

Biological Assessment of

City of Jasper WWTP

Hamilton County

NPDES #FL0027880

Sampled June 7, 2004

December 2004

Biology Section

Bureau of Laboratories

Division of Resource Assessment and Management

Quality Manual No. 870346G

NELAC Certification No. E31780

Florida Department of Environmental Protection

Fifth Year Inspection Summary

Discharger:	City of Jasper WWTP
County:	Hamilton
NPDES Number:	FL0027880
Permit Expiration:	March 29, 2005

Toxics Sampling Inspection **(XSI)**

Date Sampled: June 7, 2004

Results: Aluminum and zinc were detected in the effluent at levels that complied with Class III Surface Water Quality Criteria. Iron and lead were also detected but at levels between the method detection limits and the practical quantitation limits.

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: June 7, 2004

Results: The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during the 48-hour acute bioassays, complying with Class III Surface Water Quality Criteria and facility permit limits.

Water Quality Inspection **(WQI)**

Date Sampled: June 7, 2004

Results: Levels of coliforms detected in the effluent and at the Test Site did not exceed Class III Water Quality Criteria or the facility's permit limits. However, both fecal (2600 counts/100 mL) and total (4500 counts/100 mL) coliforms detected at the Control Site exceeded Class III Water Quality Criteria (62-302.530(6) and (7) F.A.C.). Effluent concentrations of total nitrogen (0.91 mg/L), total phosphorus (1.2 mg/L), and total ammonia (0.042 mg/L) complied with facility permit limits. These concentrations contributed to elevated levels at the Test Site. Concentrations of these nutrients at the Test Site ranked at or above the 70^{th} percentile of typical values for Florida streams compared to Control Site concentrations, which ranked at or above the 60^{th} percentile.

Impact Bioassessment Inspection **(IBI)**

Date Sampled: June 7, 2004

Results: Periphyton chlorophyll-*a* concentration was 10 mg/m^2 at the Control Site and 71 mg/m^2 at the Test Site. Stream Condition Index samples placed both the Control and Test Sites in the "Good" range. Although overall SCI scores at the Control and Test Sites were in the "Good" category, the Hester-Dendy samplers showed signs of stress in benthic macroinvertebrate assemblages in Tiger Creek. Macroinvertebrate assemblages from Hester-Dendy samplers showed a 63% reduction in Shannon-Weaver diversity scores at the Test Site (1.14) compared to the Control Site (3.11). This is an exceedance of the Class III Surface Water Biological Integrity Criterion (62-302.530(11) F.A.C.). These data suggest additional monitoring is warranted.

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 City of Jasper Wastewater Treatment Plant is located in Hamilton County, Florida (Appendix 1). This facility uses a Bardenpho wastewater treatment system. Activities at this plant include screening, nitrification, re-aeration, clarification, chlorination, dechlorination, and post-aeration for the treatment of domestic wastewater (see Facility Summary in Appendix 2). The effluent discharges from a pipe that is not submerged and is approximately 122-meters in length at D-01. The effluent flows into a treatment wetland, which drains into Tiger Creek and then to the Class III fresh waters of Baisden Swamp. The design flow of the wastewater system is 1.2 million gallons per day (MGD). The average flow of the effluent for the month of June was 1.0415 MGD. The average flow from July 2003 to June 2004 was 0.7351 MGD (personal communication from Michael Tanski).

Surface Water Quality Criteria and facility permit limits are listed in Table 1. According to the facility's monthly discharge monitoring reports, the facility's effluent violated the permit limit for toxicity in October 2003 and April 2004. The facility has also periodically violated permit limits for total phosphorus during July 2003 to June 2004 (Appendix 2).

Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Tiger/Cat Creek above SW 55th Avenue approximately 2600 meters upstream of the Test Site) and a Test Site (located in the Tiger Creek above Baisden Lake Road approximately 900 meters downstream of the discharge). Detailed methods and their relationship to Florida Admini-strative Code are given in Appendix 3.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see http://www.floridadep.org/labs/qa/2002sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.floridadep.org/labs/qa/index.htm).

The following were involved in this investigation: Pat O'Connor, Tom Kallemeyn, and Brian Kelsay (FDEP Northeast District), and DEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Shannan Gunnoe, and Michael Tanski).

Results and Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix 4. Effluent metals complied with Class III Water Quality Criteria (FAC 62-302). The metals aluminum and zinc were found in the effluent at levels above the practical quantitation limit, while iron and lead were detected at levels above the method detection limits and below the practical quantitation limits. No organic pollutants were detected in the effluent.
- Effluent conductivity, pH, and dissolved oxygen complied with Class III Water Quality Criteria (62-302 F.A.C.) and the facility permit limits. Conductivity and pH at the Control and Test Sites complied with Class III Water Quality Criteria (Table 1, 62-302.530 F.A.C.); however, dissolved oxygen at the Control (3.0 mg/L) and Test (2.9 mg/L) Sites was below the Class III Surface Water Quality Criterion (>5.0 mg/L, 62-302.530(31) F.A.C.). The conductivity of the effluent (662 µmhos/cm) likely contributed to a 47% increase in conductivity at the Test Site (390 µmhos/cm) compared to the Control Site (208 µmhos/cm).
- The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi*, or to the water flea, *Ceriodaphnia dubia*, during 48-hour acute screening bioassays (See Table 1 for percent mortality and Appendix 6 for bioassay bench sheets). This complies with Class III Surface Water Quality Criteria (62-302 F.A.C.). While the 48-hour acute screening toxicity tests do not reflect the permit required conditions, the Department uses it to provide reasonable assurance that the facility does not adversely affect waters of the State.
- Levels of fecal and total coliforms detected in the effluent and at the Test Site did not exceed Class III Water Quality Criteria or the facility's permit limits. However, fecal (2600 counts/100 mL) and total (4500 counts/100 mL) coliforms detected at the Control Site both exceeded Class III Water Quality Criteria (62-302.530(6) and (7) F.A.C.) (See Table 1 for results and Appendix 6 for laboratory worksheets).
- Effluent concentrations of total nitrogen (0.91 mg/L), total phosphorus (1.2 mg/L), and total ammonia (0.042 mg/L) complied with facility permit limits (Table 1); however, effluent concentrations of total phosphorus, ortho-phosphate, and total Kjeldahl nitrogen contributed to elevated levels of these nutrients at the Test Site (Table 1). Concentrations of these nutrients were higher at the Test Site compared to the Control Site and ranked

Table 1. Effluent limits, Class III Criteria and chemical, microbiological, and toxicological data.

City of Jasper WWTP	Class III Stds	Effluent Limits	Effluent	Control Site	Test Site
Organic Constituents (µg/L)					
None Detected	-	-	-	-	-
Metals (µg/L unless otherwise noted)					
Aluminum	≤ 1500	-	68	-	-
Arsenic	≤ 50	-	8 U	-	-
Cadmium	≤ 2.2 b	-	0.025 U	-	-
Calcium (mg/L)		-	53.2	-	-
Chromium-III	≤ 169.7 b	-	2 U	-	-
Copper	≤ 18.9 b	-	1 U	-	-
Iron	≤ 1000	-	20 I	-	-
Lead	≤ 9.1 b	-	0.15 I	-	-
Magnesium (mg/L)		-	23.3	-	-
Nickel	≤ 105.1 b	-	2 U	-	-
Selenium	≤ 5	-	0.5 U	-	-
Silver	≤ 0.07	-	0.01 U	-	-
Zinc	≤ 241.6 b	-	27	-	-
Nutrients (mg/L)					
Ortho-phosphate	-	-	1.1	0.88	1.1
Total Phosphorus	-	< 2.0 m	1.2	0.95	1.2 A
Ammonia	-	< 3.2 m	0.042 A	0.11	0.15
Unionized Ammonia	≤ 0.02	-	<0.02 c	<0.02 c	<0.02 c
Nitrate+Nitrite	-	-	0.31	0.032	0.022
Total Kjeldahl Nitrogen	-	-	0.6	0.46	0.93 A
Organic Nitrogen	-	-	0.56 c	0.35 c	0.78 c
Total Nitrogen	-	≤ 6.0 m	0.91 c	0.49 c	0.95 c
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	95	85
Dissolved Oxygen (mg/L)	≥ 5	> 4.0	8.2	**3**	**2.9**
pH (S.U.)	-	>6.0 - <8.5	7.4	7.4	7
Total Suspended Solids (TSS, mg/L)	-	10 m	2 K	2 K	2.4
Total residual chlorine (mg/L)	-	0.01 s	-	-	-
Conductivity (umhos/cm)	≤ 1275	-	662	208	390
Temperature (C)	-	-	28.2	22.8	24
Chlorophyll-a (µg/L)	-	-	0.85 U	1.5	0.96 I
CBOD (mg/L)	-	10.0 m	1.2	-	-
BOD (mg/L)	-	-	-	2 K	2 K
Flow (MGD)	-	1.2 a	0.77a	-	-
Turbidity (NTU)	31.5	-	0.75	2.51	1.65
Color (PCU)	-	-	10	60	100
Hardness (mg/L)	-	-	228.8 c	-	-
Microbiology (# counts/100ml)					
Fecal Coliforms-Membrane Filter	≤ 800	25	10 U	**2600**	45 AB
Total Coliforms-Membrane Filter	≤2400	-	25 AB	**4500**	864 AB
Toxicology Bioassays, 48-hour Acute-Screen, Percent Mortality					
Fish	<50%	-	0%	-	-
Water flea	<50%	-	0%	-	-

Value exceeds the Class III Water Quality Criteria

a - Annual average
b - Value is calculated based on hardness
c - calculated value
m - maximum value for single sample
s - single sample
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value.
K - Actual value is known to be less than value given.
U - Material analyzed for but not detected; value reported is the minimum detection limit

Table 2. Measured and predicted algal growth potential (AGP) for total soluble inorganic nitrogen (TSIN) limitation

City of Jasper WWTP	AGP (measured)	Predicted AGP (TSIN) ± 20%	Inorganic N:P ratio
Control (mg dry wt/L)	8.0	5.4 ± 1.1	0.2
Test (mg dry wt/L)	9.7	6.5 ± 1.3	0.2
Effluent (mg dry wt/L)	17 A	13.4 ± 2.7	0.3

A - Value reported is the mean of two or more determinations

at or above the 70th percentile of typical values for Florida streams (Appendix 5). Concentrations at the Control Site ranked at or above the 60th percentile. Nitrate+nitrite concentrations were an order of magnitude lower at the Control (0.032 mg/L) and Test (0.022 mg/L) Sites compared to the effluent concentration (0.31 mg/L).

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al*. 1978). Raschke and Shultz (1987) found that AGP above 5.0 mg dry wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values of the Control Site (8.0 mg dry wt/L), the downstream Test Site (9.7 mg dry wt/L) and the effluent (17 mg dry wt/L) were above this threshold (Table 2). These values indicate nutrient enrichment in this portion of Tiger Creek, with the effluent contributing to nutrient enrichment of the Test Site.

- Chlorophyll-*a* was not detected in the effluent, but was detected in water samples from the Test (0.96 µg/L) and Control (1.5 µg/L) Sites (Table 1). We note that nutrients in the water column may or may not fuel algal production immediately, depending upon the sum of environmental conditions that limit algal growth at the site (e.g. pH, shading, turbidity). Thus it is not necessarily contradictory for ambient nutrient levels to be high and for little chlorophyll to be detected in water samples.

- Periphyton chlorophyll-*a* concentration was 10 mg/m^2 at the Control Site and 71 mg/m^2 at the Test Site (Table 3). Phaeophytin was also detected at both sites in normal proportions to the amount of chlorophyll-*a*. This component of algal pigments is generally related to the decay of algal filaments, which suggests the algae had been present on the sampler for some time and that conditions at the Test Site were conducive to rapid algal growth. Algal density was also higher at the Test Site compared to the Control Site. There were little differences between Control and Test Sites in algal community composition, with both sites being dominated by diatoms.

- Habitat assessment scores were 95 at the Control Site and 85 at the Test Site, placing them in the "Sub-optimal" category (Table 1, data sheets in Appendix 7). The Control Site had more available substrate and higher water velocity than the Test Site, while the Test Site had less habitat smothering.

- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed a 63% reduction in Shannon-Weaver diversity at the Test Site (1.14) compared to the Control Site (3.11) (Table 4, Appendix 9a and 9b), an exceedance of the Class III Surface Water Biological Integrity Criterion (62-302.530(11) F.A.C.). The dominant taxon at both sites was, *Dicrotendipes simpsoni*, a pollution-tolerant dipteran (Simpson & Bode, 1980).

- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 5 and 6 and in Appendix 10a and 10b. The Control

Table 3. Periphyton composition at control and test sites.

