

Biological Assessment of

IRCUD West Regional

(Indian River County Utilities Department)

Indian River County

NPDES #FL0041637

September 2003

March 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:	IRCUD West Regional
County:	Indian River
NPDES Number:	FL0041637
Permit Expiration:	July 22, 2004

Toxics Sampling Inspection **(XSI)**

Date Sampled: 9/22/03

Results: No organic constituents were detected in the effluent sample. Iron was detected in the effluent sample at a level that was greater than the minimum detection limit but below the practical quantitation limit and which complied with Class IV Water Quality Criteria.

Compliance Biomonitoring Inspection **(CBI)**

Date Sampled: 9/22/03

Results: The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during the 96-hour acute screening bioassays.

Water Quality Inspection **(WQI)**

Date Sampled: 9/22/03

Results: Fecal coliforms were detected in the effluent and the receiving waters at levels that did not exceed the facility's fecal coliform permit limit. Total Kjeldahl Nitrogen in the effluent sample complied with the facility's permit limit but may have contributed to higher TKN concentrations at the Test Site (1.7 mg/L) compared to the Control Site (1.3 mg/L). The dissolved oxygen concentration in the effluent (2.9 mg/L) and Control Site samples (2.5 mg/L) failed to meet the Class IV Water Quality Criterion (3.0 mg/L) (62-302.530(31) F.A.C.).

Impact Bioassessment Inspection **(IBI)**

Date Sampled: 9/22/03

Results: Qualitative macroinvertebrate data placed both the Control and Test sites in the "Poor" category of the Stream Condition Index. Low numbers of EPT and Florida Index taxa, low percentages of filterers and an over-abundance of Dipteran taxa contributed to the low scores.

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 IRCUD West Regional Wastewater Treatment Facility is located in Indian River County, Florida (Appendix 1). This facility is an advanced wastewater treatment plant with a permitted capacity of 2.0 million gallon per day (MGD) annual average daily flow. Activities at this plant include influent manual and mechanical bar screens, grit removal, flow equalization and anaerobic/anoxic tanks for nutrient removal. The effluent is then aerated before passing through secondary clarifiers, chemical feed facilities with dual filtration/chlorination trains to a common intermediate storage tank. Finally, the effluent enters a man-made/created wetland or to the common public access reclaimed water pump station. Chlorination is by sodium hypochlorite. The effluent may be used as reclaimed water by the public, therefore there is no dechorination. Residuals are transported to a landfill for disposal. The facility is permitted for continuous discharge but will discharge intermittently depending on demand and reuse consumption.

Prior to being discharged into the Class IV waters of Lateral D Canal, the effluent travels through a 180-acre, 14-cell wetland treatment system with an average retention time of 41 days. Water flows through the first 13 cells to Cell 14 prior to being discharged at the permitted discharge point (D001). This water can be reused by citrus growers south of the wetland cells for irrigation of citrus groves or is allowed to flow approximately 2 miles to the Class III fresh waters of Main Canal, eventually entering the Class III marine waters of Indian River Lagoon at Vero Beach. Lateral D Canal is a Class IV water body because it is located behind a water control structure, and is part of a man-made canal system draining agricultural lands (see Facility Summary in Appendix 2). According to the facility's Discharge Monitoring Report (DMR), the average flow for August 22, 2003 through September 22, 2003 was 1.3 MGD.

Surface Water Quality Criteria and facility permit limits are listed in Table 1. A review of the facility's DMR data from May 2002 to May 2003 revealed $CBOD_5$ exceedences in December 2002 and May 2003 (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 Lateral D Canal approximately 50 meters above D001) and a Test Site (located in Lateral D Canal approximately 50 meters downstream of the discharge). Detailed methods and their relationship to Florida Administrative 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: Phil Kane, Steve Kent and David Smicherko (FDEP Central District), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Chuck Ziegmont 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 IV Water Quality Criteria (FAC 62-302) and facility permit limits. Iron was found in the effluent above the method detection limit but below the practical quantitation limit. No organic pollutants were detected in the effluent.
- The dissolved oxygen concentration in the effluent (2.9 mg/L) and at the Control Site (2.5 mg/L) did not comply with Class IV Water Quality Criteria (3.0 mg/L) (Table 1, 62-302.530(31) F.A.C.). Conductivity was elevated at the Control and Test sites but complied with Class IV criteria.
- The effluent sample was not acutely toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during 96-hour acute screening bioassays (See Table 1 for percent mortality and Appendix 6 for bioassay bench sheets).
- Fecal coliforms were detected at relatively low levels in the effluent and receiving water samples (Table 1). There are no bacteriological standards for Class IV designated waters, and levels detected in the effluent did not exceed the facility permit limit.
- The effluent total nitrogen concentration was 1.4 mg/L (Table 1). Effluent TKN (1.4 mg/L), organic nitrogen (1.46 mg/L), and total ammonia concentrations (0.055 mg/L, Table 1) may have contributed to elevated levels at the Test Site. Compared to values measured in other Florida streams, TKN was higher than 80% of these values while the Control Site was higher than 70%. Total phosphorus at the Test Site was greater than 80% of values typical of Florida streams while the Control Site more than 60% of those values (Appendix 5).

