


Biological Assessment of

# Jacksonville – Buckman Street WWTP

Duval County

NPDES #FL0026000

Sampled October 1999

September 2000

**Biology Section**
**Bureau of Laboratories**
**Division of Resource Assessment and Management**

Comprehensive Quality Assurance Plan No. 870346G

# Florida Department of Environmental Protection

## Fifth Year Inspection Summary

Discharger: Jacksonville – Buckman Street Wastewater Treatment Plant
County: Duval
NPDES Number: FL0026000
Permit Expiration: February 17, 2005

### Toxics Sampling Inspection (**XSI**)

Date Sampled: 11 October 1999

**Results**: Cadmium, copper, iron, lead, nickel, silver, and zinc were detected in the effluent at levels that complied with Class III marine water quality standards. The organic compound 2,4,6-triclorophenol was detected in the effluent at a level less than the minimum quantitation limit and greater than the minimum detection limit.

### Compliance Biomonitoring Inspection (**CBI**)

Date Sampled: 11 October 1999

**Results**: The effluent sample was not toxic to the fish, *Cyprinella leedsi,* or to the invertebrate, *Ceriodaphnia dubia,* during the 48-hour acute bioassay.

### Impact Bioassessment Inspection (**IBI**)

Date Sampled: 11 October 1999

**Results**: The biological communities at the control and test sites were severely degraded throughout the study area. Nearly 95% of estuaries in Florida have higher algal and invertebrate taxa richness. The Buckman Street WWTP discharge did not appear to further adversely affect the biological communties at the test sites.

### Water Quality Inspection (**WQI**)

Date Sampled: 11 October 1999

**Results**: Extremely high levels of nutrients were measured in the effluent and at all three study sites. Most nutrient levels in the study area exceeded those levels found in 60–95% of Florida's estuaries. Although the effluent was contributing high levels of nutrients to the St. Johns River, other sources of nutrients in the watershed were contributing to the elevated levels measured at the study sites. The effluent AGP was 58.3 mg dry wt/L. AGP values at all three study sites exceeded the 10 mg dry wt/L "problem threshold".

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

## Introduction

The Buckman Street Wastewater Treatment Plant in Jacksonville, Florida treats domestic and pretreated industrial wastewater from the City of Jacksonville. The facility, located in Duval County (see maps in the Appendix), uses Category II, Class A treatment processes; treating wastewater by mechanical screening, grit removal, primary sedimentation, aeration, activated sludge biological treatment, secondary clarification, chlorination for disinfection, and final dechlorination with sulfur dioxide gas. Treated effluent is discharged into the Class III St. Johns River. The treatment facility has a permitted design flow of 52.5 MGD. During the month preceding this study, the average rate of discharge for this facility was 30.73 MGD.

State permit limits for the Buckman Street plant are listed in Table 1. The Facility Summary (see Appendix), prepared on October 1, 1999, by Florida Department of Environmental Protection (FDEP) Northeast District staff, shows that the plant has had numerous violations and exceedences beginning in 1995. The facility is currently operating under a consent order with FDEP.

## Methods

The focus of this Fifth Year Inspection was to determine the effect of the effluent on the receiving-waters in the St. Johns River. A comparison of biological community health was made between a control site and two test sites. The control site samples were collected during an ebb tide near Reddie Point, approximately five kilometers northeast and on the opposite bank from the outfall. Test site 1 was located about 500 meters northeast of the outfall and Test site 2 was nearly 400 meters southeast of the outfall (see map in the Appendix). A habitat assessment was performed in situ establishing comparability among sites. Supplemental physical and chemical data were collected from the effluent and the study sites. Sampling for this inspection was conducted on October 11, 1999. The effluent sample was analyzed for nutrients, metals, semi-volatile organics, organonitrogen, and phosphorus pesticides.

Phytoplankton were sampled at the control site and both test sites via subsurface grabs using nalgene water bottles. Chlorophyll *a* was also determined for phytoplankton communities. Algal Growth Potential (AGP) was evaluated using the test organisms *Selenastrum capricornutum* for the freshwater effluent and *Dunaliella tertiolecta* for the marine receiving-waters. Benthic macroinvertebrate communities were sampled at the control and test sites by taking three replicate petite Ponar grabs.

Several different measures of macroinvertebrate and algal community health have been utilized to determine effluent effects on the receiving water. These measurements include: algal biomass, community composition, functional feeding groups, Shannon-Weaver Diversity Index, and taxa richness. For a discussion of each of these measures see the *Explanation of Measurements of Community Health* in the Appendix. All methods for field sampling and laboratory analyses follow FDEP Bureau of Laboratory Standard Operating Procedures (SOP's). The SOP's can be viewed on our web site at www.floridadep.org/labs/sops.htm.

The following FDEP personnel were involved in this investigation, from the Northeast District: P. O'Connor, J.R. Perez, and Kathleen Gerard. From the Central Biology Laboratory: Ken Espy, Marshall Faircloth, Michael Heyn, Lisa Homann, Joy Jackson, Edwin Loschi, Elizabeth Miller, Urania Quintana, Johnny Richardson, Julie Riley, Landon Ross, and Steve Wolfe. This report was reviewed by the Point Source Studies Review Committee: Wayne Magley, Michael Tanski, Chuck Ziegmont, and District representatives.

## Results

The control site, located closer to the mouth of the St. Johns River, had a higher salinity (12.5 ppt) compared to test sites (8.4 ppt–8.8 ppt). All other physical/chemical parameters were similar among the three study sites (Table 1 and Physical/Chemical Characterization Field Data Sheets in the Appendix). Shorelines at the study sites were characterized as urban or industrial (see Habitat Assessment Field Data Sheets in Appendix). Three different substrate types were observed at the control site: shell-rubble, sand, and mud-muck-silt. Most of the sediment particles at the