City of Jasper WWTP	Control Site	Test Site
Number of Taxa	38	44
Shannon-Weaver Diversity	3.78	3.54
Chlorophyll *a* (mg/m^2)	10	71
Phaeophytin (mg/m^2)	1.2	18
Algal Density (number/cm^2)	149,245	874,672
Percent Dominant Taxon	27.15	31.79
Dominant Taxon (name)	*Aulacoseira sp.*	*Diadesmis confervacea*
Number of Algal Units Identified	302	302
Percentage Composition:		
Blue-green algae	8.94	3.64
Euglenoids	0.66	0
Green algae	2.3	3.3
Diatoms	88.1	93.1
Other	0	0

Site SCI score of 25 and the Test Site SCI score of 23 placed them both in the "Good" category. The Test Site had fewer EPT taxa and Florida Index points, and a lower percentage of the dominant taxon. The Control Site was dominated by the filter-feeding trichopteran, *Cheumatopsyche* sp. While the Test Site was dominated by the surface-deposition feeding dipteran, *Paratanytarsus* sp.

Summary

Both DMR and FDEP data from this inspection indicate total phosphorus concentrations that either exceed or are very near facility permit limits (Appendix 1, Table 1). Data collected for this study indicate nutrient enrichment in this portion of Tiger Creek both at the Control and Test Sites; indicating upstream sources of nutrients are already present. There is a landfill and some residential areas that could be contributing to the nutrient enrichment in the creek. However, the additional nutrients from the facility appear to be contributing to degradation of stream conditions at the Test Site compared to the Control Site. Concentrations of total phosphorus, orthophosphate, and total Kjeldahl nitrogen were higher at the Test Site compared to the Control Site. AGP values from the Control Site (8.0 mg dry wt/L), the downstream Test Site (9.7 mg dry wt/L) and the effluent (17 mg dry wt/L) were above the "problem" threshold. Periphyton chlorophyll-*a* was seven times greater at the Test Site compared to the Control Site. Benthic macroinvertebrate assemblages from Hester-Dendy samplers showed a 63% reduction in Shannon-Weaver diversity at the Test Site compared to the Control Site, an exceedance of the Class III Surface Water Biological Integrity Criterion (62-302.530(11) F.A.C.). These data suggest additional monitoring is warranted and the effluent may not be retained in the treatment wetland long enough for the vegetation to uptake the nutrients.

Literature Cited

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Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative

City of Jasper WWTP	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	3.11	1.14
Number of Taxa	32	20
Florida Index	13	4
Number of EPT Taxa	2	2
Percent Dominant Taxon	47.6	84.98
Dominant Taxon (name)	*Dicrotendipes simpsoni*	*Dicrotendipes simpsoni*
Dominant Taxon (group)	Diptera	Diptera
Total Number of Individuals (counted)	773	903
Total Number of Individuals (#/m2)	2,048	2,390
Community Composition: Percent of total		
Amphipoda	2.7	0
Coleoptera	0.0	0.1
Diptera	87.8	95.2
Ephemeroptera	4.0	1.0
Gastropoda	3.7	0.8
Isopoda	0.3	1.3
Odonata	1.4	1.3
Oligochaeta	0.1	0.0
Trichoptera	0.0	0.0
Other	0.0	0.2
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	0.1	0.0
Predators	6.4	3.7
Scavangers	0.3	1.4
Surface Deposit Feeders	58.9	50.2
Suspension Feeders	25.6	42.8
Scrapers	5.9	1.3
Shredders	2.1	0.4
Unknown	0.8	0.0

Value exceeds the Class III Water Quality Criteria

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Table 5. Macroinvertebrate Dipnet Samples - Qualitative

City of Jasper WWTP	Control Site	Test Site
Stream Condition Index 1992 (value)	25	23
Stream Condition Index (word)	Good	Good
Stream Condition Index Metrics		
Florida Index	9	7
Number of EPT Taxa	5	2
Number of Taxa	28	29
Number of Chironomid Taxa	12	10
Percent Dominant Taxon	26.2	20.2
Percent Dipterans	40.78	31.19
Percent Suspension Feeders and Filterers	47.57	16.06
Total Number of Individuals	103	109
Community Composition: Percent of total		
Dominant Taxon (name)	*Cheumatopsyche* sp.	*Paratanytarsus* sp.
Dominant Taxon (group)	Trichoptera	Diptera
Amphipoda	1.94	1.83
Coleoptera	1.94	0.92
Diptera	40.78	31.19
Ephemeroptera	4.85	14.68
Gastropoda	2.91	14.68
Isopoda	7.77	14.68
Odonata	3.88	13.76
Oligochaeta	2.91	2.75
Pelecypoda	0.97	2.75
Trichoptera	31.07	0.00
Others	0.98	2.76
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	2.91	2.75
Predators	8.25	16.06
Scavengers	7.77	14.68
Scrapers	6.31	22.02
Shredders	3.40	3.21
Surface Deposit Feeders	19.90	23.85
Suspension Feeders and Filterers	47.57	16.06
Unknown	3.88	0.92

Table 6a. Stream Condition Index Metrics: Panhandle, Summer Index

Jasper WWTP - Control Site					
Metric:	Value	5	3	1	Score
Total Number of Taxa	28	≥31	30-16	<16	3
Number of EPT Taxa	5	≥7	6-4	<4	3
Number of Chironomid Taxa	12	≥9	8-5	<5	5
Percent Contribution of Dominant Taxon	26.2	≤22	23-61	>61	3
Percent Diptera	40.78	-	≤50	>50	3
Florida Index	9	≥16	15-8	<8	3
Percent Suspension Feeders and Filterers	47.57	≥12	11-6	<6	5
Total Score		**Good**			**25**
Interpretation of Scores		Excellent			27-33
		Good			21-26
		Poor			14-20
		Very Poor			7-13

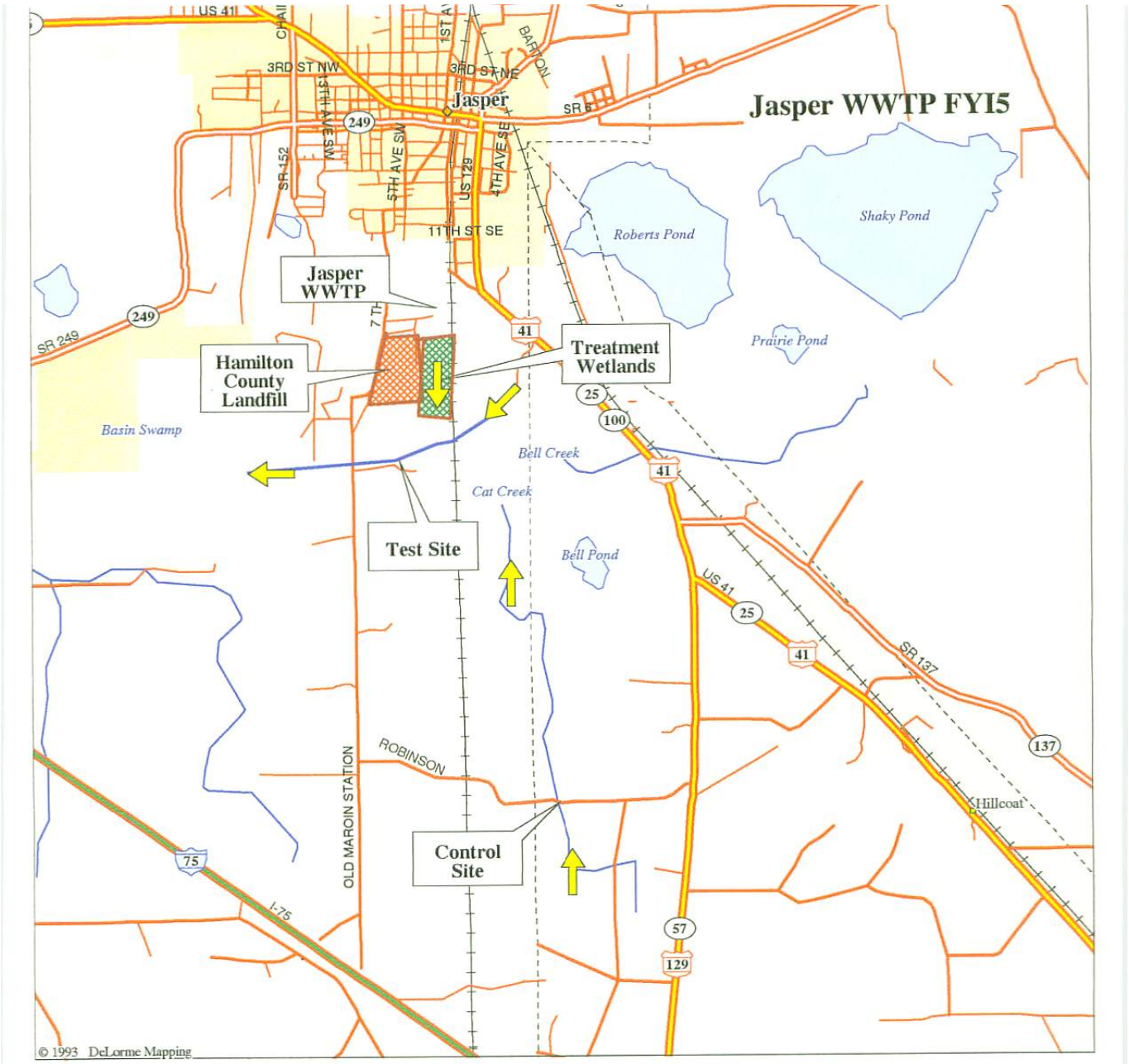
Table 6b. Stream Condition Index Metrics: Panhandle, Summer Index

Jasper WWTP - Test Site					
Metric:	Value	5	3	1	Score
Total Number of Taxa	29	≥31	30-16	<16	3
Number of EPT Taxa	2	≥7	6-4	<4	1
Number of Chironomid Taxa	10	≥9	8-5	<5	5
Percent Contribution of Dominant Taxon	20.2	≤22	23-61	>61	5
Percent Diptera	31.19	-	≤50	>50	3
Florida Index	7	≥16	15-8	<8	1
Percent Suspension Feeders and Filterers	16.06	≥12	11-6	<6	5
Total Score		**Good**			**23**
Interpretation of Scores		Excellent			27-33
		Good			21-26
		Poor			14-20
		Very Poor			7-13

Appendices

- Appendix 1. Map of facility
- Appendix 2. Facility summary
- Appendix 3. Explanation of measurements
- Appendix 4. Chemical analyses of effluent and receiving water.
- Appendix 5. Typical values for selected parameters in Florida waters
- Appendix 6. Additional physical, chemical, toxicological and microbiological results
- Appendix 7. Habitat Assessment field sheets
- Appendix 8a. Periphyton: Taxa list and density (number of individuals per cm^2)
- Appendix 8b. Periphyton: Taxa list and number of individuals counted
- Appendix 9a. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m^2)
- Appendix 9b. Hester-Dendy multi-plate samplers: Taxa list and total number of macroinvertebrates counted
- Appendix 10a. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix 10b. Dipnet samples: Taxa list and number of macroinvertebrates counted

Appendix 1


Jasper WWTP FYI5
Jasper WWTP
Hamilton County Landfill
Treatment Wetlands
Test Site
Control Site
Roberts Pond
Shaky Pond
Prairie Pond
Bell Pond
Basin Swamp
Bell Creek
Cat Creek
Jasper
Hillcoat
ROBINSON
OLD MAROIN STATION
11TH ST SE
3RD ST NW
3RD ST NE
5TH AVE SW
4TH AVE SE
US 41
US 129
SR 249
SR 152
SR 137
I-75
SR 6
© 1993 DeLorme Mapping
LEGEND
State Route
Geo Feature
Town, Small City
Interstate, Turnpike
US Highway
Population Center
Street, Road
Major Street/Road
Interstate Highway
State Route
US Highway
Railroad
River
Intermittent River
Utility (powerline)
Open Water
Scale 1:37,500 (at center)
2000 Feet
1000 Meters
Mag 13.48
Tue Apr 13 10:33:34 2004