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

Indian River County Utilities West Regional WWTF	Class IV Criteria	Effluent Limits	Effluent Samples	Control Site	Test Site
Organic Constituents (µg/L)					
None detected	-	-	-	-	-
Metals (µg/L unless otherwise noted, Class IV Criteria are less than or equal to the value given)					
Aluminum	-	-	7 U	-	-
Arsenic	≤ 50	-	6 U	-	-
Cadmium	-	Report	0.025 U	-	-
Calcium (mg/L)	-	-	29.1 A	-	-
Chromium	≤ 103.7 b	-	3 U	-	-
Copper	≤ 500	Report	1.2 U	-	-
Iron	≤ 1000	<1000	26 I	-	-
Lead	≤ 4.2 b	Report	0.05 U	-	-
Magnesium (mg/L)	-	-	12.8 A	-	-
Mercury	≤ 0.2	<0.012	0.1 U	-	-
Nickel	≤100	Report	3 U	-	-
Selenium	-	-	1 U	-	-
Silver	-	≤ 0.07	0.02 U	-	-
Zinc	≤ 1000	Report	4 U	-	-
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.004 U	0.11	0.062
Total Phosphorus	-	0.2	0.05 I	0.23	0.52
Total Ammonia	-	Report	0.055	0.01 U	0.023
Un-ionized Ammonia	-	0.02 a	<0.017	<0.017	<0.017
Nitrate and Nitrite	-	-	0.004 U	0.04	0.029
Total Kjeldahl Nitrogen	-	-	1.4	1.3	1.7
Organic Nitrogen	-	-	1.46	1.29	1.68
Total Nitrogen	-	2	1.4	1.34	1.73
General Physical and Chemical Parameters					
Habitat Assessment	-	-	-	53	53
Dissolved Oxygen (mg/L)	≥ 3.0 s	-	2.9	2.5	3.8
pH (SU)	6.0-8.5 s	6.0-8.5	7.5	7.3	7.3
Conductivity (µmhos/cm)	1275 s	1890	850	1231	1119
Temperature (°C)	-	-	28.9	27.6	27.6
Total Suspended Solids (mg/L)	-	6.0	2.5 I	-	-
CBOD, 5 day (mg/L)	-	6	3.3 AI	-	-
Chlorophyll *a* (µg/L)	-	-	1.0 U	74.0 A	36.0 A
Phaeophytin (µg/L)	-	-	1.0 U	0.0 A	0.0 A
Chloride (mg/L)	-	-	170.0 A	-	-
Sulfate (mg/L)	-	-	58.0	-	-
Flow (MGD)	-	2	1.3	-	-
Hardness (mg $CaCO_3$)	-	Report	125.4 c	-	-
Toxicity (96-hour static, screening bioassay, percent mortality in 100% effluent)					
Bioassay - Water flea	-	-	0 %	-	-
Bioassay - Fish	-	-	0 %	-	-
Microbiology (Number of counts/100ml)					
Fecal Coliforms	800 s	Report	60 B	45 B	125
Total Coliforms	2400 s	Report	-	-	-

Value exceeds the Class IV Water Quality Criteria

a - Annual average
b - Value is calculated based on hardness
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 - Value reported is < the minimum quantitation limit, and ≥ the minimum detection limit
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the minimum detection limit