*Table 1. Effluent limits and summary of chemistry data.*

| Jacksonville Buckman Street WWTP | Effluent Limits | Effluent Sample | Control Site | Test Site 1 | Test Site 2 |
|---|---|---|---|---|---|
| **Organic Constituents (µg/L)** | | | | | |
| 2,4,6-Trichlorophenol | - | 1.0 I | - | - | - |
| **Metals (µg/L)** | | | | | |
| Aluminum | ≤ 1500 ** | 50 U | - | - | - |
| Arsenic | ≤ 50 ** | 4.0 U | - | - | - |
| Cadmium | ≤ 9.3 ** | 0.052 I | - | - | - |
| Chromium | ≤ 4.76 ** | 0.70 U | - | - | - |
| Copper | ≤ 2.9 | 2.4 AJ | - | - | - |
| Iron | ≤ 300 ** | 103 A | - | - | - |
| Lead | < 5.6 ** | 0.62 I | - | - | - |
| Mercury | ≤ 0.025 ** | - | - | - | - |
| Nickel | ≤ 8.3 ** | 5.3 A | - | - | - |
| Selenium | ≤ 71 ** | 1.2 U | - | - | - |
| Silver | ≤ 2.3 ** | 0.080 I | - | - | - |
| Zinc | ≤ 86 ** | 14 I | - | - | - |
| **Nutrients (µg/L)** | | | | | |
| Ortho-phosphate | - | 3.5 A | 0.12 | 0.11 | 0.092 |
| Total phosphorus | - | 3.7 A | 0.17 | 0.16 | 0.16 A |
| Ammonia | - | 0.81 | 0.022 | 0.025 | 0.028 A |
| Un-ionized Ammonia | - | 0.0044 | - | - | - |
| Nitrate+Nitrite | - | 4.4 | 0.47 | 0.46 | 0.48 |
| TKN | - | 2.9 A | 0.86 | 0.98 | 1.1 A |
| Organic Nitrogen | - | 2.1 | 0.838 | 0.955 | 1.07 |
| Total Nitrogen | - | 7.3 | 1.33 | 1.44 | 1.58 |
| **General Phys-Chem Parameters** | | | | | |
| Habitat Assessment | - | - | 63 | 45 | 43 |
| DO (mg/L) | ≥ 5.0 | 2.2 | 5.1 | 6.3 | 6.1 |
| pH (SU) | 6.0-8.5 * | 6.8 | 7.2 | 7.3 | 7.2 |
| Conductivity (µmhos/cm) | ** | 1,127 | 20,900 | 15,220 | 14,560 |
| Salinity (ppt) | - | 0.5 | 12.5 | 8.8 | 8.4 |
| Temperature (°C) | - | 29.9 | 26.0 | 25.8 | 25.7 |
| TSS (mg/L) | 60 * | 2 | 8 | 8 | 10 |
| BOD, 5 day (mg/L) | 60 * | 2 K | 2 K | 2 K | 2 K |
| Flow (MGD) | 52.5 | 30.73 | - | - | - |
| Hardness (mg $CaCO_3$) | - | 264 | - | - | - |
| AGP (mg dry wt/L) | - | 58.3 | 21.8 | 22.2 | 21.0 |
| **Toxicity (48-hour, static, screening bioassay)** | | | | | |
| Bioassay - Fish | - | Not Toxic | - | - | - |
| Bioassay - Invertebrate | - | Not Toxic | - | - | - |
| **Microbiology (# counts/100 ml)** | | | | | |
| Fecal Coliforms | - | 10 K | 37 B | 30 B | 30 B |
| Total Coliforms | - | 30 B | 90 B | 190 B | 80 |

A - Value is the mean of two or more determinations
B - Colony counts outside acceptable range
I - Value is < the MQL, and ≥ the MDL
J - Estimated value
K - Value is known to be less than value given
U - Not detected; value is the MDL

* Permit Limit
** Class III water quality standard

study sites were in the range of 0.125-0.25 mm in diameter (Table 3). This predominant sediment grain size composed 58% of the control site substrate, 49% of test site 1 substrate, and 39% of test site 2 substrate. Habitat scores at the test site 1, with 45 points, and test site 2, with 43 points, placed them into the "poor" category (see Habitat Assessment Field Data Sheets in Appendix). The control site scored 62 points and was placed in the "fair" category. Additional results from biological and chemical analyses are in Tables 1–3.

*Table 2. Biological community structure of study sites.*

| Jacksonville Buckman Street WWTP | Control Site | Test Site 1 | Test Site 2 |
|---|---|---|---|
| **Phytoplankton Algae** | | | |
| Number of Taxa | 5 | 7 | 7 |
| Shannon-Weaver diversity | 0.63 | 0.73 | 0.47 |
| Chlorophyll a (µg/L) | 5.24 | 3.53 | 5.56 |
| Algal Density (#/ml) | 842 | 1,757 | 908 |
| % Diatoms | 100.0 | 98.0 | 99.0 |
| % Dinoflagellates | 0.0 | 1.0 | 0.5 |
| % Green | 0.0 | 1.0 | 0.0 |
| **Macroinvertebrate Quantitative** | | | |
| Number of Taxa | 1 | 4 | 4 |
| Shannon-Weaver diversity | 0 | 1.79 | 1.76 |
| Number of Polychaete Taxa | 0 | 1 | 1 |
| **Community Composition** | | | |
| % Amphipoda | 0.0 | 0.0 | 10.0 |
| % Actiniaria | 100.0 | 0.0 | 0.0 |
| % Cumacea | 0.0 | 16.7 | 50.0 |
| % Gastropoda | 0.0 | 16.7 | 0.0 |
| % Hydrozoan | 0.0 | 0.0 | 20.0 |
| % Polychaeta | 0.0 | 16.7 | 20.0 |
| % Tubificidae | 0.0 | 50.0 | 0.0 |
| **Functional Feeding Groups** | | | |
| % Burrowing Deposit Feeders | 0.0 | 50.0 | 20.0 |
| % Predators/Carnivores/Parasites | 100.0 | 16.7 | 30.0 |
| % Surface Deposit Feeders | 0.0 | 8.3 | 0.0 |
| % Suspension Feeders | 0.0 | 25.0 | 50.0 |

## Discussion

The metals cadmium, copper, iron, lead, nickel, silver, and zinc were detected in the effluent at levels that comply with Class III marine water quality standards (Table 1). The organic pollutant, 2,4,6-Trichlorophenol was detected in the effluent sample at a level above the minimum detection limit but below the minimum quantitation limit.

The effluent sample was not toxic to the fish, *Cyprinella leedsi*, or to the invertebrate, *Ceriodaphnia dubia*, during the 48-hour bioassay (Appendix).

Effluent levels of total phosphorus (3.7 mg/L), ortho-phosphate (3.5 mg/L), total nitrogen (7.3 mg/L), organic nitrogen (2.1 mg/L), nitrate+nitrite (4.4 mg/L), and TKN (2.9 mg/L) were all extremely elevated compared to levels in control site and both test site samples (Table 1). Most of the nutrients at the three study sites in the St. Johns River were comparable and found at levels greater than those found in 60%–95% of other Florida estuaries (see *Typical Values for Selected Parameters in Florida Waters* in the Appendix). For example, control site TKN results were greater than the TKN levels found in 70% of typical Florida estuaries. And, control site nitrate+nitrite levels exceeded 95% of typical estuaries in Florida (Table 1). These nutrient analyses suggest that although the Buckman Street WWTP is discharging high levels of nutrients into the St. Johns River, other sources appear to be contributing to the elevated levels at the study sites as well. Algal Growth Potential (AGP) which measures bioavailable nutrients via algal response was elevated in the effluent (58.3 mg dry wt/L). There were no significant differences in the AGP values among the three study sites; all three sites exceeded the 10 mg dry wt/L "problem threshold" for marine waters (Raschke pers. comm.) by roughly 100% (Table 1).

The phytoplankton algal communities at all three study sites were extremely depauperate. Taxa richness was very low at all three sites but slightly lower at the control site (with 5 taxa) compared to the test sites (with 7 taxa each). *Skeletonema* sp., was the dominant taxon at all three sites with 89%–94% contribution, resulting in diver-

*Table 3. Sediment particle size analysis of study sites.*

| Jacksonville Buckman Street WWTP | Control Site | Test Site 1 | Test Site 2 |
|---|---|---|---|
| **% Volume** | | | |
| < 0.063 mm | 6.48 | 20.3 | 37.2 |
| 0.063-0.125 mm | 3.35 | 12 | 6.5 |
| 0.125-0.25 mm | 57.9 | 48.6 | 39.3 |
| 0.25-0.5 mm | 31.3 | 13.7 | 16.2 |
| 0.5-2.0 mm | 0.9 | 5.4 | 0.8 |
| > 2.0 mm (% total dry weight) | 0.4 | 0.7 | 0.0 |
| % organic (dry weight) | 1.0 | 1.7 | 2.6 |

sity values of less than 1 at all three sites (Table 2). These results suggest sources of impairment in this portion of the St. Johns River in addition to the extremely high nutrients levels being discharged by the Buckman WWTP.