LEGEND

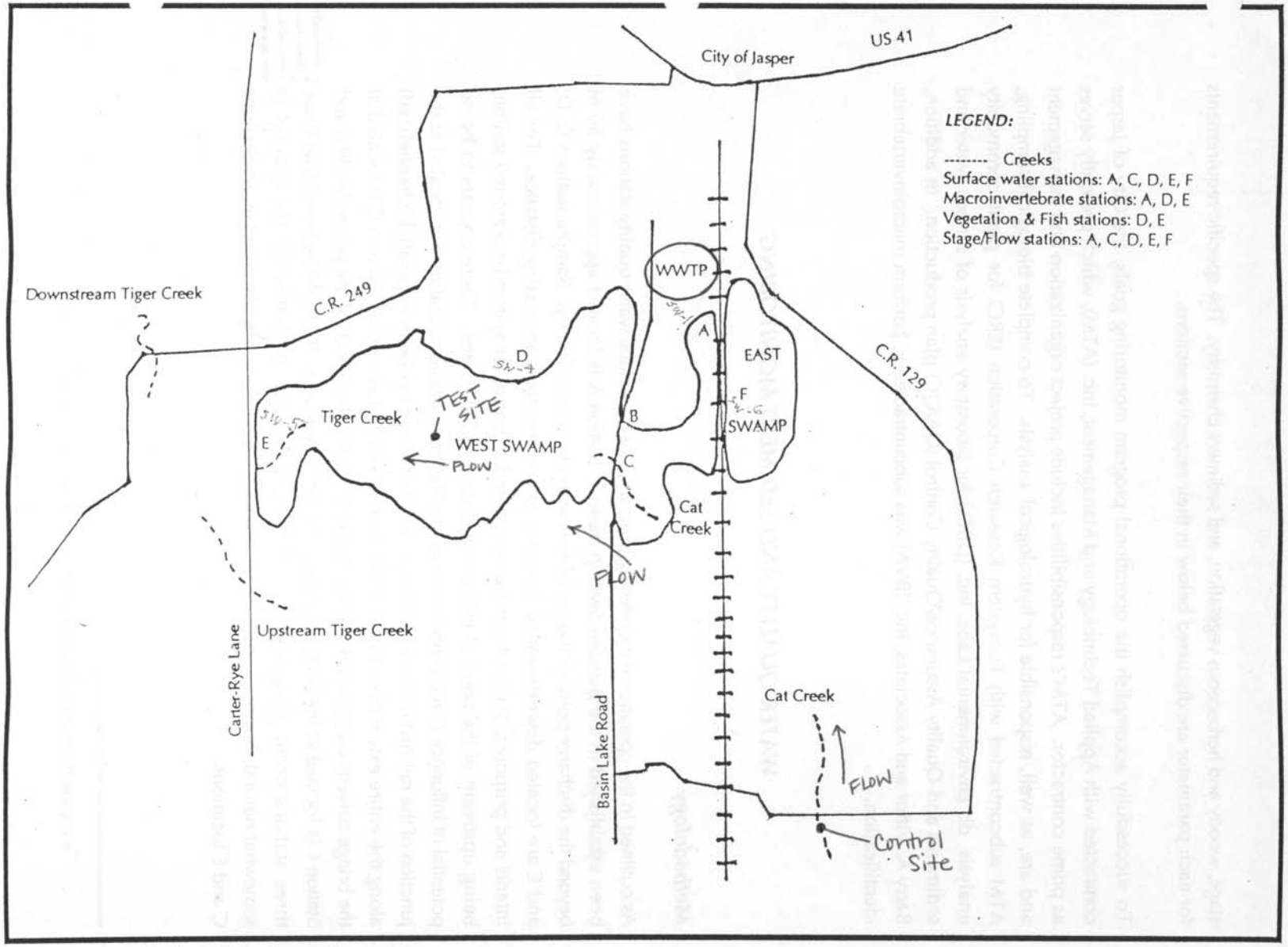
- State Capitol
- Town, Small City
- Large City
- Interstate, Turnpike
- US Highway
- State/Prov Boundary
- Population Center
- Interstate Highway
- US Highway
- Land Mass
- Open Water

Scale 1:2,000,000 (at center)

20 Miles

50 KM

Mag 8.00
Wed Feb 25 11:02:16 2004



Site map showing location of sampling stations.

Appendix 2

State of Florida
Department of Environmental Protection
Facility Introduction

City ofJasper WWTF – FL0027880– Hamilton County

Type of facility: A Bardenpho wastewater treatment system discharging to Baisden Swamp.

Design flow: 1.2 MGD WWTF

Average flow: The annual average flow for November 2002 through November 2003 was 0.7725 MGD

Description of the treatment process:

A 1.2 mgd permitted capacity Bardenpho wastewater treatment system consisting of:

- three influent manual bar screens,
- two parallel operating trains each consisting of:
  - first anoxic basin (197,498 gallons each)
  - nitrification basin (592,495 gallons each)
  - second anoxic basin (148,124 gallons each)
  - reaeration basin (44,886 gallons each)
  - clarifier (547.5 square feet each)
- one traveling bridge effluent sand filter (16,328 gallons)
- one chlorine contact chamber (42,531 gallons)
- one dechlorination basin (4,765 gallons)
- one post-aeration chamber (13,225 gallons)
- two digesters (78,375 gallons each)
- one sludge holding tank.

Receiving water and classification: Discharge is to Baisden Swamp (Class III fresh waters) at Discharge Location (D-01) which is approximately 400 feet in length and discharges above the water surface. The point of discharge is located approximately at latitude 30° 30' 20" N, longitude 82° 56' 30" W

Sampling location: Monthly and semi-annual parameters taken for discharge to the Baisden Swamp are sampled at monitoring location EFD-1 (immediately after dechlorination). Quarterly parameters are taken at Baisden Monitoring Stations A(WIM-1), C(WIM-2), D(WIM-3), E(WIM-4), and F(WIM-5).

Other information:

Facility Summary

Facility Name (as it appears on permit): City of Jasper WWTF		**Former Names:**
Physical Address: S.W. 107th Avenue Jasper, Florida 32052	**NPDES Permit No.:** FL0027880 **Expiration Date:** March 29, 2005	**Prepared By:** Brian Kelsay
County: Hamilton **District:** Northeast	**State Permit No.:** FL0027880 **Expiration Date:** March 29, 2005	**Facility Type:** Domestic
Function of Facility: Treat domestic wastewater to wetlands standards prior to discharge to Baisden Swamp.		
Sampling Location (specify lat/longs of NPDES point): Latitude: 30° 30' 20" N Longitude: 82° 56' 30" W		

Description of treatment process:

A 1.2 mgd permitted capacity Bardenpho wastewater treatment system consisting of:

- three influent manual bar screens,
- two parallel operating trains each consisting of:
  - first anoxic basin (197,498 gallons each)
  - nitrification basin (592,495 gallons each)
  - second anoxic basin (148,124 gallons each)
  - reaeration basin (44,886 gallons each)
  - clarifier (547.5 square feet each)
- one traveling bridge effluent sand filter (16,328 gallons)
- one chlorine contact chamber (42,531 gallons)
- one dechlorination basin (4,765 gallons)
- one post-aeration chamber (13,225 gallons)
- two digesters (78,375 gallons each)
- one sludge holding tank.

Receiving Waters: There is one permitted discharge location: **1. Surface Water Discharge:** An existing 1.2 mgd AADF permitted discharge to Baisden Swamp (Class III fresh waters) at Discharge Location (D-01) which is approximately 400 feet in length and discharges above the water surface. The point of discharge is located approximately at latitude 30° 30' 20" N, longitude 82° 56' 30" W.	**Classification:** Class III fresh water

Temperature (C):	**Design Flow:** 1.20 MGD
pH (SU):	**Mean Flow:** The average flow for November 2002 through November 2003 was 0.7725 MGD.
Conductivity (umhos/cm):	**Flow During Survey:**
Dissolved Oxygen (mg/L):	**Total Residual Chlorine (mg/L):**

Discharge is: (Continuous) Intermittent Seasonal Rainfall Dependent Other

List Effluent Limits:

Parameter and Units For Surface Discharge D001 Monthly at EFD-1	Limit:	Describe special permit conditions and permit modifications:
Flow	Annual Average: 1.20 mgd Monthly Average: Report mgd	Continuous monitoring
$CBOD_5$	Annual Average: 5.0 mg/L Monthly Average: 6.25 mg/L Maximum: 10.0 mg/L	Sample weekly - 16hr FPC
Total Suspended Solids	Annual Average: 5.0 mg/L Monthly Average: 6.25 mg/L Maximum: 10.0 mg/L	Sample weekly - 16hr FPC
Total Nitrogen (as N)	Annual Average: 3.0 mg/L Monthly Average: 3.75 mg/L Maximum: 6.0 mg/L	Sample weekly - 16hr FPC
Total Phosphorous, as P	Annual Average: 1.0 mg/L Monthly Average: 1.25 mg/L Maximum: 2.0 mg/L	Sample weekly - 16hr FPC
Total Ammonia, (as N)	Annual Average: 1.6 mg/L Monthly Average: 2.0 mg/L Maximum: 3.2 mg/L	Sample weekly - 16hr FPC
Dissolved Oxygen	Minimum 4.0 mg/L	Daily, 7days/week
Fecal Coliform	75% of samples non detectable Mo. Geom. Mean: Report #/100L Maximum: 25 #/100L	Sample weekly.
Total Residual Chlorine (for disinfection)	Minimum 1.0 mg/L	Continuous Monitoring
pH	Minimum: 6.0 s.u Maximum: 8.5 s.u	Continuous Monitoring
For Surface Discharge D001 Monthly at EFA-1		
Total Residual Chlorine (for dechlorination)	Maximum 0.01 mg/L	Daily, grab 7 days/week

For Surface Discharge D001 Monthly at INF-1		
$CBOD_5$	Monthly Average: report mg/L	Sample weekly
Total Suspended Solids	Monthly Average: report mg/L	Sample weekly
For Surface Discharge D001 Semi-Annual at EFD-1		
LC50 Stat RE 96 hour Acute Ceriodaphnia dubia (routine)	Minimum: 100 %	4 grabs in 24 hours
LC50 Stat RE 96 hour Acute Cyprinnella Leedsi (routine)	Minimum: 100 %	4 grabs in 24 hours
For Surface Discharge D001 Quarterly at WIM-1 (Monitoring Station A)		
Temperature	Maximum: Report °C	Quarterly grab
Dissolved Oxygen	Maximum: Report mg/L	Quarterly grab
pH	Maximum: Report s.u.	Quarterly grab
Conductivity	Maximum: Report µohm/cm	Quarterly grab
Total Kjeldahl Nitrogen (as N)	Maximum: Report mg/L	Quarterly grab
Nitrite + Nitrate	Maximum: Report mg/L	Quarterly grab
Sulfate	Maximum: Report mg/L	Quarterly grab
Herbaceous Vegetation	Maximum: Report	Quarterly grab
For Surface Discharge D001 Quarterly at WIM-2 (Monitoring Station C)		
Temperature	Maximum: Report °C	Quarterly grab
Dissolved Oxygen	Maximum: Report mg/L	Quarterly grab
pH	Maximum: Report s.u.	Quarterly grab
Conductivity	Maximum: Report µohm/cm	Quarterly grab
$CBOD_5$	Maximum: Report mg/L	Quarterly grab
Total Suspended Solids	Maximum: Report mg/L	Quarterly grab

Total Phosphorus (as P)	Maximum: Report mg/L	Quarterly grab
Total Kjeldahl Nitrogen (as N)	Maximum: Report mg/L	Quarterly grab
Total Ammonia, (as N)	Maximum: Report mg/L	Quarterly grab
Nitrite + Nitrate	Maximum: Report mg/L	Quarterly grab
Sulfate	Maximum: Report mg/L	Quarterly grab
Fecal Coliform	Maximum: Report #/100mL	Quarterly grab
Herbaceous Vegetation	Maximum: Report	Quarterly grab
For Surface Discharge D001 Quarterly at WIM-3 (Monitoring Station D)		
Temperature	Maximum: Report °C	Quarterly grab
Dissolved Oxygen	Maximum: Report mg/L	Quarterly grab
pH	Maximum: Report s.u.	Quarterly grab
Conductivity	Maximum: Report µohm/cm	Quarterly grab
$CBOD_5$	Maximum: Report mg/L	Quarterly grab
Total Suspended Solids	Maximum: Report mg/L	Quarterly grab
Total Phosphorus (as P)	Maximum: Report mg/L	Quarterly grab
Total Kjeldahl Nitrogen (as N)	Maximum: Report mg/L	Quarterly grab
Total Ammonia, (as N)	Maximum: Report mg/L	Quarterly grab
Nitrite + Nitrate	Maximum: Report mg/L	Quarterly grab
Sulfate	Maximum: Report mg/L	Quarterly grab
Fecal Coliform	Maximum: Report #/100mL	Quarterly grab
Stage	Monthly Average: Report ft	Quarterly staff gauge
Herbaceous Vegetation	Maximum: Report	Quarterly grab

For Surface Discharge D001 Quarterly at WIM-4 (Monitoring Station E)		
Temperature	Maximum: Report °C	Quarterly grab
Dissolved Oxygen	Maximum: Report mg/L	Quarterly grab
pH	Maximum: Report s.u.	Quarterly grab
Conductivity	Maximum: Report µohm/cm	Quarterly grab
$CBOD_5$	Maximum: Report mg/L	Quarterly grab
Total Suspended Solids	Maximum: Report mg/L	Quarterly grab
Total Phosphorus (as P)	Maximum: Report mg/L	Quarterly grab
Total Kjeldahl Nitrogen (as N)	Maximum: Report mg/L	Quarterly grab
Total Ammonia, (as N)	Maximum: Report mg/L	Quarterly grab
Nitrite + Nitrate	Maximum: Report mg/L	Quarterly grab
Sulfate	Maximum: Report mg/L	Quarterly grab
Fecal Coliform	Maximum: Report #/100mL	Quarterly grab
Stage	Monthly Average: Report ft	Quarterly staff gauge
Herbaceous Vegetation	Maximum: Report	Quarterly grab
For Surface Discharge D001 Quarterly at WIM-5 (Monitoring Station F)		
Temperature	Maximum: Report °C	Quarterly grab
Dissolved Oxygen	Maximum: Report mg/L	Quarterly grab
pH	Maximum: Report s.u.	Quarterly grab
Conductivity	Maximum: Report µohm/cm	Quarterly grab
$CBOD_5$	Maximum: Report mg/L	Quarterly grab
Total Suspended Solids	Maximum: Report mg/L	Quarterly grab

Total Phosphorus (as P)	Maximum: Report mg/L	Quarterly grab
Total Kjeldahl Nitrogen (as N)	Maximum: Report mg/L	Quarterly grab
Total Ammonia, (as N)	Maximum: Report mg/L	Quarterly grab
Nitrite + Nitrate	Maximum: Report mg/L	Quarterly grab
Sulfate	Maximum: Report mg/L	Quarterly grab
Fecal Coliform	Maximum: Report #/100mL	Quarterly grab
Stage	Monthly Average: Report ft	Quarterly staff gauge
Herbaceous Vegetation	Maximum: Report	Quarterly grab

Description of permitted outfall: There is one permitted discharge location:

Surface Water Discharge: An existing 1.2 mgd AADF permitted discharge to Baisden Swamp (Class III fresh waters) at Discharge Location (D-01) which is approximately 400 feet in length and discharges above the water surface. The point of discharge is located approximately at latitude 30° 30' 20" N, longitude 82° 56' 30" W.