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al.* 1978). Raschke and Shultz (1987) found that AGP values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values at the upstream Control Site (6.8 mg dry weight/L), the Test Site (13.9 mg dry weight/L), and the effluent (9.9 mg dry weight/L) were all above this threshold. The Test Site AGP was twice that of the Control Site, indicating nutrient enrichment related to the discharge in this portion of the Lateral D Canal. There was no evidence of growth inhibition in the AGP data (Table 2).
- Periphytometers and Hester-Dendy samplers were deployed but were missing upon retrieval (P. Kane, pers. comm.).
- The effluent phytoplankton chlorophyll-*a* value was undetected while those in the Control (74 µg/L) and Test Site (36 µg/L) samples were elevated (Table 1). The elevated concentration in the Control Site sample suggests sources of nutrient enrichment in the watershed other than the outfall. Furthermore, if the Control Site chlorophyll-*a* concentration was representative of conditions throughout the year, this waterbody segment would meet the threshold for nutrient impairment under the Impaired Waters Rule (62-303 F.A.C.).
- Habitat assessment scores were considered "Marginal" at the Control and Test Sites with each scoring 53 points. Both sites lost points due to artificial channelization, the quality and quantity of the riparian buffer zone vegetation, significant habitat smothering and a

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

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Inorganic N:P ratio
Control (mg dry wt/L)	6.8	1.9 ± 0.4	0.5
Test (mg dry wt/L)	13.9	2.0 ± 0.4	0.8
Effluent (mg dry wt/L)	9.9	ND	ND

ND - No orthophosphate was detected, so these values cannot be calculated.

lack of productive habitats (Table 1, data sheets in Appendix 7).

- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 3 and 4 and in Appendix 8a and 8b. The Control Site SCI score of 19 and the Test Site SCI score of 17 placed both in the "Poor" category. Low numbers of Ephemeroptera-Plecoptera-Trichoptera taxa, Florida Index taxa and filterers contributed to the low scores at both sites.

Summary

Iron was detected in the effluent at a level that complied with Class IV Water Quality Criteria. Effluent nutrients were in compliance with the facility's permit limit although TKN, total phosphorus and total ammonia were all higher at the Test Site compared to the Control Site and other values typical of Florida streams. AGP values were elevated above the 5.0 mg dry wt/L "problem" threshold in the effluent, Control, and Test Site samples. This indicates nutrient enrichment from other sources in addition to the effluent. There was no evidence of algal growth inhibition at the Control or Test Sites.

Conductivity was elevated at the Control and Test Sites but complied with Class IV standards. The dissolved oxygen concentration in the effluent (2.9 mg/L) and at the Control Site (2.5 mg/L) did not comply with Class IV Water Quality Criteria (3.0 mg/L). The dissolved oxygen at the Test Site (3.5 mg/L) was above the Class IV standard. Elevated conductivity levels, low dissolved oxygen values and poor instream habitat quality are likely to have contributed to the depauperate macroinvertebrate communities at both receiving water sites. Both sites were rated as "Poor" using the Stream Condition Index.

Literature Cited

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Table 3. Macroinvertebrate Dipnet Samples - Qualitative

Indian River County Utilities West Regional WWTF	Control Site	Test Site
Stream Condition Index (value)	19	17
Stream Condition Index (word)	Poor	Poor
Stream Condition Index Metrics		
Florida Index	2	2
Number of EPT Taxa	1	1
Number of Taxa	28	24
Number of Chironomid Taxa	10	10
Percent Dominant Taxon	14.7	28.0
Percent Dipterans	58	77
Percent Suspension Feeders and Filterers	1.05	1
Total Number of Individuals	143	100
Community Composition: Percent of total		
Dominant Taxon (name)	Polypedilum trigonum	Goeldichironomus holoprasinus
Dominant Taxon (group)	Diptera	Diptera
Amphipoda	1.4	8.0
Acariformes	2.1	1.0
Diptera	58.0	77.0
Ephemeroptera	3.5	4.0
Gastropoda	2.8	0.0
Odonata	2.1	3.0
Oligochaeta	21.7	2.0
Functional Feeding Groups: Percent of total		
Burrowing Deposit Feeders	21.7	2.0
Predators	15.7	16.0
Surface Deposit Feeders	36.4	56.5
Suspension Feeders and Filterers	1.1	1.0
Scrapers	6.6	2.0
Shredders	10.1	15.5
Unknown	4.2	5.0