As with the algae data, the macroinvertebrate communities were severely impaired throughout the study area (Table 2 and Figure 1). Taxa richness values at all three sites were less than 95% of other typical estuaries in Florida (Table 2 and *Typical Values for Selected Parameters in Florida Waters* in the Appendix). Taxa richness was lowest at the control site, where only one individual specimen of one taxon was collected (see Macroinvertebrate Taxa List in the Appendix). Shannon-Weaver diversity values were also extremely low at all three sites. There was no diversity at the control site and the test sites were ranked in the lowest 20% percentile. There were no polychaete taxa at the control site and only a single taxon found at the two test sites.

The results of this Fifth Year Inspection show that pollution sources in this portion of the St. Johns River have severely degraded the biological communities and the exact extent to which the Buckman Street WWTP has contributed to the overall degradation of the study area is difficult to determine.

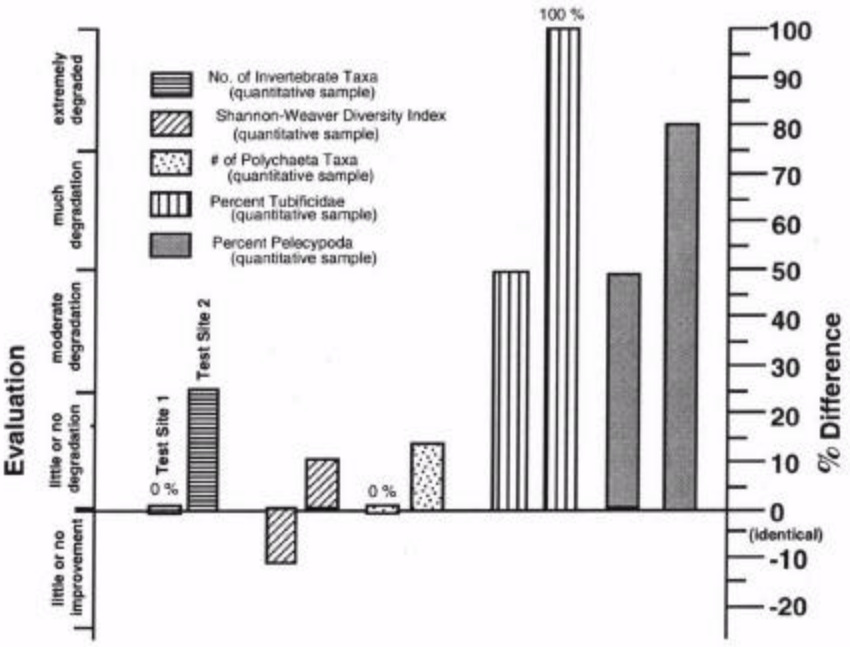



*Figure 1. Effect of discharge on the macroinvertebrate community in the recieving waters.*

## Literature Cited

EA Engineering, Science, and Technology and Tetra Tech, Inc. 1994. Bioassessment for the Nonpoint Source Program. Draft Report. Tallahassee, FL: FDEP. Unpaginated. Available from: FDEP, Tallahassee, FL 32399-2400.

Miller WE, Maloney TE, Greene JC. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. Cincinnati: USEPA. EPA-600/9-78-018. 126p.

Raschke RL, Schultz DA. 1987. The use of the algal growth potential test for data assessment. J Wat Poll Cont Fed 59(4):222-7.

Ross LT. 1990. Methods for aquatic biology. Tallahassee, FL: FDEP Reg Tech Ser 10(1):1-47. Available from: FDEP, Tallahassee, FL 32399-2400.

Weber CI. 1993. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 4th edition. Cincinnati: USEPA. EPA/600/4-90/027. 216p.

# Typical Values for Selected Parameters in Florida Waters

Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

**ESTUARIES** (690 stations)

**Percentile Distribution**

| Parameter | 5% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 95% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phytoplankton Chlorophyll *a* | 2.14 | 3.28 | 4.49 | 5.13 | 6.00 | 6.93 | 7.94 | 9.60 | 12.40 | 17.60 | 22.20 |
| Dredge Diversity | 1.34 | 1.53 | 1.91 | 2.28 | 2.56 | 2.90 | 3.15 | 3.59 | 4.01 | 4.53 | 4.98 |
| Dredge Taxa Richness | 4.00 | 6.00 | 9.00 | 11.00 | 15.00 | 18.50 | 25.00 | 35.00 | 41.00 | 62.00 | 90.00 |
| TKN | 0.26 | 0.34 | 0.42 | 0.50 | 0.59 | 0.69 | 0.76 | 0.82 | 0.95 | 1.30 | 1.49 |
| NH3+NH4 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.13 | 0.22 | 0.28 |
| NO2-NO3 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 | 0.05 | 0.08 | 0.17 | 0.23 |
| Total Phosphorus | 0.01 | 0.02 | 0.06 | 0.07 | 0.10 | 0.11 | 0.14 | 0.17 | 0.23 | 0.43 | 0.59 |
| Ortho-Phosphate | 0.01 | 0.02 | 0.03 | 0.04 | 0.04 | 0.05 | 0.07 | 0.09 | 0.12 | 0.21 | 0.44 |
| Turbidity | 3.50 | 4.00 | 4.50 | 5.05 | 5.40 | 5.60 | 6.30 | 6.80 | 8.00 | 11.40 | 11.75 |

Units: Phytoplankton Chlorophyll *a* (ug/L), Periphyton Chlorophyll *a* ($mg/m^2$), Nutrients (mg/L),

# Explanation of Measurements of Community Health

Different measurements of macroinvertebrate and algal community health are used to determine the biotic effects of a discharge. The measurements are briefly discussed here.

**Taxa richness**: Stress tends to reduce the number of different types of organisms present in a system, although moderate nutrient enrichment may sometimes be correlated with increased algal taxa richness.