List permit violations (DMR data) and plant upsets that occurred at the plant within the last year:

Reviewed past 12 months (November 2002 – November 2003)

1. EFD-1 BOD_5 violation 22.0 mg/L (10.0 mg/L limit) on the November 2002 DMR.
2. LC50 Stat RE 96 hour Acute Ceriodaphnia dubia (routine) violation 98% (Min 100% limit) October 2003
3. LC50 Stat RE 96 hour Acute Cyprinnella Leedsi (routine) violation 99% (Min 100% limit) October 2003

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions:

1. The last WABEL was completed in April 2000 for the last permit renewal. The permit application and other available application information were evaluated to determine if the discharge could cause an excursion above the 62-611 FAC, receiving wetlands standards. Also. Baisden Swamp water quality data was from the five monitoring stations was organized and analyzed to determine if the Baisden Swamp was meeting the receiving wetland water quality standards in the vicinity of the discharge. It was determined that the discharge from this facility should not cause or contribute to an excursion in the receiving wetland water quality standards. The existing treatment limits should be adequate to protect the designated use of the water body based on the review of the ambient water quality data. The following are findings from a review of the 5 monitoring stations in the Baisden Swamp from July 25. 1995 to April 20, 1999.

   - The total ammonia results at all of the stations was less than the effluent single sample limit of 3.2 mg/L. The high ammonia level recorded was 1.1 mg/L at Station A on July 25, 1995.
   - The permitted effluent single sample maximum for total phosphorous is 2.0 mg/L. None of the results from the stations exceed this value; the highest value was recorded at Station A, 1.480 mg/L on April 25, 1996.
   - The permitted effluent single sample maximum for CBOD5 is 10.0 mg/L. A value of 11.0 mg/L was recorded at Station C on July 25, 1995. Also. during that sample period, the CBOD5 value at Station F was 6.5 mg/L, 3.5 mg/L at Station E, and 2.9 mg/L at Station D. Since that July 1995 sample period 90% of the CBOD5 values through April 1999 have been less than or equal to 2.0 mg/L.
   - No TSS values at any of the monitoring stations have been 10.0 mg/L – the effluent permitted single sample maximum. The highest value recorded was 9.3 mg/L at Station C on October 31. 1996.
   - Dissolved oxygen measurements were taken at the top. middle and bottom depths.
     TOP – The average DO value. from 75 measurements. was 5.4 mg/L
     MIDDLE – The average DO value. from 71 measurements was 5.38 mg/L
     BOTTOM – The average DO value. from 71 measurements. was 5.35 mg/L

     All of the values at all of the depths were above the effluent limit of a minimum of 4.0 mg/L.

2. No current enforcement.

Discuss DMR trends to prior data; is trend improving or declining: Data from WAFR for November 2002 to November 2003:

Flow (Mo. Avg): Highest Data Value: 1.2 MGD Feb 2002, Lowest Data Value: 0.58MGD Nov 2003, Data Average: 0.83 – Seasonal trend with highest values from Feb to Aug.

$CBOD_5$ (Mo. Avg): Highest Data Value: 2.50 Lowest Data Value: 2.50 Data Average: 2.5

Total Suspended Solids (Mo Avg): Highest Data Value: 2.37 Lowest Data Value: 2.35 Data Average: 2.36 – trend consistent

Total Nitrogen(as N) (Mo Avg): Highest Data Value: 3.275 Lowest Data Value: 1.27 Data Average: 1.27 – Declining trend since Nov 2002.

Total Phosphorous, as P: Highest Data Value: 1.12 Lowest Data Value: 0.19 Data Average: 0.55- trend increasing since May 2003.

Total Ammonia,(as N): Highest Data Value: 0.205 Lowest Data Value: 0.0285 Data Average: 0.081 – Trend consistant

Dissolved Oxygen (min): Highest Data Value: 8.1 Lowest Data Value: 6.81 Data Average: 7.31 – higher on winter months

Fecal Coliform (Mo. Geom Mean): Highest Data Value: 1.8 Lowest Data Value: 0 Data Average: 1.01 - inconsistent trend

Total Residual Chlorine (for disinfection): Highest Data Value: 1.05 Lowest Data Value: 1.0 Data Average: 1.0038 – trend consistent.

pH (min.): Highest Data Value: 8.1 Lowest Data Value: 7.4 - trend consistent
pH (max): Highest Data Value: 8.4 Lowest Data Value: 8.1 - trend consistent

Total Residual Chlorine (for dechlorination): Highest Data Value: <0.01 – trend consistent.

Additional Information:

Summary Results

The date range you specified is: 07/01/2003 to 06/30/2004

Permit Number: FL0027880
Facility Name: JASPER-WWTP
Outfall Indicator: 001-1
Monitoring Location Code: 1

Parameter Code	Description	Limit	Limit Effective Dates	Statistical Base	Units	Average	Maximum	Minimum
P 00665	PHOSPHORUS, TOTAL (AS P)	2	4/1/2000 to 3/31/2005	MAXIMUM	MG/L	2.525	2.61	2.44
P 00665	PHOSPHORUS, TOTAL (AS P)	1.25	4/1/2000 to 3/31/2005	MO AVG	MG/L	1.2356	1.2748	1.1964

Permit Number: FL0027880
Facility Name: JASPER-WWTP
Outfall Indicator: 001-T
Monitoring Location Code: P

Parameter Code	Description	Limit	Limit Effective Dates	Statistical Base	Units	Average	Maximum	Minimum
P TAN3B	LC50 STATRE 96HR ACU CERIODAPHNIA	100	4/1/2000 to 3/31/2005	MINIMUM	PER- CENT	97.125	98	96.25
P TAN6H	LC50 STATRE 96HR ACUCYPRINELLA LEEDSI	100	4/1/2000 to 3/31/2005	MINIMUM	PER- CENT	99.1875	99.375	99

Appendix 3

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.floridadep.org/labs/sop/index.htm and/or http://www.floridadep.org/labs/qa/index.htm .

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix 4. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, Appendix 2). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia,* and the fish, *Cyprinella leedsi* following FDEP SOPs TA07_01 and TA07_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits.

(4) Bacteriological Testing

The effluent and water from control and test sites were analyzed for the presence and concentration of total and fecal coliform bacteria following FDEP SOPs MB1_0 and MB1_1. High levels of fecal or total coliform bacteria may constitute violation of 62-302.530(6), 62-302.530(7) and/or facility permit limits.

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The effluent and water from control and test sites are autoclaved, filtered (0.45μm), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum,* USEPA 2002*),* and incubated for 14 days (FDEP SOP TA08_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N:P) is less than 10:1, nitrogen limitation of algal production is likely. When the N:P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(62) F.A.C..

(7) Algal Phytoplankton and Periphyton Assemblages

Methods: Periphyton were sampled at both control and test sites by incubating glass microscope slides in a standard periphytometer for 28 days (QA Rule SOP FS7210). Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton and phytoplankton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03_1 and AB05).

Chlorophyll *a* Content: Chlorophyll *a* content is measured in both phytoplankton and periphyton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples and number of natural units/cm^2 for periphyton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present with more equitable abundance among taxa (Magurran 1988). Low diversity scores related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(8) Benthic Macroinvertebrate Assemblages

Methods: Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(11) F.A.C..

The Florida Index: Some organisms become rare or absent as the intensity or duration of disturbance increases. The Florida Index assigns points to stream-dwelling macroinvertebrates based on their ranked sensitivity to pollution (Beck 1954). A site with a high Florida Index score is considered healthy (Ross 1990). Decreases in Florida Index points related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Ephemeroptera/Plecoptera/Trichoptera (EPT) Taxa: This value is the number of EPT taxa present. More EPT taxa are usually present in unpolluted waters (Plafkin *et al*., 1989, Wallace *et al.*, 1996). Decreases in the number of EPT taxa related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida. Using data from qualitative dipnet samples, the SCI assigns points to seven parameters, depending on how closely each parameter approaches an expected reference condition (QA Rule SOP LT 7200). Points are summed to yield a final SCI score (range 7-33, depending on region and index period). Included in the calculation of SCI are taxa richness, number of EPT taxa, number of Chironomid taxa, percent contribution of the dominant taxon, the Florida Index, percent contribution of Diptera, and the percent contribution of suspension and filter feeders. Scores are broken into four ordinal groups: Excellent, Good, Poor and Very Poor. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score of "Poor" or "Very Poor" related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

(9) Statistical Comparisons

Statistical comparisons of the proportions of taxa, major groups or feeding groups were made using 95% confidence intervals on proportions. A 95% confidence interval is the range of values above and below a given proportion that has a 95% chance of containing the true proportion (Sokal and Rohlf 1995). If the 95% confidence intervals for two proportions do not overlap, then the proportion of X in sample 1 is significantly different from the proportion of X in sample 2 at $p<0.05$. A "$p<0.05$" level of significance means that there is less than a 5% chance that the true proportions in the two samples are the same. All comparisons that are labeled as significant in the text have a probability <0.05 that the proportions are the same.

Appendix 4

Chemical analysis of effluent and receiving water

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 6:45	EQ BLANK	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	EQUIPMENT BLANK	48	190
6/7/2004 6:45	EQ BLANK	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	EQUIPMENT BLANK	14	57
6/7/2004 6:45	EQ BLANK	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2-Chlorophenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	2-Nitrophenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	EQUIPMENT BLANK	38	150
6/7/2004 6:45	EQ BLANK	BNA-Water	4,4'-DDD	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	4,4'-DDE	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	4,4'-DDT	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	EQUIPMENT BLANK	1.9	7.6
6/7/2004 6:45	EQ BLANK	BNA-Water	4-Nitrophenol	14	ug/L	U	EQUIPMENT BLANK	14	57
6/7/2004 6:45	EQ BLANK	BNA-Water	Acenaphthene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Acenaphthylene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Aldrin	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Anthracene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzidine	95	ug/L	U	EQUIPMENT BLANK	95	380
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	EQUIPMENT BLANK	14	57
6/7/2004 6:45	EQ BLANK	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	EQUIPMENT BLANK	4.8	19
6/7/2004 6:45	EQ BLANK	BNA-Water	Chrysene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	EQUIPMENT BLANK	4.8	19

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 6:45	EQ BLANK	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Dieldrin	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Diethyl phthalate	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Dimethyl phthalate	48	ug/L	U	EQUIPMENT BLANK	48	190
6/7/2004 6:45	EQ BLANK	BNA-Water	Endosulfan I	3.8	ug/L	U	EQUIPMENT BLANK	3.8	15
6/7/2004 6:45	EQ BLANK	BNA-Water	Endosulfan II	3.8	ug/L	U	EQUIPMENT BLANK	3.8	15
6/7/2004 6:45	EQ BLANK	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Endrin	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Endrin aldehyde	3.8	ug/L	U	EQUIPMENT BLANK	3.8	15
6/7/2004 6:45	EQ BLANK	BNA-Water	Fluoranthene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Fluorene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Heptachlor	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Isophorone	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	EQUIPMENT BLANK	1.9	7.6
6/7/2004 6:45	EQ BLANK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	EQUIPMENT BLANK	1.9	7.6
6/7/2004 6:45	EQ BLANK	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Naphthalene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Nitrobenzene	1.9	ug/L	U	EQUIPMENT BLANK	1.9	7.6
6/7/2004 6:45	EQ BLANK	BNA-Water	Pentachlorophenol	2.9	ug/L	U	EQUIPMENT BLANK	2.9	11
6/7/2004 6:45	EQ BLANK	BNA-Water	Phenanthrene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Phenol	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	Pyrene	0.95	ug/L	U	EQUIPMENT BLANK	0.95	3.8
6/7/2004 6:45	EQ BLANK	BNA-Water	alpha-BHC	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	beta-BHC	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	delta-BHC	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	BNA-Water	gamma-BHC	1.4	ug/L	U	EQUIPMENT BLANK	1.4	5.7
6/7/2004 6:45	EQ BLANK	GC-Water	Alachlor	0.65	ug/L	U	EQUIPMENT BLANK	0.6522	2.61
6/7/2004 6:45	EQ BLANK	GC-Water	Ametryn	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Atrazine	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Azinphos Methyl	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Bromacil	0.22	ug/L	U	EQUIPMENT BLANK	0.2174	0.87
6/7/2004 6:45	EQ BLANK	GC-Water	Butylate	0.22	ug/L	UJ	EQUIPMENT BLANK	0.2174	0.87
6/7/2004 6:45	EQ BLANK	GC-Water	Chlorpyrifos Ethyl	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Chlorpyrifos Methyl	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Diazinon	0.054	ug/L	UJ	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Ethion	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Ethoprop	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Fenamiphos	0.22	ug/L	U	EQUIPMENT BLANK	0.2174	0.87