Indian River County Utilities West Regional WWTF Control Site					
Table 4. Stream Condition Index Metrics: Peninsula, Summer Index					
Metric:	Value	5	3	1	Score
Total Number of Taxa	28	≥26	25-14	<14	5
Number of EPT Taxa	1	≥4	3-2	<2	1
Number of Chironomid Taxa	10	≥7	6-4	<4	5
Percent Contribution of Dominant Taxon	15	≤29	30-64	>64	5
Percent Diptera	58	-	≤37	>37	1
Florida Index	2	≥7	6-4	<4	1
Percent Suspension Feeders and Filterers	1	-	≥7	<7	1
Total Score					19
Interpretation of Scores			Excellent		26-31
			Good		20-25
			Poor		13-19
			Very Poor		7-12

Indian River County Utilities West Regional WWTF Test Site					
Table 4. Stream Condition Index Metrics: Peninsula, Summer Index					
Metric:	Value	5	3	1	Score
Total Number of Taxa	24	≥26	25-14	<14	3
Number of EPT Taxa	1	≥4	3-2	<2	1
Number of Chironomid Taxa	10	≥7	6-4	<4	5
Percent Contribution of Dominant Taxon	28	≤29	30-64	>64	5
Percent Diptera	77	-	≤37	>37	1
Florida Index	2	≥7	6-4	<4	1
Percent Suspension Feeders and Filterers	1	-	≥7	<7	1
Total Score					17
Interpretation of Scores			Excellent		26-31
			Good		20-25
			Poor		13-19
			Very Poor		7-12

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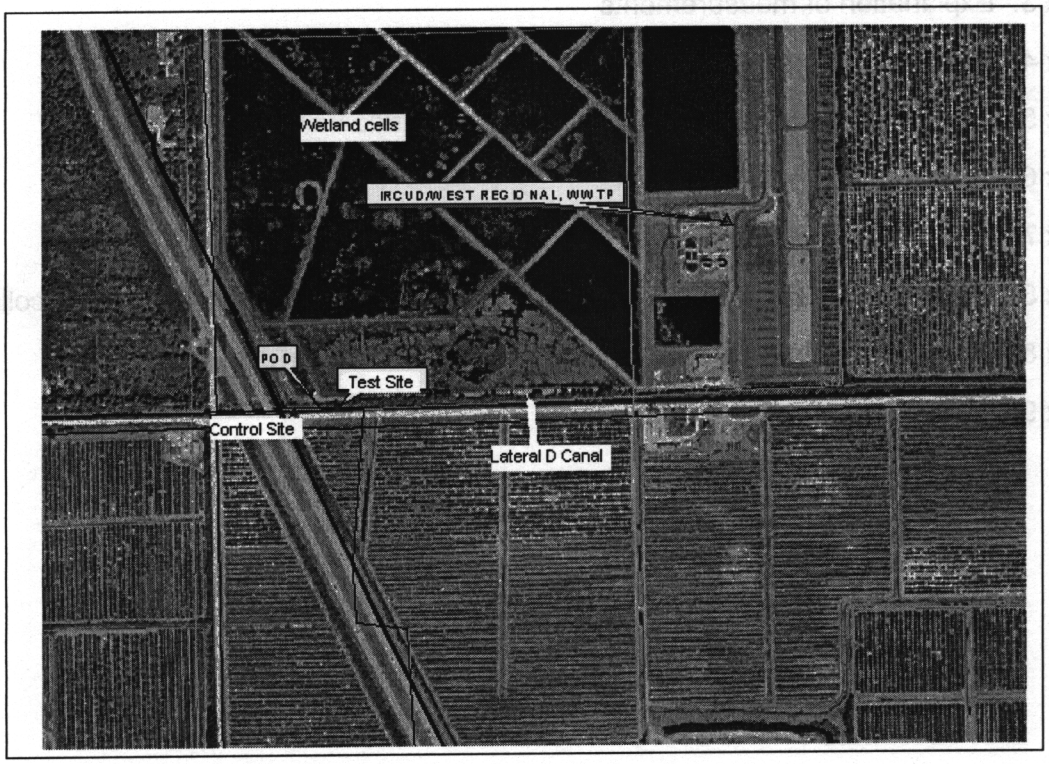
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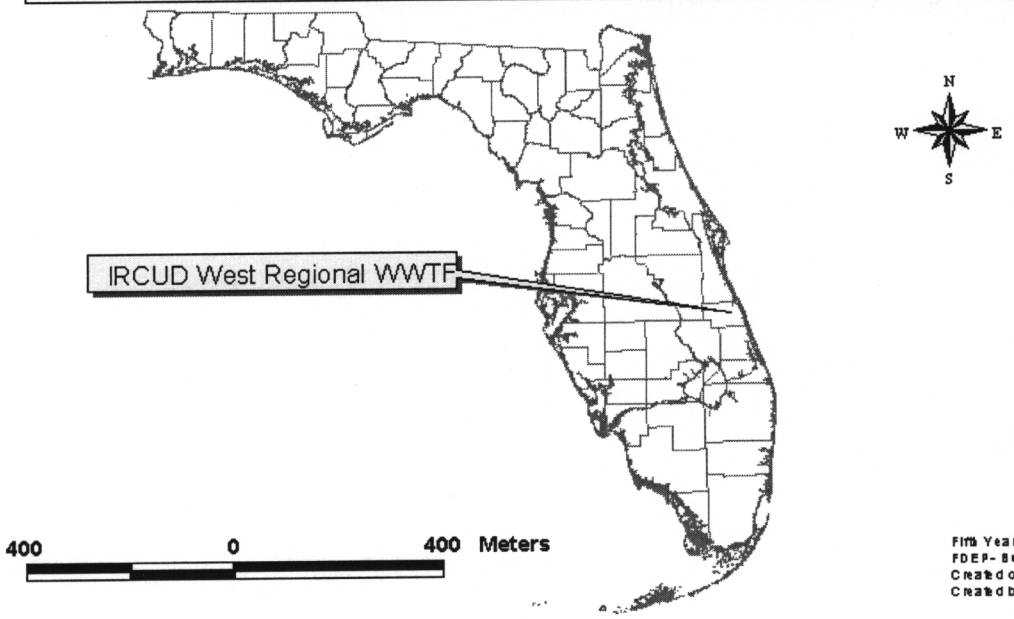
Appendices