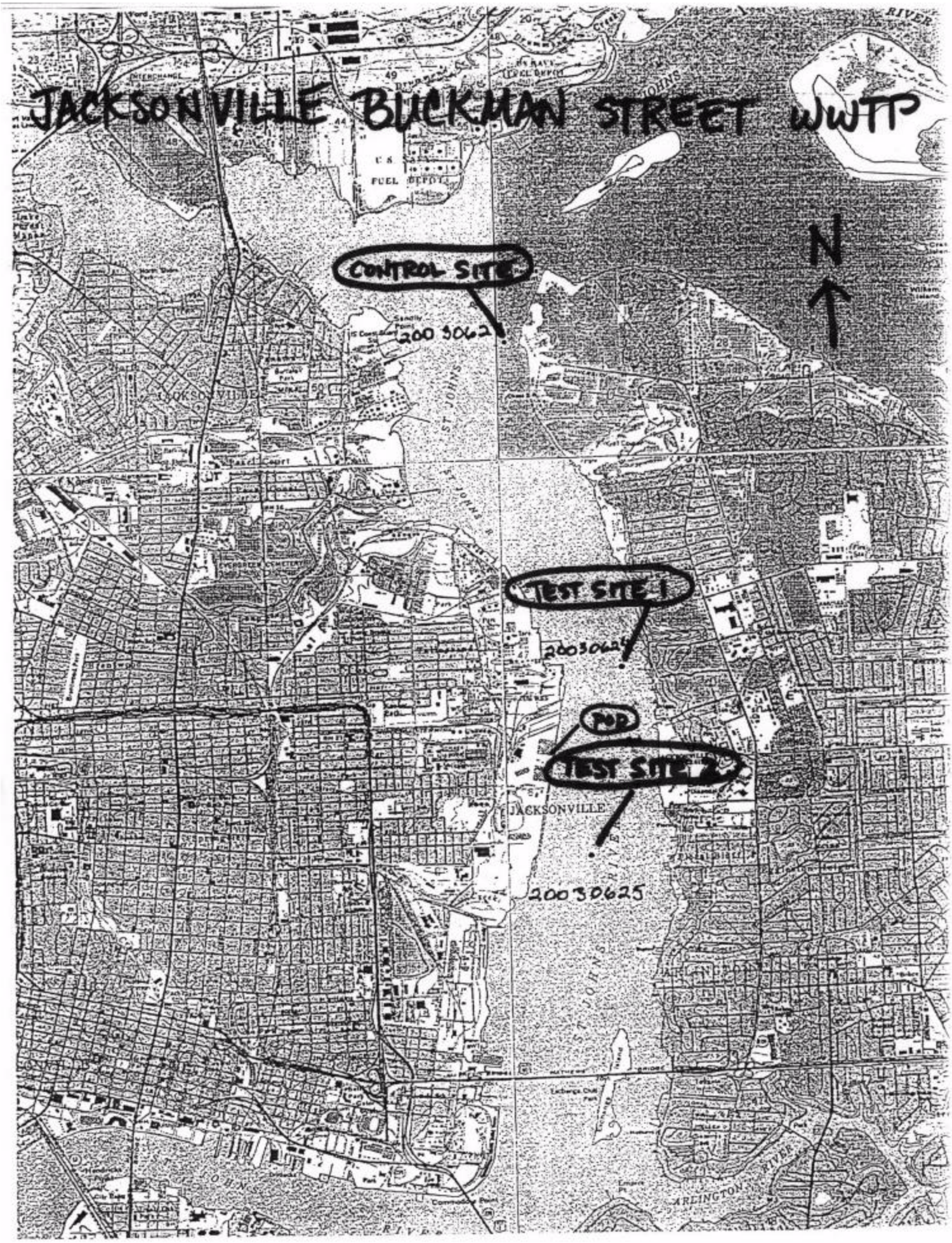
**Shannon-Weaver diversity**: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

**Numbers of pollution sensitive taxa**: Some organisms become rare or absent as the intensity or duration of disturbance increases. Species sensitivity data from other sources, such as Chang *et al.* (1992), Farrell (1992), Hudson *et al.* (1990), Hulbert (1990), Lenat (1993), and Whitmore (1989), are used as appropriate.

**Community structure**: Substantial shifts in proportions of major groups of organisms, compared to control conditions, may indicate degradation. In marine systems, an increase in the % tubificid oligochaetes, a decrease in the % pelecypods, and a decrease in the number of polychaete taxa are all considered indicators of disturbance (Engel *et al.* 1994).

**Trophic composition/feeding guilds**: Disturbance can shift the feeding strategies of invertebrates. In Florida for example, pollution may be responsible for reducing the numbers of filter-feeders (FDEP 1994) and shredders (EA Engineering 1994).

**Algal biomass**: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress.


JACKSONVILLE BUCKMAN STREET WWTP
CONTROL SITE
20030624
TEST SITE 1
20030624
POP
TEST SITE 2
20030625
N
JACKSONVILLE
ST JOHNS
RIVER
ARLINGTON RIVER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

# FACILITY SUMMARY

COPY 1

| Facility Name: Buckman Street WWTF | | Date Summary Prepared: October 1, 1999 |
|---|---|---|
| Location (attach detailed map): 2221 Buckman Street Jacksonville, Florida. | County: Duval | District: Northeast District |
| Federal Permit # and expiration date: FL0026000 September 30, 1997.* | State GMS # and State expiration date: 3116M01973 September 30, 1997 - Application pending.* | Facility Type: Industrial (Municipal) Federal Agricultural Other (list): |

**Function of facility:**
Wastewater treatment facility.

**Description of treatment process:**
the facility is a 52.5 MGD wastewater facility with mechanical screening, one aerated grit chamber, one preaeration tank, ten primary clarifiers, four complete mix activated sludge aeration basins, six secondary clarifiers, two chorine contact chambers and sulfur dioxide dechlorination. Domestic wastewater residuals are injected with polymer(s), de watered and incinerated in two multiple-heath incinerators, with ash residual disposed of in a sanitary landfill.

| Receiving waters: St. Johns River. | Classification: I II (III) | |
|---|---|---|
| Design Flow: 52.5 MGD. | Mean Flow: 30.73 MGD. | Flow during survey: |

**Discharge is:** (Continuous) Intermittent Seasonal Rainfall dependent
Other (describe)

**therefore, the best time to sample is:**

**If facility has a mixing zone, give details (size, parameters affected, etc.):**
the facility personnel are currently requesting a mixing zone. See attached memoradums.

**List effluent limits (if necessary, attach relevant paperwork):**

| Parameter | Limit (units) | | | |
|---|---|---|---|---|
| | Annual Avg. | Monthly Avg. | Weekly Avg. | Single |
| $CBOD_5$ | 20 | 30 | 45 | 60 |
| TSS | 20 | 30 | 45 | 60 |
| fecal coliforms | 200 No/100 mL. | --- | | 800 |
| Chlorine | minimum | | | 0.5 mg/L |
| Chlorine (af dech.) | maximum | | | 0.01 mg/L |
| pH: | minimum | 6.0 std. units. | | |
| | maximum | 8.5 std. units. | | |

**Describe special permit conditions and permit modifications:**
See attached specific conditions 14 16 and 17. Quarterly monitoring requirements for effluent, toxicity requirements stated. Note that a permit application is pending since 1997. When the permit is issued addition requirements for monitoring will be added.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Buckman Street WWTF
(Facility)

## FACILITY SUMMARY

**Description of permitted outfall(s):**
Dechlorinated effluent is discharged by gravity flow into the St. Johns River through a 78-inch diameter reinforced concrete pipe. See attached map for outfall location.

**List permit violations (from MOR data or other source) and plant upsets that occurred within past year:** A Consent Order was issued June 23, 1999 for exceedence of TSS, $CBOD_5$, and fecal coliforms. as well as failure to meet minimum chlorine residual of 0.5 mg/L. the department's Industrial pretreatment section in Tallahassee entered into Consent Order # 98-0032 with Jacksonville Electric Authority (JEA) on June 28, 1998. the violations cited were exceedences of permit metal limits from January 1995 to November 1996. the introduction of toxic materials from industrial pretreatment sources are also believed to be a source of plant upsets that have resulted in TSS & fecal violations. the CO required JEA to upgrade their pretreatment enforcement program and prepare a plan of study for a comprehensive reevaluation of its pretreatment discharge limits.

**Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:**
EPA issued Administrative Order No. 96-013 in October of 1996 covering collection system issues for all major city plants. the specific violations cited for Buckman unpermitted discharges from the collection system and failure to maintain the collection system. many TSS and fecal coliform violations at the WWTP may be the result of collection system problems such as infiltration and inflow. the AO required an analysis of the collection system and implementation of a four year program to correct any deficiencies.
Please note attached copy of biossay result shows toxicity in samples taken November 1996. Several metals were detected an unionized ammonia results exceeded limits.

**Discuss comparability of MOR results to past DER results and whether there are trends (improving, declining) in the data set:**
Data submitted on DMRs is consistent with DEP sampling results.

**Additional information:**
See attached information.

**Staff contributing to this review (signature):**

| | |
|---|---|
| | (Biologist) |
| Kathleen Sinard | (Inspector) |
| | (Engineer) |
| | ( ) |
| | ( ) |
| | ( ) |

# STATE OF FLORIDA
## DEPARTMENT OF ENVIRONMENTAL PROTECTION
### PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5/21/98)

| SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE: | TIME: | RECEIVING BODY OF WATER: |
|---|---|---|---|---|
| | 20030623 | 10/11/99 | | St. Johns River |

| REMARKS: | COUNTY: | LOCATION: | FIELD NAME: |
|---|---|---|---|
| High Tide Outgoing | DUVAL | Reddie Pt | Control Site |

**RIPARIAN ZONE/INSTREAM FEATURES**

Predominant Land-Use in Watershed (specify relative percent in each category):

| Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commericial | Industrial | Other (specify |
|---|---|---|---|---|---|---|---|
| 30 | | 20 | | 50 | | | |

Local Watershed Erosion: None: ☐ Slight: ☒ Moderate: ☐ Heavy: ☐

Local Watershed NPS Pollution: No evidence: ☐ Slight: ☒ Moderate potential: ☐ Obvious sources: ☐

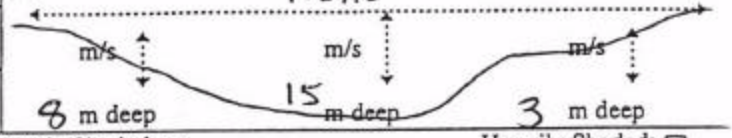
Width of riparian vegetation (m) on least buffered side: >18

List & map dominant vegetation on back

Typical Width (m)/Depth (m)/Velocity (m/sec) Transect

1000 m wide

TIDAL




Artificially Channelized ☐ NO Artificially Impounded ☐ YES — none

High Water Mark: 0.75 + 3 = 3.75 (m above present water level) (present depth in m) (m above bed)

Canopy Cover %: Open: ☒ Lightly Shaded: ☐ (11-45%) Moderately Shaded: ☐ (46-80%) Heavily Shaded: ☐

**SEDIMENT SUBSTRATE**

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none Silt smothering: none Other: ☐

| Substrate Types | % coverage | # times sampled | method | Substrate Types | % coverage | # times sampled | method |
|---|---|---|---|---|---|---|---|
| Woody Debris (Snags) | | | | Sand | 60 | 1 | P Ponar |
| Leaf Packs or Mats | | | | Mud/Muck/Silt | 20 | 1 | P Ponar |
| Aquatic Vegetation | | | | Other: | | | |
| Rock or Shell Rubble | 20 | 1 | P Ponar | Other: | | | |
| Undercut banks/Roots | | | | Draw aerial view sketch of habitats found in 100 m section. | | | |

| Water Quality | Depth (m): | Temp. (°C): | pH (SU): | D.O. (mg/l): | Cond. (µmho/cm) or Salinity (ppt): | Time | | Secchi (m): |
|---|---|---|---|---|---|---|---|---|
| Top | | | | | | | | 0.9 |
| Mid-depth | 1.4 | 26.01 | 7.21 | 5.14 | 20,900 12.5 | 1420 | | |
| Bottom | | | | | | | | |

System Type: Stream: ☐ 1st - 2nd order Lake: ☐ Wetland: ☐ Estuary: ☒ Other: ☐

Water Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils: None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity: Clear: ☒ Slightly Turbid: ☐ Turbid: ☐ Opaque: ☐

Color: Tannic: ☒ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:
Warm Clear 80's
Winds Light Variable

| Abundance: | Absent | Rare | Common | Abundant |
|---|---|---|---|---|
| Periphyton | ☐ | ☒ | ☐ | ☐ |
| Fish | ☐ | ☐ | ☒ | ☐ |
| Aquatic Macrophytes | | ☐ | ☒ | ☐ |
| Iron/sulfur Bacteria | | ☒ | ☐ | ☐ |

Sampling Team: O'Connor Perez

Signature: John W O'Connor

Date: 10/11/99

# MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

| SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE (M/D/Y): | RECEIVING BODY OF WATER: |
|---|---|---|---|
| | 20030623 | 10/11/99 | St. Johns River |

| REMARKS: | LOCATION: Reddie Pt | FIELD ID/NAME: Control Site |
|---|---|---|

| Habitat Parameter | Score | Excellent | Good | Fair | Poor |
|---|---|---|---|---|---|
| Littoral Alterations | 5 | None—Unaltered shoreline. 9-10 points | Mostly natural shoreline, but with occasional riprap. 6-8 points | Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points | Shoreline consisting almost entirely of vertical seawalls. 0-2 points |
| Community Types Observed | 35 | At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points | Two or three communities observed from those listed. 26-37 points | One community observed from those listed. 13-25 points | No communities observed from those listed. 0-12 points |
| Tidal Fluctuation | 3 | >0.75 m. 4-5 points | 0.5 - 0.75 m. 3 points | 0.25 - 0.5 m. 2 points | <0.25 m. 0-1 point |
| Freshwater Discharges/ Alterations | 6 | Only natural runoff. 9-10 points | Mostly natural runoff, but with a few, small stormwater sources. 6-8 points | Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points | Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points |
| Flow and Wave Action | 2 | Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points | — | — | Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points |
| Sediment Type | 11 | Combination of sand, gravel, and shell. 12-15 points | Primarily sand, with small areas of mud. 8-11 points | Mixture of sand and mud, or well-aerated mud only. 4-7 points | Anaerobic mud. 0-3 points |

TOTAL SCORE: 62

COMMENTS:

| ANALYSIS DATE: | ANALYST: | SIGNATURE: |
|---|---|---|
| | | |

# STATE OF FLORIDA
## DEPARTMENT OF ENVIRONMENTAL PROTECTION
## PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5/21/98)

| SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE: | TIME: | RECEIVING BODY OF WATER: |
|---|---|---|---|---|
| | 20030624 | 10/11/99 | 1020 | St Johns River |

| REMARKS: | COUNTY: | LOCATION: | FIELD NAME: |
|---|---|---|---|
| High Slack Tide | Duval | Buckman WWTP 500 M. E. of North End of Bulkhead | Test Site 1 |

### RIPARIAN ZONE/INSTREAM FEATURES

Predominant Land-Use in Watershed (specify relative percent in each category):

| Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commericial | Industrial | Other (specify) |
|---|---|---|---|---|---|---|---|
| | | | | 20 | 40 | 40 | |

Local Watershed Erosion: None: ☐ Slight: ☒ Moderate: ☐ Heavy:

Local Watershed NPS Pollution: No evidence: ☐ Slight: ☐ Moderate potential: ☐ Obvious sources:

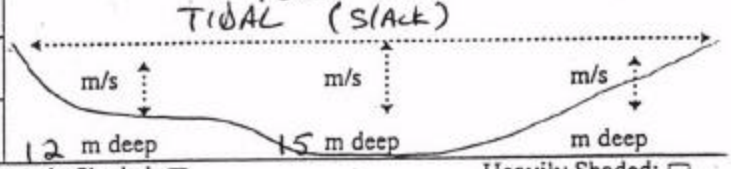
Width of riparian vegetation (m) on least buffered side: 0

List & map dominant vegetation on back

Artificially Channelized ☐ NO
Artificially Impounded ☒ YES
none

High Water Mark: 0.75 + 15 = 15.75
(m above present water level) (present depth in m) (m above bed)

Typical Width (m)/Depth (m)/Velocity (m/sec) Transect




Canopy Cover %: Open: ☒ Lightly Shaded: ☐ (11-45%) Moderately Shaded: ☐ (46-80%) Heavily Shaded: ☐

### SEDIMENT SUBSTRATE

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none (Silt smothering) none Other: ☐

| Substrate Types | % coverage | # times sampled | method | Substrate Types | % coverage | # times sampled | method |
|---|---|---|---|---|---|---|---|
| Woody Debris (Snags) | | | | Sand | 40 | 1 | P. Ponar |
| Leaf Packs or Mats | | | | Mud/Muck/Silt | 45 | 1 | P. Ponar |
| Aquatic Vegetation | | | | Other: | | | |
| Rock or (Shell Rubble) | 15 | 1 | P. Ponar | Other: | | | |
| Undercut banks/Roots | | | | Draw aerial view sketch of habitats found in 100 m section. | | | |

| Water Quality | Depth (m): | Temp. (°C): | pH (SU): | D.O. (mg/l): | Cond. (µmho/cm) or Salinity (ppt): | Time 1020 | | Secchi (m) |
|---|---|---|---|---|---|---|---|---|
| Top | | | | | | | | 0.8 |
| Mid-depth | 4.6 | 25.76 | 7.29 | 6.25 | 15220, 8.8 | | | |
| Bottom | | | | | | | | |

System Type: Stream: ☐ 1st - 2nd order Lake: ☐ Wetland: ☐ Estuary: ☒ Other: ☐

Water Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils: None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity: Clear: ☒ Slightly Turbid: ☐ Turbid: ☐ Opaque: ☐

Color: Tannic: ☒ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:
Clear Warm 80's
Winds Light Variable

| Abundance: | Absent | Rare | Common | Abundant |
|---|---|---|---|---|
| Periphyton | ☐ | ☒ | ☐ | ☐ |
| Fish | ☐ | ☐ | ☒ | ☐ |
| Aquatic Macrophytes | | ☒ | ☐ | ☐ |
| Iron/sulfur Bacteria | | ☒ | ☐ | ☐ |

Sampling Team: O'Connor, Perez

Signature: Patrick W O'Connor

Date: 10/11

# MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

| SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE (M/D/Y): | RECEIVING BODY OF WATER: |
|---|---|---|---|
| | 20030624 | 10/11/99 | SAINT JOHNS RIVER |

| REMARKS: | LOCATION: | FIELD ID/NAME: |
|---|---|---|
| | SJR 500 M. EAST OF NORTH END OF BULKHEAD | TEST SITE 1 |

| Habitat Parameter / score | Excellent | Good | Fair | Poor |
|---|---|---|---|---|
| Littoral Alterations: 3 | None—Unaltered shoreline. 9-10 points | Mostly natural shoreline, but with occasional riprap. 6-8 points | Shoreline consisting mostly of riprap and vertical seawalls. 3-5 points | Shoreline consisting almost entirely of vertical seawalls. 0-2 points |
| Community Types Observed: 26 | At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. 38-50 points | Two or three communities observed from those listed. 26-37 points | One community observed from those listed. 13-25 points | No communities observed from those listed. 0-12 points |
| Tidal Fluctuation: 3 | >0.75 m. 4-5 points | 0.5 - 0.75 m. 3 points | 0.25 - 0.5 m. 2 points | <0.25 m. 0-1 point |
| Freshwater Discharges/ Alterations: 3 | Only natural runoff. 9-10 points | Mostly natural runoff, but with a few, small stormwater sources. 6-8 points | Considerable stormwater discharge from local roads, parking lots, etc. 3-5 points | Extensive manmade discharges, especially from canals draining large tracts of land. 0-2 points |
| Flow and Wave Action: 2 | Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. 9-10 points | — | — | Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. 0-2 points |
| Sediment Type: 8 | Combination of sand, gravel, and shell. 12-15 points | Primarily sand, with small areas of mud. 8-11 points | Mixture of sand and mud, or well-aerated mud only. 4-7 points | Anaerobic mud. 0-3 points |

TOTAL SCORE: 45

COMMENTS:

| ANALYSIS DATE: | ANALYST: | SIGNATURE: |
|---|---|---|
| | | |

# STATE OF FLORIDA
## DEPARTMENT OF ENVIRONMENTAL PROTECTION
### PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (5/21/98)

| SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE: | TIME: | RECEIVING BODY OF WATER: |
|---|---|---|---|---|
| | 20030625 | 10/11/99 | 0930 | St. Johns River |

| REMARKS: | COUNTY: | LOCATION: | FIELD NAME: |
|---|---|---|---|
| High Slack Tide | Duval | Buckman WWTP 400 m E. of South End of Bulkhead | Test Site 2 |

**RIPARIAN ZONE/INSTREAM FEATURES**

Predominant Land-Use in Watershed (specify relative percent in each category):

| Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commericial | Industrial | Other (specify) |
|---|---|---|---|---|---|---|---|
| | | | | 20 | 40 | 40 | |

Local Watershed Erosion: None: ☐ Slight: ☒ Moderate: ☐ Heavy:

Local Watershed NPS Pollution: No evidence: ☐ Slight: ☐ Moderate potential: ☐ Obvious sources: ☐

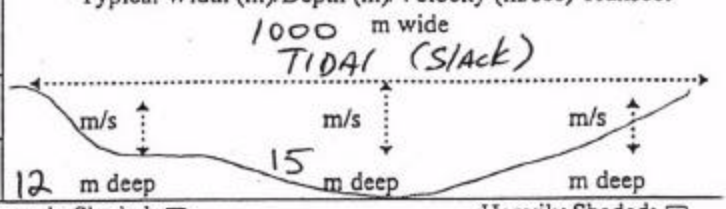
Width of riparian vegetation (m) on least buffered side: 0

List & map dominant vegetation on back

Artificially Channelized ☐ NO
Artificially Impounded ☒ YES
none

High Water Mark: 0.75 + 15 = 15.75
(m above present water level) (present depth in m) (m above bed)

Typical Width (m)/Depth (m)/Velocity (m/sec) Transect




Canopy Cover %: Open: ☒ Lightly Shaded: ☐ (11-45%) Moderately Shaded: ☐ (46-80%) Heavily Shaded: ☐