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 6:45	EQ BLANK	GC-Water	Fonofos	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Hexazinone	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Malathion	0.16	ug/L	U	EQUIPMENT BLANK	0.163	0.65
6/7/2004 6:45	EQ BLANK	GC-Water	Metalaxyl	0.27	ug/L	U	EQUIPMENT BLANK	0.2717	1.09
6/7/2004 6:45	EQ BLANK	GC-Water	Metolachlor	0.54	ug/L	U	EQUIPMENT BLANK	0.5435	2.17
6/7/2004 6:45	EQ BLANK	GC-Water	Metribuzin	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Mevinphos	0.22	ug/L	U	EQUIPMENT BLANK	0.2174	0.87
6/7/2004 6:45	EQ BLANK	GC-Water	Naled	0.87	ug/L	UJ	EQUIPMENT BLANK	0.8696	3.48
6/7/2004 6:45	EQ BLANK	GC-Water	Norflurazon	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Parathion Ethyl	0.16	ug/L	U	EQUIPMENT BLANK	0.163	0.65
6/7/2004 6:45	EQ BLANK	GC-Water	Parathion Methyl	0.11	ug/L	U	EQUIPMENT BLANK	0.1087	0.44
6/7/2004 6:45	EQ BLANK	GC-Water	Phorate	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	GC-Water	Prometryn	0.16	ug/L	U	EQUIPMENT BLANK	0.163	0.65
6/7/2004 6:45	EQ BLANK	GC-Water	Simazine	0.054	ug/L	U	EQUIPMENT BLANK	0.0543	0.22
6/7/2004 6:45	EQ BLANK	Metals-Water	Aluminum	10	ug/L	U	EQUIPMENT BLANK	10	40
6/7/2004 6:45	EQ BLANK	Metals-Water	Arsenic	8	ug/L	U	EQUIPMENT BLANK	8	32
6/7/2004 6:45	EQ BLANK	Metals-Water	Cadmium	0.025	ug/L	U	EQUIPMENT BLANK	0.025	0.1
6/7/2004 6:45	EQ BLANK	Metals-Water	Calcium	0.05	mg/L	U	EQUIPMENT BLANK	0.05	0.3
6/7/2004 6:45	EQ BLANK	Metals-Water	Chromium	2	ug/L	U	EQUIPMENT BLANK	2	8
6/7/2004 6:45	EQ BLANK	Metals-Water	Copper	1	ug/L	U	EQUIPMENT BLANK	1	4
6/7/2004 6:45	EQ BLANK	Metals-Water	Iron	10	ug/L	U	EQUIPMENT BLANK	10	40
6/7/2004 6:45	EQ BLANK	Metals-Water	Lead	0.05	ug/L	U	EQUIPMENT BLANK	0.05	0.2
6/7/2004 6:45	EQ BLANK	Metals-Water	Magnesium	0.01	mg/L	U	EQUIPMENT BLANK	0.01	0.04
6/7/2004 6:45	EQ BLANK	Metals-Water	Nickel	2	ug/L	U	EQUIPMENT BLANK	2	8
6/7/2004 6:45	EQ BLANK	Metals-Water	Selenium	0.5	ug/L	U	EQUIPMENT BLANK	0.5	2
6/7/2004 6:45	EQ BLANK	Metals-Water	Silver	0.01	ug/L	U	EQUIPMENT BLANK	0.01	0.04
6/7/2004 6:45	EQ BLANK	Metals-Water	Zinc	4	ug/L	U	EQUIPMENT BLANK	4	16
6/7/2004 6:45	EQ BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	EQUIPMENT BLANK	0.01	0.02
6/7/2004 6:45	EQ BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	EQUIPMENT BLANK	0.004	0.01
6/7/2004 6:45	EQ BLANK	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	EQUIPMENT BLANK	0.06	0.2
6/7/2004 6:45	EQ BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	EQUIPMENT BLANK	0.004	0.01
6/7/2004 6:45	EQ BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	EQUIPMENT BLANK	0.02	0.06
6/7/2004 10:40	CONTROL SITE	Bio-AGP/LimNut	Algal Growth Potential	8.02	mg DryWt/L		JASPER FYI5 CONTROL	0.1	0.3
6/7/2004 10:40	CONTROL SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Periphyton	10	mg/m2		JASPER FYI5 CONTROL	0.36	1.1
6/7/2004 10:40	CONTROL SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	1.5	ug/L	I	JASPER FYI5 CONTROL	0.85	2.6
6/7/2004 10:40	CONTROL SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Periphyton	1.2	mg/m2		JASPER FYI5 CONTROL	0.36	1.1
6/7/2004 10:40	CONTROL SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L	J	JASPER FYI5 CONTROL	0.85	2.6
6/7/2004 10:40	CONTROL SITE	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	26	# Taxa		JASPER FYI5 CONTROL		
6/7/2004 10:40	CONTROL SITE	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	23	# Taxa		JASPER FYI5 CONTROL		
6/7/2004 10:40	CONTROL SITE	Bio-Peri/Phyto	Periphyton-Quantitative-# Diatom Taxa	27	#Taxa		JASPER FYI5 CONTROL		
6/7/2004 10:40	CONTROL SITE	Bio-Peri/Phyto	Periphyton-Quantitative-# Wet Taxa	13	#Taxa		JASPER FYI5 CONTROL		
6/7/2004 10:40	CONTROL SITE	Nutrients-Liquid	Ammonia-N	0.11	mg N/L		JASPER FYI5 CONTROL	0.01	0.02
6/7/2004 10:40	CONTROL SITE	Nutrients-Liquid	NO2NO3-N	0.032	mg N/L		JASPER FYI5 CONTROL	0.004	0.01
6/7/2004 10:40	CONTROL SITE	Nutrients-Liquid	N_KJEL_TOT	0.46	mg N/L		JASPER FYI5 CONTROL	0.06	0.2
6/7/2004 10:40	CONTROL SITE	Nutrients-Liquid	O-Phosphate-P	0.88	mg P/L		JASPER FYI5 CONTROL	0.04	0.1

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 10:40	CONTROL SITE	Nutrients-Liquid	Total-P	0.95	mg P/L		JASPER FYI5 CONTROL	0.02	0.06
6/7/2004 10:40	CONTROL SITE REP 2	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	20	# Taxa		JASPER FYI5 CONTROL		
6/7/2004 10:40	CONTROL SITE REP 3	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	25	# Taxa		JASPER FYI5 CONTROL		
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	1,2-Dichlorobenzene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	1,3-Dichlorobenzene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	1,4-Dichlorobenzene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,4,6-Trichlorophenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,4-Dichlorophenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,4-Dimethylphenol	49	ug/L	U	JASPER WWTP FINAL EFFLUENT	49	190
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	JASPER WWTP FINAL EFFLUENT	15	58
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2,6-Dinitrotoluene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2-Chloronaphthalene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2-Chlorophenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	2-Nitrophenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	39	ug/L	U	JASPER WWTP FINAL EFFLUENT	39	160
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4,4'-DDD	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4,4'-DDE	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4,4'-DDT	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.9	7.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	4-Nitrophenol	15	ug/L	U	JASPER WWTP FINAL EFFLUENT	15	58
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Acenaphthene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Acenaphthylene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Aldrin	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Anthracene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzidine	97	ug/L	U	JASPER WWTP FINAL EFFLUENT	97	390
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzo(a)anthracene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzo(a)pyrene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzo(b)fluoranthene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzo(g,h,i)perylene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Benzo(k)fluoranthene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	JASPER WWTP FINAL EFFLUENT	15	58
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Butyl benzyl phthalate	4.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	4.9	19
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Chrysene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Di-n-butyl phthalate	4.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	4.9	19
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Di-n-octyl phthalate	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Dibenzo(a,h)anthracene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Dieldrin	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Diethyl phthalate	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Dimethyl phthalate	49	ug/L	U	JASPER WWTP FINAL EFFLUENT	49	190
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Endosulfan I	3.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	3.9	16
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Endosulfan II	3.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	3.9	16
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Endrin	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Endrin aldehyde	3.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	3.9	16
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Fluoranthene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Fluorene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Heptachlor	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Hexachlorobenzene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Hexachloroethane	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Indeno(1,2,3-cd)pyrene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Isophorone	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.9	7.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.9	7.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Naphthalene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Nitrobenzene	1.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.9	7.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Pentachlorophenol	2.9	ug/L	U	JASPER WWTP FINAL EFFLUENT	2.9	12
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Phenanthrene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Phenol	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	Pyrene	0.97	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.97	3.9
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	alpha-BHC	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	beta-BHC	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	delta-BHC	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	BNA-Water	gamma-BHC	1.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	1.5	5.8
6/7/2004 11:30	FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential	17	mg DryWt/L	A	JASPER WWTP FINAL EFFLUENT	0.1	0.3
6/7/2004 11:30	FINAL EFFLUENT	Bio-BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.2	mg/L		JASPER WWTP FINAL EFFLUENT		
6/7/2004 11:30	FINAL EFFLUENT	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.85	2.6
6/7/2004 11:30	FINAL EFFLUENT	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.85	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.85	2.6
6/7/2004 11:30	FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L	JASPER WWTP FINAL EFFLUENT		
6/7/2004 11:30	FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L	JASPER WWTP FINAL EFFLUENT		
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Alachlor	0.6	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.6	2.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Ametryn	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Atrazine	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Azinphos Methyl	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Bromacil	0.2	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.2	0.8
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Butylate	0.2	ug/L	UJ	JASPER WWTP FINAL EFFLUENT	0.2	0.8
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Diazinon	0.05	ug/L	UJ	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Ethion	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Ethoprop	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Fenamiphos	0.2	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.2	0.8
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Fonofos	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Hexazinone	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Malathion	0.15	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.15	0.6
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Metalaxyl	0.25	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.25	1
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Metolachlor	0.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.5	2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Metribuzin	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Mevinphos	0.2	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.2	0.8
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Naled	0.8	ug/L	UJ	JASPER WWTP FINAL EFFLUENT	0.8	3.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Norflurazon	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Parathion Ethyl	0.15	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.15	0.6
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Parathion Methyl	0.1	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.1	0.4
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Phorate	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Prometryn	0.15	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.15	0.6
6/7/2004 11:30	FINAL EFFLUENT	GC-Water	Simazine	0.05	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Aluminum	68	ug/L		JASPER WWTP FINAL EFFLUENT	10	40
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Arsenic	8	ug/L	U	JASPER WWTP FINAL EFFLUENT	8	32
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Cadmium	0.025	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.025	0.1
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Calcium	53.2	mg/L		JASPER WWTP FINAL EFFLUENT	0.05	0.3
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Chromium	2	ug/L	U	JASPER WWTP FINAL EFFLUENT	2	8
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Copper	1	ug/L	U	JASPER WWTP FINAL EFFLUENT	1	4
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Iron	20	ug/L	I	JASPER WWTP FINAL EFFLUENT	10	40
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Lead	0.15	ug/L	I	JASPER WWTP FINAL EFFLUENT	0.05	0.2
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Magnesium	23.3	mg/L		JASPER WWTP FINAL EFFLUENT	0.01	0.04
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Nickel	2	ug/L	U	JASPER WWTP FINAL EFFLUENT	2	8
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Selenium	0.5	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.5	2
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Silver	0.01	ug/L	U	JASPER WWTP FINAL EFFLUENT	0.01	0.04
6/7/2004 11:30	FINAL EFFLUENT	Metals-Water	Zinc	27	ug/L		JASPER WWTP FINAL EFFLUENT	4	16
6/7/2004 11:30	FINAL EFFLUENT	Nutrients-Liquid	Ammonia-N	0.042	mg N/L	A	JASPER WWTP FINAL EFFLUENT	0.01	0.02
6/7/2004 11:30	FINAL EFFLUENT	Nutrients-Liquid	NO2NO3-N	0.31	mg N/L		JASPER WWTP FINAL EFFLUENT	0.02	0.05
6/7/2004 11:30	FINAL EFFLUENT	Nutrients-Liquid	N_KJEL_TOT	0.6	mg N/L		JASPER WWTP FINAL EFFLUENT	0.06	0.2
6/7/2004 11:30	FINAL EFFLUENT	Nutrients-Liquid	O-Phosphate-P	1.1	mg P/L		JASPER WWTP FINAL EFFLUENT	0.08	0.2
6/7/2004 11:30	FINAL EFFLUENT	Nutrients-Liquid	Total-P	1.2	mg P/L		JASPER WWTP FINAL EFFLUENT	0.1	0.3
6/7/2004 12:10	TEST SITE	Bio-AGP/LimNut	Algal Growth Potential	9.72	mg DryWt/L		JASPER FYI5 TEST	0.1	0.3
6/7/2004 12:10	TEST SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Periphyton	71	mg/m2		JASPER FYI5 TEST	1.9	5.7
6/7/2004 12:10	TEST SITE	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.96	ug/L	I	JASPER FYI5 TEST	0.96	2.9
6/7/2004 12:10	TEST SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Periphyton	18	mg/m2		JASPER FYI5 TEST	1.9	5.7
6/7/2004 12:10	TEST SITE	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L	J	JASPER FYI5 TEST	0.96	2.9
6/7/2004 12:10	TEST SITE	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	30	# Taxa		JASPER FYI5 TEST		
6/7/2004 12:10	TEST SITE	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	8	# Taxa		JASPER FYI5 TEST		