- 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. Toxicological results
- Appendix 7. Habitat Assessment field sheets
- Appendix 8a. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix 8b. Dipnet samples: Taxa list and number of macroinvertebrates counted
- Appendix 9. DMR summary report

Appendix 1

Indian River County Utilities Department West Regional WWTF





Fifth Year Inspection Program
FDEP- Bureau of Laboratories
Created on: February 26, 2004
Created by: Julie Espy

Facility Summary

Facility Name (as it appears on permit): IRCUD/WEST REGIONAL WWTF		**Former Names:**
Physical Address: 8405 8th Street Vero Beach FL	**NPDES Permit No.:FL0041637 Expiration Date: July 22, 2004**	**Prepared By:**
County: Indian River District: Central District	**State Permit No.: FL0041637 Expiration Date: July 22, 2004**	**Facility Type: Municipal**

Function of Facility: Domestic wastewater treatment plant.

Sampling Location (specify lat/longs of NPDES point): 27° 36' 46" N 80° 30' 31" W

Description of treatment process: Domestic wastewater treatment plant consisting of influent manual and mechanical bar screens, grit removal, flow equalization, anaerobic/anoxic tanks for nutrient removal, aeration, secondary clarifiers, chemical feed facilities, with dual filtration/chlorination. Chlorination is by sodium hypochlorite. There is no chemical dechlorination

Receiving Waters: Lateral "D" Canal to Main Canal, to the Indian River Lagoon at Vero Beach.	**Classification:** Class IV fresh waters, Class III fresh waters, Class III marine waters.

Temperature (C):	**Design Flow:**
pH (SU):	**Mean Flow:**
Conductivity (umhos/cm):	**Flow During Survey:**
Dissolved Oxygen (mg/L):	**Total Residual Chlorine (mg/L):**

Discharge is: Continuous Intermittent X Seasonal Rainfall Dependent Other

Facility Mixing Zone Details: No mixing Zone.

List Effluent Limits:

Parameter and Units	Limit	Describe special permit conditions and permit modifications:
See table 1.		

Description of permitted outfall: The outfall is a discharge structure from wetland cell #14.

List permit violations (DMR data) and plant upsets that occurred at the plant within the last year: A review of the DMRs from May 2002 to May 2003 showed the following exceedences. December 2002 $CBOD_5$ maximum 8.7 mg/L. May 2003 $CBOD_5$ monthly average 4.7 mg/L.

Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: There have been no previous bioassessments or enforcement actions regarding this facility.
Discuss MOR trends to prior data; is trend improving or declining: The facility's first discharge was in February 2002. There is not enough prior data to make a comment on trends in the effluent quality.
Additional Information:

Table 1. IRCUD/West Regional Effluent Limits

Parameter	Units	Annual Avg	Monthly Avg	Weekly Avg	Single Sample
CBOD5	mg/L	3	3.75	4.5	6
Solids, Total Suspended	mg/L	3	3.75	4.5	6
pH	s.u.				6.0 to 8.5
Fecal Coliform bacteria	#/100ml		Report		
Total Coliform Bacteria	#/100ml	-	Report	-	-
Total Residual Chlorine (For Dechlorination)	mg/L				0.01
Nitrogen, Total (as N)	mg/L	1	1.25	1.5	2
Nitrogen, Kjeldahl, Total (as N)	mg/L	-	Report	-	-
Nitrite plus Nitrate, Total (as N)	mg/L	-	Report	-	-
Nitrogen, Ammonia, Total (as N)	mg/L	-	Report	-	-
Nitrogen, Ammonia, Total unionized (as N)	mg/L	0.02	-	-	-
Phosphorus, Total (as P)	mg/L	0.1	0.13	0.15	0.2
Phosphate, Ortho (as P)	mg/L	-	Report	-	-
Sulfate, Total as SO4	mg/L	-	Report	-	-
Chloride	mg/L	-	Report	-	-
Alkalinity, Total as CaCO3	mg/L	-	Report	-	-
Temperature, Water	deg C	-	Report	-	-
Oxygen, Dissolved (DO)	mg/L	-	Report	-	-
Specific Conductivity	umhos/cm	-	-	-	1890
Chlorophyll a	mg/L	-	-	-	Report
Cadmium, Total Recoverable Metal	ug/L	-	-		Report
Copper, Total Recoverable Metal	ug/L	-	-	-	Report
Iron, Total Recoverable Metal	mg/L	-	-	-	< 1.0
Lead, Total Recoverable Metal	ug/L	-	-	-	Report
Mercury, Total Recoverable Metal	ug/L	-	-	-	< 0.012
Nickel , Total Recoverable Metal	ug/L	-	-	-	Report
Silver, Total Recoverable Metal	ug/L	-	-	-	< 0.07
Zinc, Total Recoverable Metal	ug/L	-	-	-	Report
Hardness, Total as CaCO3	mg/L	-	-	-	Report

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	MDL	PQL
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	77
9/22/2003 11:00	BLANK WEST R	BNA-Water	1-Naphthylamine	9.6	ug/L	U	9.6	38
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4,5-Trichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4-Dinitrophenol	14	ug/L	UJ	14	58
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,6-Dichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Acetylaminofluorene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Methylnaphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Naphthylamine	9.6	ug/L	U	9.6	38
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Nitroaniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Nitrophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	2-Picoline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
9/22/2003 11:00	BLANK WEST R	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	77
9/22/2003 11:00	BLANK WEST R	BNA-Water	3-Methylcholanthrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	3-Nitroaniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Aminobiphenyl	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Chloroaniline	0.96	ug/L	U	0.96	3.8

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Nitroaniline	0.96	ug/L	UJ	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
9/22/2003 11:00	BLANK WEST R	BNA-Water	5-Nitro-o-toluidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Acetophenone	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Aniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzidine	96	ug/L	UJ	96	380
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Benzyl alcohol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
9/22/2003 11:00	BLANK WEST R	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
9/22/2003 11:00	BLANK WEST R	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
9/22/2003 11:00	BLANK WEST R	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dibenzofuran	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dimethylaminoazobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Dinoseb	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Ethyl methanesulfonate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:00	BLANK WEST R	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	UJ	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Hexachloropropene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Isosafrole	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Methyl methanesulfonate	0.96	ug/L	UJ	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosodi-n-butylamine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosodiethylamine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosomorpholine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosopiperidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	77
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pentachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pentachloronitrobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	12
9/22/2003 11:00	BLANK WEST R	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
9/22/2003 11:00	BLANK WEST R	BNA-Water	Safrole	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:00	BLANK WEST R	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.7
9/22/2003 11:00	BLANK WEST R	BNA-Water	o-Toluidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:00	BLANK WEST R	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
9/22/2003 11:00	BLANK WEST R	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.048	0.192