**SEDIMENT SUBSTRATE**

Sediment Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☒ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none Silt smothering: none Other: ☐

| Substrate Types | % coverage | # times sampled | method | Substrate Types | % coverage | # times sampled | method |
|---|---|---|---|---|---|---|---|
| Woody Debris (Snags) | | | | Sand | 40 | 1 | P. Ponar |
| Leaf Packs or Mats | | | | Mud/Muck/Silt | 95 | 1 | P. Ponar |
| Aquatic Vegetation | | | | Other: | | | |
| Rock or Shell Rubble | 15 | 1 | P. Ponar | Other: | | | |
| Undercut banks/Roots | | | | Draw aerial view sketch of habitats found in 100 m section. | | | |

| Water Quality | Depth (m): | Temp. (°C): | pH (SU): | D.O. (mg/l): | Cond. (µmho/cm) or Salinity (ppt): | Time | | Secchi (m) |
|---|---|---|---|---|---|---|---|---|
| Top | | | | | | | | 0.8 |
| Mid-depth | 2.46 | 25.68 | 7.22 | 6.14 | 14560 | 0930 | | |
| Bottom | | | | | | | | |

System Type: Stream: ☐ 1st - 2nd order Lake: ☐ Wetland: ☐ Estuary: ☒ Other: ☐

Water Odors: Normal: ☒ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils: None: ☒ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity: Clear: ☒ Slightly Turbid: ☐ Turbid: ☐ Opaque: ☐

Color: Tannic: ☒ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:
Warm clear 80's
Winds Light Variable

| Abundance: | Absent | Rare | Common | Abundant |
|---|---|---|---|---|
| Periphyton | ☐ | ☒ | ☐ | ☐ |
| Fish | ☐ | ☐ | ☒ | ☐ |
| Aquatic Macrophytes | | ☒ | ☐ | ☐ |
| Iron/sulfur Bacteria | | ☒ | ☐ | ☐ |

Sampling Team: O'Connor, Perez

Signature: Patrick O'Connor

Date: 10/11/

# MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

| SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: | STORET STATION NUMBER: | DATE (M/D/Y): | RECEIVING BODY OF WATER: |
|---|---|---|---|
| | 20030625 | 10/11/99 | St. Johns River |

| REMARKS: | LOCATION: SJR 400 m EAST of S END of BULKHEAD | FIELD ID/NAME: TEST SITE 2 |
|---|---|---|

| Habitat Parameter | Excellent | Good | Fair | Poor |
|---|---|---|---|---|
| Littoral Alterations<br>score: 3 | None—Unaltered shoreline.<br>9-10 points | Mostly natural shoreline, but with occasional riprap.<br>6-8 points | Shoreline consisting mostly of riprap and vertical seawalls.<br>3-5 points | Shoreline consisting almost entirely of vertical seawalls.<br>0-2 points |
| Community Types Observed<br>score: 24 | At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek.<br>38-50 points | Two or three communities observed from those listed.<br>26-37 points | One community observed from those listed.<br>13-25 points | No communities observed from those listed.<br>0-12 points |
| Tidal Fluctuation<br>score: 3 | >0.75 m.<br>4-5 points | 0.5 - 0.75 m.<br>3 points | 0.25 - 0.5 m.<br>2 points | <0.25 m.<br>0-1 point |
| Freshwater Discharges/ Alterations<br>score: 3 | Only natural runoff.<br>9-10 points | Mostly natural runoff, but with a few, small stormwater sources.<br>6-8 points | Considerable stormwater discharge from local roads, parking lots, etc.<br>3-5 points | Extensive manmade discharges, especially from canals draining large tracts of land.<br>0-2 points |
| Flow and Wave Action<br>score: 2 | Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures.<br>9-10 points | — | — | Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high.<br>0-2 points |
| Sediment Type<br>score: 6 | Combination of sand, gravel, and shell.<br>12-15 points | Primarily sand, with small areas of mud.<br>8-11 points | Mixture of sand and mud, or well-aerated mud only.<br>4-7 points | Anaerobic mud.<br>0-3 points |

TOTAL SCORE: 43

COMMENTS:

| ANALYSIS DATE: | ANALYST: | SIGNATURE: |
|---|---|---|
| 10/14/99 | O'CONNOR | |

# FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Buckman St. WWTP
County: Duval
Contact / District: Pat O'Connor / NE DIST
NPDES Permit #: FL0026000
LIMS Sample #: 411994 LIMS Job #: TLH1999-10-12-14-01

Sample Collection: Date 10/11/99 Time 12:00
Test Beginning: Date 10/12/99 Time 14:45
Test Ending: Date 10/14/99 Time 1400
Organism Batch #: 50 Diluent Batch #: 41 DMW
Organism Age: <24 hrs. SRT toxicant batch #: NA
Test organism: C. dubia

sample log
Test Type: (Screening) / Definitive
Static / (Static Renewal) / Flow-through
Test Number: 2 of 2

Remarks:

| Conc. | Chamber # | Number Live 0 hr | 24 h | 48 h | pH 0 hr | 24 h | 48 h | Temperature (°C) 0 hr | 24 h | 48 h | D.O. (mg/L) 0 hr | 24 h | 48 h | UNCORRECTED Cond. (mmhos/cm) 0 hr | 24 h | 48 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTRL A | A | 5 | 5 | 5 | 8.1 | — | 8.4 | 25.7 | — | 23.8 | 7.8 | — | 7.6 | 220 | — | 225 |
| B | B | 5 | 5 | 5 | — | — | 8.4 | — | — | 23.6 | — | — | 7.7 | — | — | 195 |
| C | C | 5 | 5 | 5 | — | — | 8.4 | — | — | 23.9 | — | — | 7.7 | — | — | 185 |
| D | D | 5 | 5 | 5 | — | — | 8.4 | — | — | 24.8 | — | — | 7.7 | — | — | 170 |
| 100% A | A | 5 | 5 | 5 | 7.2 | — | 8.6 | 25.6 | — | 24.0 | 6.0 | — | 7.6 | 1060 | — | 1190 |
| B | B | 5 | 5 | 5 | — | — | 8.6 | — | — | 23.8 | — | — | 7.7 | — | — | 1190 |
| C | C | 5 | 5 | 5 | — | — | 8.6 | — | — | 24.0 | — | — | 7.7 | — | — | 1200 |
| D | D | 5 | 5 | 5 | — | — | 8.6 | — | — | 24.6 | — | — | 7.7 | — | — | 1110 |
| measured by: | | SG | DPH | MF | DPH | | mf | DPH | | mf | DPH | | MF | DPH | | MF |
| recorded by: | | DPH | DPH | MF | SG | | SMC | SG | | SMC | SG | | SMC | SG | | SMC |

Investigators' Signatures
Marsha Faircloth
Shannon Gerardi
Della Parker Hawkins
Steve Clark
S H Wolfe
reviewer form updated 3/3/99

Temperature Range °C
Incubator # 2 25.0-26.0°C
Room 3246 23.5-25.5°C

| Water Quality Parameters | Salt Water / Well Water | 20% Min Water | Sample | Method | Measured by | Verified by |
|---|---|---|---|---|---|---|
| Field Total Residual Cl2 (mg/L): | | | 0.01K | NA | RJ Perez | RJ Perez |
| Lab Total Residual Cl2 (mg/L): | | <0.03 | 0.04 | PR100 | CH | SG |
| Alkalinity (mg/L as CaCO3): | | 70 | 168 | HACH | DPH | SG |
| Hardness (mg/L as CaCO3): | | 32 | 277 | HACH | DPH | SG |
| Total ammonia (mg/L as N): | | <0.017 | 0.267 | Denver | MF/DPH | SG |
| Salinity: | | 0 | 0 | YSI | MF | SMC |

# FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Buckman St. WWTP
Sample Collection: Date 10/11/99 Time 12:00
County: Duval
Test Beginning: Date 10/12/99 Time 14:45
Contact / District: Pat O'Connor / NE DIST
Test Ending: Date 10/14/99 Time 1400
NPDES Permit #: FL0026000
Organism Batch #: 78 Diluent Batch #: Well
LIMS Sample #: 411994 LIMS Job #: TLH1999-10-12-14-01
Organism Age: 11 days SRT toxicant batch #: N/A
sample log
Test organism: Cyprinella leedsi
Test Type: (Screening) / Definitive
Static / (Static Renewal) / Flow-through
Test Number: 1 of 2
Remarks: Cross-out lines drawn through some of the 0 hr. parameters, should be ignored. (Lines are a mistake. SS)

| Conc. | Chamber # | Number Live 0 hr | Number Live 24 h | Number Live 48 h | pH 0 hr | pH 24 h | pH 48 h | Temperature (°C) 0 hr | Temperature (°C) 24 h | Temperature (°C) 48 h | D.O. (mg/L) 0 hr | D.O. (mg/L) 24 h | D.O. (mg/L) 48 h | UNCORRECTED Cond. (mmhos/cm) 0 hr | UNCORRECTED Cond. (µmhos/cm) 24 h | UNCORRECTED Cond. (µmhos/cm) 48 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTRL A | H1 | 5 | 5 | 5 | 7.9 | 8.3 | 8.5 | 24.0 | 26.0 | 26.3 | 7.7 | 7.3 | 7.4 | 265 | 285 | 285 |
| B | H2 | 5 | 5 | 5 | 7.9 | 8.4 | 8.5 | 23.8 | 25.9 | 25.7 | 7.7 | 7.3 | 7.4 | 250 | 275 | 275 |
| C | H3 | 5 | 5 | 5 | 7.9 | 8.4 | 8.5 | 23.8 | 25.7 | 26.5 | 7.8 | 7.4 | 7.4 | 250 | 270 | 285 |
| D | H4 | 5 | 5 | 5 | 7.9 | 8.4 | 8.5 | 23.8 | 25.7 | 26.4 | 7.8 | 7.4 | 7.2 | 250 | 280 | 290 |
| 100% A | H5 | 5 | 5 | 5 | 7.2 | 8.0 | 8.8 | 25.4 | 25.3 | 24.3 | 6.0 | 7.4 | 7.0 | 1110 | 1120 | 1180 |
| B | H6 | 5 | 5 | 5 | 7.2 | 8.0 | 8.3 | 25.5 | 25.7 | 27.0 | 5.8 | 7.4 | 7.0 | 1130 | 1145 | 1215 |
| C | H7 | 5 | 5 | 5 | 7.2 | 8.1 | 8.3 | 25.5 | 26.4 | 26.6 | 5.8 | 7.0 | 6.8 | 1135 | 1150 | 1210 |
| D | H8 | 5 | 5 | 5 | 7.2 | 8.1 | 8.3 | 25.5 | 26.3 | 26.0 | 5.7 | 6.9 | 6.7 | 1135 | 1160 | 1170 |
| measured by: | | DPH | DPH | SMC | DPH | | MF | DPH | | MF | DPH | | MF | DPH | | MF |
| recorded by: | | DPH | DPH | SMC | SS | | SMC | SS | | SMC | SS | | SMC | SS | | SMC |

Investigators' Signatures
Marshall Sandefur
Shannon Conard
Della Parker Henry
Sybil Clark
Ann Wolfe
reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 3 24.0–25.5°C
Room B246 23.5–25.5°C

Salt Water: Well Water / 20% Min Water

| Water Quality Parameters | Sample | Method | Measured by | Verified by |
|---|---|---|---|---|
| Field Total Residual Cl2 (mg/L): | 0.01K | NA | RS Perez | RS Perez |
| Lab Total Residual Cl2 (mg/L): <0.03 | 0.04 | DR100 | CH | SS |
| Alkalinity (mg/L as CaCO3): 130/134 | 168 | HACH | DPH | SS |
| Hardness (mg/L as CaCO3): 130 | 277 | HACH | DPH | SS |
| Total ammonia (mg/L as N): <0.017 | 0.867 | Denver | MF/DPH | SS |
| Salinity: 0 | 0 | YSI | ME | |

DPH 10/13/99

Phytoplankton taxa list for Jacksonville Buckman Street Wastewater Treatment Plant receiving water, collected 11 October, 1999, via subsurface grabs. Densities, in number/$m^2$.

| | Control Site | Test Site 1 | Test Site 2 |
|---|---|---|---|
| **Bacillariophyta** | | | |
| *Chaetoceros* sp. | 7 | 18 | 10 |
| *Cyclotella* sp. | — | 18 | 10 |
| *Gyrosigma* sp. | — | 18 | — |
| *Navicula* sp. | 15 | — | — |
| *Nitzschia* sp. | 7 | — | 15 |
| *Pennales* sp. | 22 | — | — |
| *Rhizosolenia* sp. | 29 | — | — |
| *Skeletonema* sp. | 762 | 1562 | 854 |
| *Thalassiosira* sp. | — | 106 | 10 |
| **Chlorophycota** | | | |
| *Chlamydomonas sp.* | — | 18 | — |
| *Tetraselmis* sp. | — | — | 5 |
| **Pyrrophycophyta** | | | |
| Undetermined Dinophyceae | — | 18 | 5 |

Benthic macroinvertebrate taxa list for Jacksonville Buckman Street Wastewater Treatment Plant receiving water, collected 11 October, 1999, via petite Ponar grab. Densities, in number/$m^2$, represent the mean of three replicates.

| Scientific Name | Control Site | Test Site 1 | Test Site 2 |
|---|---|---|---|
| **Amphipoda** | – | – | 1 |
| **Cnidaria** | | | |
| Undetermined Actiniaria | 14 | – | – |
| Undetermined Hydrozoa | – | – | 28 |
| **Cumacea** | | | |
| *Cyclaspis varians* | – | – | 69 |
| Undetermined Cumacea | – | 14 | – |
| **Gastropoda** | | | |
| *Odostomia* sp. | – | 14 | – |
| **Isopoda** | | | |
| Undetermined Caprellidae | – | – | 14 |
| **Oligochaeta** | | | |
| Undetermined Tubificidae | – | 428 | – |
| **Polychaeta** | | | |
| *Paraprionospio pinnata* | – | 14 | – |
| Undetermined Capitellidae | – | – | 28 |

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 FL0026000 11 | 12 991011 17 | 18 X | 19 S | 20 1 |

Remarks

21 66

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

| Transaction Code | NPDES NUMBER | YR/MO/DA | Insp Type | Inspector | Fac Type |
|---|---|---|---|---|---|
| 1 N 2 5 | 3 FL0026000 11 | 12 991011 17 | 18 X | 19 B | 20 1 |

Remarks

21 66