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	SITE LOCATION	MDL	PQL
6/7/2004 12:10	TEST SITE	Bio-Peri/Phyto	Periphyton-Quantitative-# Diatom Taxa	30	#Taxa		JASPER FYI5 TEST		
6/7/2004 12:10	TEST SITE	Bio-Peri/Phyto	Periphyton-Quantitative-# Wet Taxa	14	#Taxa		JASPER FYI5 TEST		
6/7/2004 12:10	TEST SITE	Nutrients-Liquid	Ammonia-N	0.15	mg N/L		JASPER FYI5 TEST	0.01	0.02
6/7/2004 12:10	TEST SITE	Nutrients-Liquid	NO2NO3-N	0.022	mg N/L		JASPER FYI5 TEST	0.004	0.01
6/7/2004 12:10	TEST SITE	Nutrients-Liquid	N_KJEL_TOT	0.93	mg N/L	A	JASPER FYI5 TEST	0.06	0.2
6/7/2004 12:10	TEST SITE	Nutrients-Liquid	O-Phosphate-P	1.1	mg P/L		JASPER FYI5 TEST	0.04	0.1
6/7/2004 12:10	TEST SITE	Nutrients-Liquid	Total-P	1.2	mg P/L	A	JASPER FYI5 TEST	0.1	0.3
6/7/2004 12:10	TEST SITE REP 2	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	16	# Taxa		JASPER FYI5 TEST		
6/7/2004 12:10	TEST SITE REP 3	Bio-Invertebrates	Macroinvert-FW-Quan-ArtSubstr-# Taxa	13	# Taxa		JASPER FYI5 TEST		

Appendix 5

Typical Values for Selected Parameters in Florida Waters

Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	**6.45**	10.51	17.00	39.51	60.85	**10**
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	2.88	**3.09**	3.25	3.40	3.52	3.76	3.90	**3.11**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	**32**	**32**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	**28**	31	37	53	**28**
Total Kjeldahl Nitrogen	0.30	**0.39**	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	**0.46**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	**0.11**	0.14	0.20	0.34	0.60	**0.11**
Nitrate plus Nitrite	0.01	0.01	**0.03**	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.032**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	**0.74**	1.51	**0.95**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	**0.59**	1.37	**0.88**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll *a* (mg/m^2)	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	**60.85**	**71**
Hester-Dendy Diversity	**0.84**	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	**1.14**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	**17**	21.5	26	29	32	**20**
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	**28**	31	37	53	**29**
Total Kjeldahl Nitrogen	0.30	0.39	0.56	0.73	**0.87**	1.00	1.11	1.26	1.49	1.93	2.80	**0.93**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	**0.14**	0.20	0.34	0.60	**0.15**
Nitrate plus Nitrite	0.01	**0.01**	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	**0.022**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	**0.74**	1.51	**1.2**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	**0.59**	1.37	**1.1**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	

Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data.

Appendix 6

Additional physical, chemical, toxicological and microbiological results

FDEP Biology Section - Acute Screening Bioassay Bench Sheets

Facility: City of Live Oak — Sample Collection: Date: 6-7-04 Time: 1140

Address: S.W. 10th Avenue

City: Jasper County: Hamilton

Contact/District: Patrick O'Connor / NE

NPDES Permit #: FL 0027880

LIMS Job #: 75894-33 DN. LIMS Sample #: 75893

Lims Data Entry: 6-7-04 MF — Data Entry Verification: 6/14/04 CAP

Instructions (for below): Circle appropriate wording. If yes is circled complete blanks.

Test Type: (Screening) Static / Static Renewal / Flow-through

Test Duration: (48) 96 Hours.

Light Intensity : 50 - 100 ft. candles.

Photoperiod : 16 hours light 8 hours dark.

Initial sample handling:

PH adjustment : yes (no) Initial pH ___ NaOH ___ N ___ HCl ___ N ___ Drops mL ___ Final pH ___

Aeration : yes (no) Initial DO: ___ mg/L Final DO: ___ mg/L Duration: ___ minutes Rate: ~ ___ bubbles/min

Salinity adjusted (Test 1): yes (no) Initial Salinity: ___ Final Salinity: ___ Salts Hypersaline brine

Salinity adjusted (Test 2): yes (no) Initial Salinity: ___ Final Salinity: ___ Salts Hypersaline brine

Dechlorination: yes (no) ___ mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC ___

Sample Validation:

Temperature: Shipped ≤6°C (Yes) No Hand Delivered: Cooling (received °C < collected °C) Yes No

Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Test 1 validation:

Control survival ≥90% (Yes) No

Temperature Range ≤3°C: (Yes) No

Test 2 validation:

Control survival ≥90% (Yes) No

Temperature Range ≤3°C: (Yes) No

Comments:

Temperature Range °C

Incubator # 3 Range 23.5-24.5°C

Room B246: 24.5-26.0°C

Waterbath: N/A

Investigators' Signatures

Maribel Fuentes

Donna Whitaker

Jack Scott

REVIEWER

Water Quality Parameters	20% DMW #20	Well Water	Salt Water ASW NSW Test 1	Salt Water ASW NSW Test 2	Moderately Hard Water	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	N/A	N/A	N/A	N/A	N/A	Not measured	Not measured	—	DN
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03				<0.03	HACH	CAP	JD
Alkalinity (mg/L as $CaCO_3$):	83	134				163	HACH	DN	JD
Hardness (mg/L as $CaCO_3$):	110	166				268	HACH	JD	CAP
Total Ammonia (mg/L as N):	<0.017	<0.017				<0.017	DENVER	MF	CAP
Salinity (ppt):	<1	<1				<1	YSI	MF	CAP

V.2 2/26/04

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FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 758933 Test #: 1 Test Started: Date 06/08/04 Time: 2:25

Organism: C. dubia Test Ended: Date 6/10/04 Time: 1230

Organism Batch: #20 Diluent/ Batch: D.N. DW DMW, #20

Organism Age: <24 hr Food: (YCT) (P. subcapitata) Artemia

Chamber Size 30 mL Batch: #2 #27

Test Volume 20 mL Feeding: (Prior to test) - Prior to renewal - Daily

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A		5	4 1D	4			
	B		5	5	5			
	C		5	5	5			
	D		5	5	5			
100%	A		5	5	5			
	B		5	5	5			
	C		5	5	5			
	D		5	5	5			

Organisms loaded by: DN

Loading Verified by: CA

Checked by: (initials) CA DN Ctp

Comments:

m = missing d = dead BR = before renewal AR = after renewal

Test Results:

% mortality in 100% sample Ø

LC$_{50}$: >100% If Calculated: 95% CI ______ Method: ______

Screening Tests: Report LC50 as >100%, =100%, or <100%.

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 758933 Test #: 2 Test Started: Date 06/08/04 Time: 2:15

Organism: C. leedsi Test Ended: Date 06/10/04 Time: 12 25

Organism Batch: #12 Diluent/ Batch: Well 1 N/A

Organism Age: 13 days Food: YCT *P. subcapitata* Artemia

Chamber Size 1000 mL Batch: #2 #27 0194042SG

Test Volume 500 mL Feeding: Prior to test - Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	A17	5	5	5			
	B	A18	5	5	5			
	C	A19	5	5	5			
	D	A20	5	5	5			
100%	A	A21	5	5	5			
	B	A22	5	5	5			
	C	A23	5	5	5			
	D	A24	5	5	5			

Organisms loaded by: SD Checked by: GR DN CAP

Loading Verified by: GR (initials)

m = missing d = dead BR = before renewal AR = after renewal

Comments:

Test Results:

% mortality in 100% sample Ø

LC_{50}: >100% If Calculated: 95% CI _____ Method: _____

Screening Tests: Report LC50 as >100%, =100%, or <100%.

Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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V.1 2/23/04

Bioassay Parameters

LIMS Sample # : 758933 **Test # :** 1 **of** 2

TEST SOP: TA07_ 01 **Test Species:** (*Ceriodaphnia dubia*) *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B			
pH (S.U.)	8.3		8.2			
Temperature °C	24.9		24.1			
Dissolved Oxygen mg/L	8.3		8.5			
Conductivity (µmhos) mmhos	185		235			
(initials) Measured by:	DN		DN			
(initials) Recorded by:	CAP		CAP			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B			
pH (S.U.)	7.8		8.5			
Temperature °C	24.6		24.0			
Dissolved Oxygen mg/L	7.7		8.6			
Conductivity (µmhos) mmhos	645		645			
(initials) Measured by:	DN		DN			
(initials) Recorded by:	CAP		CAP			

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Bioassay Parameters

LIMS Sample # : 758933 **Test # :** 2 **of** 2

TEST SOP: TA-07- 02 **Test Species:** *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.0	8.2	8.4			
Temperature °C	24.9	24.8	24.2			
Dissolved Oxygen mg/L	8.5	7.0	~~6.9~~ (A)			
Conductivity µmhos mmhos	260	315	335			
(initials) Measured by:	DN	CAP	DN			
(initials) Recorded by:	CAP	DN	CAP			

Comments: (A) (CAP) 8.5

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C			
pH (S.U.)	8.0	8.1	8.3			
Temperature °C	24.6	24.5	24.0			
Dissolved Oxygen mg/L	7.8	6.7	~~6.9~~ (B)			
Conductivity µmhos mmhos	635	700	725			
(initials) Measured by:	DN	CAP	CAP			
(initials) Recorded by:	CAP	DN	CAP			

Comments: (B) (CAP) 8.3

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity µmhos mmhos						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHEAST DISTRICT
7825 BAYMEADOWS WAY, SUIT B-200 **DOH Accreditation # E32890**
JACKSONVILLE, FL 32256-7577

SAMPLE ID : 040657 STATION : DATE: 6/7/04 TIME: 10:40
SAMPLE SOURCE Jasper WWTP SAMPLER: OConnor
STATION Jasper control site 5YI
LOCATION:
PROGRAM MOD.: DW COMPLIANCE: ☒ ENFORCEMENT: ☐
FIELD MEASUREMENTS

Tot. Depth:	0.5	Sample Depth:		W.Temp. °C:	22.83
Conductivity: µmoh/cm (EPA 120.1) :	208	Diss. Oxygen (EPA 360.1)	2.98	EPA 170.1	
Stream Velocity:		Salinity:	0.78	T.R.C.:	
pH:(EPA 150.1)	7.36	Secchi:		EPA 330.5	

WEATHER CONDITIONS:

LABORATORY MEASUREMENTS

		Unit	Analysis Date/Time	Analyst	Remarks
Turbidity (NTU) : EPA 180.1	2.51	NTU	6/9/04 10:30	TK	
Color (PtCo): EPA 110.2	60	PCU	6/9/04 10:30	TK	
B.O.D : SM 5210-B	2K	Mg/L	6/9/04 8:30	JP	
C.B.O.D : SM 5210-B		Mg/L			
Tot. S.S : EPA 160.2	2K	Mg/L	6/11/04 8:45	JP	
Vol. S.S: EPA 160.4	2K	Mg/L	6/11/04 8:45	JP	
Fix S.S:	2K	Mg/L	6/11/04 8:45	JP	

COMMENTS:

Sample Custody
Sample Released to: Jeremy Parrish Date: 6/7/04

Preservation: ICE Time:

Reported by: Jeremy Parrish Date::

K = Actual value is known to be less than the value given.
A = Value is the mean of two or more determinations.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond the accepted holding time.
T = Value reported is less than the laboratory method detection limit.
U = Indicates that the compound was analyzed for but not detected.
Y = The laboratory analysis was from an unpreserved or improperly preserved sample.
REJ = Data is rejected and should not be used.
L = Off - scale high. Actual value is known to be greater than value given
J = Estimated value; value not accurate.
PQL = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Results for NELAP accredited tests contained in this report meet the requirement specified for the National Environmental Accreditation Program.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHEAST DISTRICT
7825 BAYMEADOWS WAY, SUIT B-200 **DOH Accreditation # E32890**
JACKSONVILLE, FL 32256-7577

SAMPLE ID : 040658 STATION : DATE: 6/7/04 TIME: 12:10
SAMPLE SOURCE Jasper WWTP SAMPLER: OConnor
STATION Jasper test site fyi
LOCATION:
PROGRAM MOD.: DW COMPLIANCE: ☒ ENFORCEMENT: ☐
FIELD MEASUREMENTS

Tot. Depth:	0.5	Sample Depth:		W.Temp. °C:	24.05
Conductivity: µmoh/cm (EPA 120.1) :	585	Diss. Oxygen (EPA 360.1)	2.91	EPA 170.1	
Stream Velocity:		Salinity:	0.78	T.R.C.:	
pH:(EPA 150.1)	7.03	Secchi:		EPA 330.5	

