 | 8.5 | | 7.8 | 8.6 | | 22.4 | 22.0 | | | | |
| " | | 5 | 0 | | 8.3 | 8.5 | | 7.8 | 8.6 | | | | | | | |
| " | | 5 | 0 | | 8.3 | 8.5 | | 7.8 | 8.6 | | | | | | | |
| " | | 5 | 0 | | 8.3 | 8.5 | | 7.8 | 8.6 | | | | | 945 | 960 | |
| Measured by: | | MT | MT | | SW | MF | | MT | MF | | SW | MF | | SW | MF | |
| Recorded by: | | MT | MT | | TH | MGC | | MT | MGC | | TH | MGC | | TH | MGC | |

**Investigators' Signatures**

Steven H Wolf
Marshall Faircloth
Donna Harrington
Mike Cimaglia
Reviewer

**Water-quality Parameters**

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | | | |
| Lab Tot. Resid. Cl2: | | | | | |
| Alkalinity: | | | | | |
| Hardness: | | | | | |
| Total Ammonia: | | | | | |

# DER Biology Section — Acute-bioassay Bench Sheet

**Sample Source:** Arlington East STP
**Address/City:**
**County:**
**Contact/District:**
**NPDES Permit #:** **Outfall #:**

**Sample Collection:** Date 6/11/90 Time 1215
**Test Beginning:** Date 6/12/90 Time 1130
**Test Ending:** Date 6/18/90 Time 1100
**Test Organism:** Notropis lutrensi
**Life Stage/Age:** 19 days

**Test Number:** 4 of 4 **Test Type:** Screening | Definitive
Static | Static Renewal | Flow-through

**Remarks:** Chlor

**Instrument Calibrations:**

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | | | | |
| 24 hr | | | | |
| 48 hr | | | | |

| | | Number Live | | | DO (mg/l) | | | pH | | | Temp. (°C) | | | Cond. (µmhos/cm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conc. | Chamber # | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 | 0 | 24 | 48 |
| CONT | 19 | 5 | 5 | | 8.1 | 7.7 | | 7.9 | 8.3 | | 22.3 | 22.9 | | | | |
| " | 38 | 5 | 5 | | 8.1 | 7.7 | | 7.9 | 8.3 | | | | | 240 | 250 | |
| 100% | 198 | 5 | 0 | | 8.1 | 6.7 | | 7.6 | 8.1 | | 22.9 | 23.0 | | | | |
| " | 186 | 5 | 0 | | 8.2 | 6.5 | | 7.6 | 8.1 | | | | | 1000 | 1020 | |
| Measured by: | | TH | MF | | SW | MF | | SW | MF | | SW | MF | | SW | MF | |
| Recorded by: | | MF | MF | | TH | MGC | | TH | MGC | | TH | MGC | | TH | MGC | |

**Investigators' Signatures**

Steven H Wolfe
Marshall Fairbrother
Tonya Dunnington
Mike Cunningham
Reviewer

**Water-quality Parameters**

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | | | |
| Lab Tot. Resid. Cl2: | | | | | |
| Alkalinity: | | | | | |
| Hardness: | | | | | |
| Total Ammonia: | | | | | |