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:00	BLANK WEST R	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
9/22/2003 11:00	BLANK WEST R	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
9/22/2003 11:00	BLANK WEST R	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Diazinon	0.048	ug/L	UJ	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Ethion	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
9/22/2003 11:00	BLANK WEST R	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
9/22/2003 11:00	BLANK WEST R	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
9/22/2003 11:00	BLANK WEST R	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
9/22/2003 11:00	BLANK WEST R	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
9/22/2003 11:00	BLANK WEST R	GC-Water	Naled	0.76	ug/L	UJ	0.76	3.04
9/22/2003 11:00	BLANK WEST R	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
9/22/2003 11:00	BLANK WEST R	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
9/22/2003 11:00	BLANK WEST R	GC-Water	Phorate	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	GC-Water	Prometryn	0.14	ug/L	UJ	0.14	0.56
9/22/2003 11:00	BLANK WEST R	GC-Water	Simazine	0.048	ug/L	U	0.048	0.192
9/22/2003 11:00	BLANK WEST R	Mercury-Water	Mercury	0.1	ug/L	U	0.1	0.4
9/22/2003 11:00	BLANK WEST R	Metals-Water	Aluminum	7	ug/L	U	7	28
9/22/2003 11:00	BLANK WEST R	Metals-Water	Arsenic	6	ug/L	U	6	24
9/22/2003 11:00	BLANK WEST R	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
9/22/2003 11:00	BLANK WEST R	Metals-Water	Calcium	0.1	mg/L	I	0.05	0.2
9/22/2003 11:00	BLANK WEST R	Metals-Water	Chromium	3	ug/L	U	3	12
9/22/2003 11:00	BLANK WEST R	Metals-Water	Copper	1.2	ug/L	U	1.2	4.8
9/22/2003 11:00	BLANK WEST R	Metals-Water	Iron	15	ug/L	U	15	60
9/22/2003 11:00	BLANK WEST R	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
9/22/2003 11:00	BLANK WEST R	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
9/22/2003 11:00	BLANK WEST R	Metals-Water	Nickel	3	ug/L	U	3	12
9/22/2003 11:00	BLANK WEST R	Metals-Water	Selenium	1	ug/L	U	1	4
9/22/2003 11:00	BLANK WEST R	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
9/22/2003 11:00	BLANK WEST R	Metals-Water	Zinc	4	ug/L	U	4	16
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	0.06	0.2
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	Sulfate	0.2	mg SO4/L	U	0.2	0.5
9/22/2003 11:00	BLANK WEST R	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-AGP/LimNut	Algal Growth Potential	13.9	mg DryWt/L		0.1	0.3
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-Chl-a	Chlorophyll-A, Monochromatic, Periphyton	mg/m2				