WEATHER CONDITIONS:

LABORATORY MEASUREMENTS

		Unit	Analysis Date/Time	Analyst	Remarks
Turbidity (NTU) : EPA 180.1	1.65	NTU	6/9/04 10:30	TK	
Color (PtCo): EPA 110.2	100	PCU	6/9/04 10:30	TK	
B.O.D : SM 5210-B	2K	Mg/L	6/9/04 8:30	JP	
C.B.O.D : SM 5210-B		Mg/L			
Tot. S.S : EPA 160.2	2.4	Mg/L	6/11/04 8:45	JP	
Vol. S.S: EPA 160.4	2.8	Mg/L	6/11/04 8:45	JP	
Fix S.S:	2K	Mg/L	6/11/04 8:45	JP	

COMMENTS:

Sample Custody
Sample Released to: Jeremy Parrish Date: 6/7/04

Preservation: ICE Time:

Reported by: Jeremy Parrish Date::

K = Actual value is known to be less than the value given.
A = Value is the mean of two or more determinations.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond the accepted holding time.
T = Value reported is less than the laboratory method detection limit.
U = Indicates that the compound was analyzed for but not detected.
Y = The laboratory analysis was from an unpreserved or improperly preserved sample.
REJ = Data is rejected and should not be used.
L = Off - scale high. Actual value is known to be greater than value given
J = Estimated value; value not accurate.
PQL = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Results for NELAP accredited tests contained in this report meet the requirement specified for the National Environmental Accreditation Program.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHEAST DISTRICT
7825 BAYMEADOWS WAY, SUIT B-200 **DOH Accreditation # E32890**
JACKSONVILLE, FL 32256-7577

SAMPLE ID : 040659 STATION : DATE: 6/7/04 TIME: 11:30
SAMPLE SOURCE Jasper WWTP SAMPLER: OConnor
STATION Jasper final effluent
LOCATION:
PROGRAM MOD.: DW COMPLIANCE: ☒ ENFORCEMENT: ☐
FIELD MEASUREMENTS

Tot. Depth:		Sample Depth:		W.Temp. °C:	28.18
Conductivity: µmoh/cm (EPA 120.1) :	662	Diss. Oxygen (EPA 360.1)	8.22	EPA 170.1	
Stream Velocity:		Salinity:	0.32	T.R.C.:	
pH:(EPA 150.1)	7.35	Secchi:		EPA 330.5	

WEATHER CONDITIONS:

LABORATORY MEASUREMENTS

		Unit	Analysis Date/Time	Analyst	Remarks
Turbidity (NTU) : EPA 180.1	0.75	NTU	6/9/04 10:30	TK	
Color (PtCo): EPA 110.2	10	PCU	6/9/04 10:30	TK	
B.O.D : SM 5210-B		Mg/L			
C.B.O.D : SM 5210-B		Mg/L			
Tot. S.S : EPA 160.2	2K	Mg/L	6/11/04 8:45	JP	
Vol. S.S: EPA 160.4	2K	Mg/L	6/11/04 8:45	JP	
Fix S.S:	2K	Mg/L	6/11/04 8:45	JP	

COMMENTS:

Sample Custody
Sample Released to: Jeremy Parrish Date: 6/7/04

Preservation: ICE Time:

Reported by: Jeremy Parrish Date::

K = Actual value is known to be less than the value given.
A = Value is the mean of two or more determinations.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond the accepted holding time.
T = Value reported is less than the laboratory method detection limit.
U = Indicates that the compound was analyzed for but not detected.
Y = The laboratory analysis was from an unpreserved or improperly preserved sample.
REJ = Data is rejected and should not be used.
L = Off - scale high. Actual value is known to be greater than value given
J = Estimated value; value not accurate.
PQL = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Results for NELAP accredited tests contained in this report meet the requirement specified for the National Environmental Accreditation Program.

STATE OF FLORIDA

DEPT. OF ENVIRONMENTAL PROTECTION

NORTHEAST DISTRICT

Division of Water Facilities
Surface Water Section
7825 Baymeadows Way,suite 200B
Jacksonville, Florida 32256

Microbiology Report

Name: Jasper WWTP **Survey type:** 5YI
Sample: Efflu.,Surf.water **Sample date:** 06/07/04

D.O.H.accred.#E32890

Lab I.D.#	Site Name	Date	Time	S.M.9222B Total colif. #cfu/100ml	code	S.M.9222D Fecal colif. #cfu/100ml	code
40657	Jasper "Control" site	6/7/2004	16:15	4500		2600	
40658	Jasper "Test" site	6/7/2004	16:15	864	AB	45	AB
40659	Jasper wwtp final efflu.	6/7/2004	16:15	45	AB	10	U

Results for NELAP accredited tests contained in this report meet the requirements for the National Environmental Accredidation Program.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.
J - Estimated Value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected; the value reported is the minimum detection limit.
V - Analyte was detected in both sample and method blank.
Z - Colonies were too numerous to count (TNTC).

SURVEY TYPE: Ambient Monitoring--Trend,Reference Stream,Reference Lake,BioReconn,Special project
Permit Compliance--5th Year,3rd Year,CSI,CEI,PAI,RI,Complaint Potable Water--Sanitary Survey,Facility Inspection
SAMPLE TYPE: Suface Water,Ground Water,Potable Water,Treated Effluent,Untreated Effluent,Sediment,Sludge,Soil

Signature Sample Results:Jeremy Parrish Date: 6/10/2004

Appendix 7

Habitat Assessment Field Sheets

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		06/07/04	1040	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
F415	Hamilton	Tiger Creek @ SW 55th Ave	Control Site

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
30	25	30	10	5			

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☒ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☒

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side:

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☐ no ☐ recent, ☐ severe ☐ some recovery ☐ mostly recovered

ARTIFICIALLY IMPOUNDED ☐ yes more sinuous

HIGH WATER MARK 0.3 (m above present water level) + 0.6 (present depth in m) = 0.9 (m above bed)

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT

1 m wide		
m/s	0.05 m/s	m/s
m deep	0.6 m deep	m deep

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 SLIGHT MODERATE SEVERE SILT SMOTHERING: NONE SLIGHT MODERATE SEVERE OTHER:

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	1	5	D-NET	SAND	10	2	D-NET
LEAF PACKS OF MATS	0.5	5	↓	MUD/MUCK/SILT	87	3	↓
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	1	5	D-NET	DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH	0.15	22.83	7.36	2.98	208			0.6
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER ☐ 3RD-4TH ORDER ☐ 5TH – 6TH ORDER ☐ 7TH ORDER OR GREATER ☐ LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☒ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☒ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☒ SLIGHTLY TURBID: ☐ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☒ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐

WEATHER CONDITIONS/NOTES: BEAVERS, STREAM HAS SLOWED SINCE DEPLOYMENT OF H/D's

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☒	☐
FISH	☐	☐	☒	☐
AQUATIC MACROPHYTES	☐	☒	☐	☐
IRON/SULFUR BACTERIA	☐	☒	☐	☐

SAMPLING TEAM: Kallemeyn, O'Connor

SIGNATURE: Robert O'Connor

DATE: 6/7/04

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY): 06/07/04	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: HAMILTON	LOCATION: TIGER CREEK @ SW 55th AVE	FIELD ID/NAME: CONTROL SITE

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 13	Four or more productive habitats present [snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 9	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 9	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 8 Primary Score 39	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 13	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 6 Left Bank 7	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 5	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 8 Left Bank 7 Secondary Score 56	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

95 **TOTAL SCORE**

ANALYSIS DATE: 6/7/04	ANALYST: O'CONNOR	SIGNATURE:

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
		6/7/04	1200	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Hamilton	Tiger Creek @ Baisden Lake Rd	Test Site

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
25		40		35			

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side:

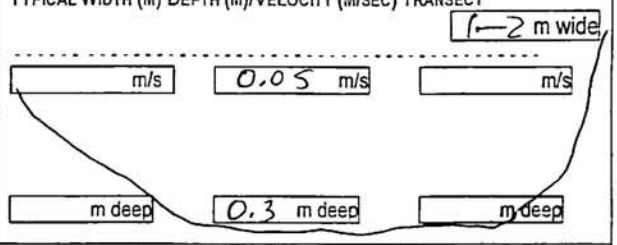
LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☐ no ☐ recent, severe ☒ some recovery ☐ mostly recovered more sinuous

ARTIFICIALLY IMPOUNDED ☐ yes

HIGH WATER MARK: 0.3 + 0.3 = 0.6
(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 SLIGHT (MODERATE) SEVERE SILT SMOTHERING: NONE SLIGHT (MODERATE) SEVERE OTHER:

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	<1	5	Dipnet	SAND	94	5	Dipnet
LEAF PACKS OF MATS	<1	5	↓	MUD/MUCK/SILT			
AQUATIC VEGETATION	5	5		OTHER:			
ROCK OR SHELL RUBBLE				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. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH	0.15	24.05	7.03	2.91	390			0.3L
BOTTOM								

SYSTEM TYPE: STREAM: (1ST-2ND ORDER) 3RD-4TH ORDER 5TH – 6TH ORDER 7TH ORDER OR GREATER LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐

WATER ODORS (CHECK BOX): NORMAL: ☒ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐

WATER SURFACE OILS (CHECK BOX): NONE: ☒ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☒ SLIGHTLY TURBID: ☐ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☒ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐

WEATHER CONDITIONS/NOTES:

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☐	☒
FISH	☐	☐	☒	☐
AQUATIC MACROPHYTES	☐	☐	☐	☒
IRON/SULFUR BACTERIA	☐	☒	☐	☐

SAMPLING TEAM: Kalleroyn, O'Connor, ~~Evans~~ PG

SIGNATURE: Patricia O'Connor

DATE: 6/7/04

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
		06/07/04	

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
F915	Hamilton	Tiger Creek @ Basden Lake Rd	TEST SITE

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity 14	Four or more productive habitats present [snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 6	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity 5	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering 10 Primary Score 35	Less than 20% of habitats affected by sand or silt accumulation 20 19 18 17 16	20%-50% of habitats affected by sand or silt accumulation 15 14 13 12 11	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement 10 9 8 7 6	Smothering of >80% of habitats with sand or silt, as severe problem, pools absent 5 4 3 2 1
Secondary Habitat Components Artificial Channelization 13	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern 15 14 13 12 11	Channelized, somewhat recovered, but > 80% of area affected 10 9 8 7 6	Artificially channelized, box-cut banks, straight, instream habitat highly altered 5 4 3 2 1
Bank Stability Right Bank 6 Left Bank 8	Stable. No evidence of erosion or bank failure. Little potential for future problems. 10 9	Moderately stable. Infrequent or small areas of erosion, mostly healed over. 8 7 6	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. 5 4	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing. 3 2 1
Riparian Buffer Zone Width Right Bank 3 Left Bank 9	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12 to 18 m 8 7 6	Width of native vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of native buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 3 Left Bank 8 Secondary Score 50	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions 10 9	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident. 8 7 6	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious. 5 4	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less 3 2 1

85 TOTAL SCORE

ANALYSIS DATE:	ANALYST:	SIGNATURE:
6/7/04	O'Connor	

Appendix 8a

Taxa list and density (number/cm^2) for periphyton collected from glass microscope slides incubated for 28 days upstream and downstream of the City of Jasper WWTP facility discharge. June 7, 2004.

	Control Site	Test Site
Bacillariophyta		
Achnanthes sp.	-	2,896
Achnanthes clevei	494	-
Achnanthes exigua	1,977	11,585
Achnanthes hungarica	-	8,689
Achnanthes lanceolata	1,483	11,585
Achnanthes lanceolata apiculata	1,977	-
Achnanthes lanceolata frequentissima	2,965	-
Aulacoseira sp.	40,525	228,806
Bacillariophyceae	1,483	17,378
Caloneis bacillum	494	-
Capartogramma crucicula	-	5,793
Cocconeis placentula	-	2,896
Cyclotella sp.	3,459	5,793
Cyclotella meneghiniana	4,942	2,896
Cymbellaceae	-	2,896
Diadesmis confervacea	29,158	278,042
Encyonema silesiacum	3,459	-
Eunotia sp.	18,780	49,237
Fallacia sp.	-	2,896
Fragilaria sp.	2,471	-
Fragilariaceae	1,977	-
Gomphonema sp.	1,483	5,793
Hippodonta sp.	-	46,340
Hippodonta capitata	494	11,585
Hippodonta hungarica	494	2,896
Melosira sp.	-	5,793
Navicula sp.	988	20,274
Navicula clementis	988	-
Navicula cryptocephala	494	11,585
Navicula minima	5,436	2317-
Navicula radiosa	988	2,896
Nitzschia sp.	2,965	23,170
Nitzschia gracilis	-	2,896
Nitzschia nana	-	2,896
Nitzschia prolongata	-	2,896
Pinnularia sp.	988	2,896
Planothidium delicatulum	-	2,896
Sellaphora sp.	494	-
Synedra ulna	-	14,481

Appendix 8a (cont'd)

	Control Site	Test Site
Chlorophycota		
Ankistrodesmus falcatus	-	2,896
Chlorella sp.	-	5,793
Chlorococcum sp.	494	2,896
Chlorophyceae	-	5,793
Gloeocystis gigas	-	2,896
Microspora sp.	-	2,896
Oedogonium sp.	1,977	2,896
Scenedesmus bijuga	988	-
Scenedesmus dimorphus	-	2,896
Cyanophycota		
Anabaena sp.	494	-
Cyanobium parvum	494	2,896
Jaaginema sp.	2,965	8,689
Oscillatoria sp.	1,977	-
Planktolyngbya sp.	-	2,896
Pseudanabaena sp.	988	5,793
Schizothrix calcicola	5,930	8,689
Synechocystis sp.	494	2,896
Euglenophycota		
Phacus sp.	494	-
Trachelomonas sp.	494	-

Appendix 8b

Taxa list and number of individuals counted for periphyton collected from glass microscope slides incubated for 28 days upstream and downstream of the City of Jasper WWTP facility discharge, June 7, 2004.

	Control Site	Test Site
Bacillariophyta		
Achnanthes sp.	-	1
Achnanthes clevei	1	-
Achnanthes exigua	4	4
Achnanthes hungarica	-	3
Achnanthes lanceolata	3	4
Achnanthes lanceolata apiculata	4	-
Achnanthes lanceolata frequentissima	6	-
Aulacoseira sp.	82	79
Bacillariophyceae	3	6
Caloneis bacillum	1	-
Capartogramma crucicula	-	2
Cocconeis placentula	-	1
Cyclotella sp.	7	2
Cyclotella meneghiniana	10	1
Cymbellaceae	-	1
Diadesmis confervacea	59	96
Encyonema silesiacum	7	-
Eunotia sp.	38	17
Fallacia sp.	-	1
Fragilaria sp.	5	-
Fragilariaceae	4	-
Gomphonema sp.	3	2
Hippodonta sp.	-	16
Hippodonta capitata	1	4
Hippodonta hungarica	1	1
Melosira sp.	-	2
Navicula sp.	2	7
Navicula clementis	2	-
Navicula cryptocephala	1	4
Navicula minima	11	8
Navicula radiosa	2	1
Nitzschia sp.	6	8
Nitzschia gracilis	-	1
Nitzschia nana	-	1
Nitzschia prolongata	-	1
Pinnularia sp.	2	1
Planothidium delicatulum	-	1
Sellaphora sp.	1	-
Synedra ulna	-	5

Appendix 8b (cont'd)

	Control Site	Test Site
Chlorophycota		
Ankistrodesmus falcatus	-	1
Chlorella sp.	-	2
Chlorococcum sp.	1	1
Chlorophyceae	-	2
Gloeocystis gigas	-	1
Microspora sp.	-	1
Oedogonium sp.	4	1
Scenedesmus bijuga	2	-
Scenedesmus dimorphus	-	1
Cyanophycota		
Anabaena sp.	1	-
Cyanobium parvum	1	1
Jaaginema sp.	6	3
Oscillatoria sp.	4	-
Planktolyngbya sp.	-	1
Pseudanabaena sp.	2	2
Schizothrix calcicola	12	3
Synechocystis sp.	1	1
Euglenophycota		
Phacus sp.	1	-
Trachelomonas sp.	1	-

Appendix 9a

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the City of Jasper WWTP facility and collected June 7, 2004. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Hirudinea		
Desserobdella phalera	-	2
Oligochaeta		
Naididae	1	-
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	21	-
Isopoda		
Caecidotea	2	12
Insecta		
Coleoptera		
Dineutus sp.	-	1
Diptera		
Ablabesmyia mallochi	23	32
Ablabesmyia rhamphe grp.	-	2
Ceratopogonidae	-	1
Chironomus sp.	63	6
Corynoneura sp.	2	-
Dicrotendipes simpsoni	372	770
Kiefferulus sp.	75	17
Labrundinia sp.	-	3
Labrundinia becki	8	-
Labrundinia pilosella	6	-
Microtendipes pedellus grp.	6	-
Palpomyia/bezzia grp.	13	-
Phaenopsectra sp.	3	-
Polypedilum fallax	5	-
Polypedilum flavum	1	-
Polypedilum illinoense grp.	1	-
Polypedilum sp. a epler	-	6
Polypedilum tritum	4	-
Procladius sp.	2	-
Stempellinella sp. A Epler	1	-
Tanytarsus sp. A Epler	-	6
Tanytarsus sp. L Epler	14	-
Tanytarsus sp. M Epler	3	-
Tanytarsus sp. O Epler	9	-
Thienemannimyia grp.	3	-
Tribelos fuscicornis	23	10
Tribelos jucundum	42	7

Appendix 9a (cont'd)

	Control Site	Test Site
Ephemeroptera		
Baetidae	-	1
Caenis sp.	16	8
Stenacron interpunctatum	15	-
Odonata		
Coenagrionidae	4	2
Libellulidae	-	10
Neurocordulia sp.	7	-
Mollusca		
Gastropoda		
Ancylidae	-	5
Hebetancylus excentricus	9	-
Micromenetus sp.	5	-
Physella sp.	14	-
Planorbidae	-	2

Appendix 9b

Benthic macroinvertebrates taxa list and counts (number of individuals counted, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the City of Jasper WWTP facility and collected June 7, 2004.

	Control Site	Test Site
Annelida		
Hirudinea		
Desserobdella phalera	-	2
Oligochaeta		
Naididae	1	-
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	21	-
Isopoda		
Caecidotea	2	12
Insecta		
Coleoptera		
Dineutus sp.	-	1
Diptera		
Ablabesmyia mallochi	22	31
Ablabesmyia rhamphe grp.	-	2
Ceratopogonidae	3	1
Chironomidae	35	39
Chironomus sp.	60	6
Corynoneura sp.	2	-
Dicrotendipes sp.	33	119
Dicrotendipes simpsoni	316	614
Kiefferulus sp.	71	16
Labrundinia sp.	-	3
Labrundinia becki	8	-
Labrundinia pilosella	6	-
Microtendipes pedellus grp.	6	-
Palpomyia/bezzia grp.	10	-
Phaenopsectra sp.	3	-
Polypedilum sp.	1	-
Polypedilum fallax	4	-
Polypedilum flavum	1	-
Polypedilum illinoense grp.	1	-
Polypedilum sp. S Epler	-	6
Polypedilum tritum	4	-
Procladius sp.	2	-
Stempellinella sp. A Epler	1	-
Tanytarsus sp.	5	-
Tanytarsus sp. A Epler	-	6
Tanytarsus sp. L Epler	11	-
Tanytarsus sp. M Epler	2	-
Tanytarsus sp. O Epler	7	-
Thienemannimyia grp.	3	-
Tribelos sp.	4	2
Tribelos fuscicornis	21	9
Tribelos jucundum	37	6

Appendix 9b (cont'd)

	Control Site	Test Site
Ephemeroptera		
Baetidae	-	1
Caenis sp.	16	8
Stenacron sp.	13	-
Stenacron interpunctatum	2	-
Odonata		
Coenagrionidae	4	2
Libellulidae	5	10
Neurocordulia sp.	2	-
Mollusca		
Gastropoda		
Ancylidae	4	3
Hebetancylus excentricus	4	-
Micromenetus sp.	2	-
Physella sp.	13	-
Planorbidae	3	1
Undetermined Gastropoda	2	3

Appendix 10a

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of the City of Jasper WWTP facility (June 7, 2004). Taxa list and number of individuals counted (collapsed). See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Oligochaeta		
Aulodrilus pigueti	-	2
Naididae	-	1
Pristinella osborni	1	-
Tubificidae	2	-
Arthropoda		
Arachnida		
Acariformes		
Hydrodroma sp.	-	1
Crustacea		
Amphipoda		
Hyalella azteca	2	2
Isopoda		
Caecidotea sp.	8	16
Insecta		
Coleoptera		
Dubiraphia vittata	2	-
Peltodytes sp.	-	1
Diptera		
Ablabesmyia mallochi	1	2
Ablabesmyia peleensis	-	1
Labrundinia becki	1	-
Microtendipes pedellus grp.	3	-
Natarsia sp. a roback	1	-
Parametriocnemus sp.	1	-
Paratanytarsus sp.	6	22
Polypedilum aviceps	5	-
Polypedilum illinoense grp.	-	1
Polypedilum trigonum	-	1
Pseudochironomus sp.	-	1
Rheotanytarsus exiguus grp.	11	1
Tanytarsus sp. A Epler	-	1
Tanytarsus sp. G Epler	-	3
Tanytarsus sp. L Epler	2	1
Tanytarsus sp. M Epler	4	-
Thienemannimyia grp.	1	-
Tribelos jucundum	6	-
Ephemeroptera		
Baetidae	-	5
Caenis sp.	1	11
Stenonema sp.	4	-
Heteroptera		
Ranatra sp.	1	-

Appendix 10a (cont'd)

	Control Site	Test Site
Lepidoptera		
Pyralidae	-	1
Odonata		
Calopterygidae	1	-
Coenagrionidae	1	-
Enallagma sp.	-	7
Gomphidae	-	2
Ischnura posita	-	2
Libellulidae	2	4
Trichoptera		
Cheumatopsyche sp.	27	-
Chimarra sp.	4	-
Oecetis sp. E Floyd	1	-
Mollusca		
Bivalvia		
Bivalvia	1	-
Sphaeriidae(mollusca)	-	3
Gastropoda		
Ancylidae	3	9
Physella sp.	-	1
Planorbidae	-	4
Viviparus georgianus	-	2
Platyhelminthes		
Platyhelminthes		
Undetermined Platyhelminthes	-	1

Appendix 10b

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of the City of Jasper WWTP (June 7, 2004). Taxa list and number of individuals counted.

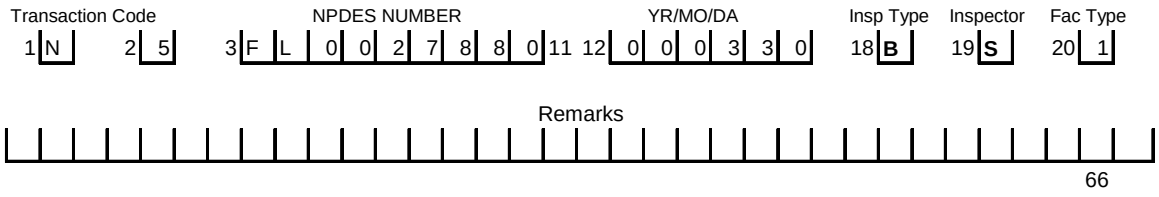
	Control Site	Test Site
Annelida		
Oligochaeta		
Aulodrilus pigueti	-	1
Naididae	-	1
Pristinella osborni	1	-
Tubificidae	2	1
Arthropoda		
Arachnida		
Acariformes		
Hydrodroma sp.	-	1
Crustacea		
Amphipoda		
Hyalella azteca	2	2
Isopoda		
Caecidotea sp.	8	16
Insecta		
Coleoptera		
Dubiraphia vittata	2	-
Peltodytes sp.	-	1
Diptera		
Ablabesmyia mallochi	1	2
Ablabesmyia peleensis	-	1
Chironomidae	-	1
Labrundinia becki	1	-
Microtendipes pedellus grp.	3	-
Natarsia sp. A Roback	1	-
Parametriocnemus sp.	1	-
Paratanytarsus sp.	6	21
Polypedilum aviceps	5	-
Polypedilum illinoense grp.	-	1
Polypedilum trigonum	-	1
Pseudochironomus sp.	-	1
Rheotanytarsus exiguus grp.	11	1
Tanytarsus sp. A Epler	-	1
Tanytarsus sp. G Epler	-	3
Tanytarsus sp. L Epler	2	1
Tanytarsus sp. M Epler	4	-
Thienemannimyia grp.	1	-
Tribelos sp	2	-
Tribelos jucundum	4	-
Ephemeroptera		
Baetidae	-	5
Caenis sp.	1	10
Undetermined Ephemeroptera	-	1
Stenonema sp.	4	-
Heteroptera		
Ranatra sp.	1	-

Appendix 10b (cont'd)

	Control Site	Test Site
Lepidoptera		
Pyralidae	-	1
Odonata		
Calopterygidae	1	-
Coenagrionidae	1	4
Enallagma sp.	-	4
Gomphidae	-	2
Ischnura posita	-	1
Libellulidae	2	4
Trichoptera		
Cheumatopsyche sp.	22	-
Chimarra sp.	4	-
Hydropsychidae	4	-
Oecetis sp. E Floyd	1	-
Undetermined Trichoptera	1	-
Mollusca		
Bivalvia		
Undetermined Bivalvia	1	1
Sphaeriidae(mollusca)	-	2
Gastropoda		
Ancylidae	3	8
Physella sp.	-	1
Planorbidae	-	4
Undetermined Gastropoda	-	1
Viviparus georgianus	-	2
Platyhelminthes		
Platyhelminthes		
Undetermined Platyhelminthes	-	1

The Bioassay of Jasper WWTP effluent sampled on 06/07/04, NPDES #FL0027880.

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



The Priority Pollutants Analysis for Bioassay of Jasper WWTP effluent sampled on 06/07/04, NPDES #FL00 27880.

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