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	36	ug/L	A	1.4	4.3
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-Chl-a	Phaeophytin-A, Monochromatic, Periphyton		mg/m2			
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L	A	1.4	4.3
9/22/2003 9:00	DOWNSTREAM WEST R	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	24	# Taxa			
9/22/2003 9:00	DOWNSTREAM WEST R	Nutrients-Liquid	Ammonia-N	0.023	mg N/L		0.01	0.02
9/22/2003 9:00	DOWNSTREAM WEST R	Nutrients-Liquid	NO2NO3-N	0.029	mg N/L		0.004	0.01
9/22/2003 9:00	DOWNSTREAM WEST R	Nutrients-Liquid	N_KJEL_TOT	1.7	mg N/L		0.06	0.2
9/22/2003 9:00	DOWNSTREAM WEST R	Nutrients-Liquid	O-Phosphate-P	0.062	mg P/L		0.004	0.01
9/22/2003 9:00	DOWNSTREAM WEST R	Nutrients-Liquid	Total-P	0.52	mg P/L		0.02	0.06
9/22/2003 9:45	UPSTREAM WEST R	Bio-AGP/LimNut	Algal Growth Potential	6.83	mg DryWt/L		0.1	0.3
9/22/2003 9:45	UPSTREAM WEST R	Bio-Chl-a	Chlorophyll-A, Monochromatic, Periphyton		mg/m2			
9/22/2003 9:45	UPSTREAM WEST R	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	74	ug/L		1.2	3.7
9/22/2003 9:45	UPSTREAM WEST R	Bio-Chl-a	Phaeophytin-A, Monochromatic, Periphyton		mg/m2			
9/22/2003 9:45	UPSTREAM WEST R	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0	ug/L		1.2	3.7
9/22/2003 9:45	UPSTREAM WEST R	Bio-Invertebrates	Macroinvert-FW-Qual-Dipnetx20-# Taxa	30	# Taxa			
9/22/2003 9:45	UPSTREAM WEST R	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
9/22/2003 9:45	UPSTREAM WEST R	Nutrients-Liquid	NO2NO3-N	0.04	mg N/L		0.004	0.01
9/22/2003 9:45	UPSTREAM WEST R	Nutrients-Liquid	N_KJEL_TOT	1.3	mg N/L		0.06	0.2
9/22/2003 9:45	UPSTREAM WEST R	Nutrients-Liquid	O-Phosphate-P	0.11	mg P/L		0.008	0.02
9/22/2003 9:45	UPSTREAM WEST R	Nutrients-Liquid	Total-P	0.23	mg P/L		0.02	0.06
9/22/2003 11:45	WEST R	BNA-Water	1,2,4,5-Tetrachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	1,3,5-Trinitrobenzene	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	1,3-Dinitrobenzene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	1,4-Naphthoquinone	19	ug/L	U	19	77
9/22/2003 11:45	WEST R	BNA-Water	1-Naphthylamine	9.6	ug/L	U	9.6	38
9/22/2003 11:45	WEST R	BNA-Water	2,3,4,6-Tetrachlorophenol	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	2,4,5-Trichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2,4-Dichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
9/22/2003 11:45	WEST R	BNA-Water	2,4-Dinitrophenol	14	ug/L	UJ	14	58
9/22/2003 11:45	WEST R	BNA-Water	2,4-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2,6-Dichlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Acetylaminofluorene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	2-Methylnaphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Naphthylamine	9.6	ug/L	U	9.6	38

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:45	WEST R	BNA-Water	2-Nitroaniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Nitrophenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	2-Picoline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
9/22/2003 11:45	WEST R	BNA-Water	3,3'-Dimethylbenzidine	19	ug/L	U	19	77
9/22/2003 11:45	WEST R	BNA-Water	3-Methylcholanthrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	3-Nitroaniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	4-Aminobiphenyl	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	4-Chloroaniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	4-Nitroaniline	0.96	ug/L	UJ	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	4-Nitrophenol	14	ug/L	U	14	58
9/22/2003 11:45	WEST R	BNA-Water	5-Nitro-o-toluidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	7,12-Dimethylbenz(a)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Acetophenone	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	Aniline	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Azobenzene/1,2-Diphenylhydrazine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzidine	96	ug/L	UJ	96	380
9/22/2003 11:45	WEST R	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzo(a)pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Benzyl alcohol	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	58
9/22/2003 11:45	WEST R	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
9/22/2003 11:45	WEST R	BNA-Water	Chrysene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
9/22/2003 11:45	WEST R	BNA-Water	Di-n-octyl phthalate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Dibenzo(a,h)anthracene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Dibenzofuran	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.8

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:45	WEST R	BNA-Water	Diethyl phthalate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
9/22/2003 11:45	WEST R	BNA-Water	Dimethylaminoazobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Dinoseb	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Diphenylamine	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Ethyl methanesulfonate	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Hexachloropropene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	Indeno(1,2,3-cd)pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Isosafrole	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Methapyrilene	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Methyl methanesulfonate	0.96	ug/L	UJ	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosodi-n-butylamine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosodiethylamine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosomethylethylamine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosomorpholine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosopiperidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	N-Nitrosopyrrolidine	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	Naphthalene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	Nitroquinoline-1-oxide	19	ug/L	UJ	19	77
9/22/2003 11:45	WEST R	BNA-Water	Pentachlorobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Pentachloroethane	48	ug/L	U	48	190
9/22/2003 11:45	WEST R	BNA-Water	Pentachloronitrobenzene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	12
9/22/2003 11:45	WEST R	BNA-Water	Phenacetin	3.8	ug/L	U	3.8	12
9/22/2003 11:45	WEST R	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:45	WEST R	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	Pyridine	3.8	ug/L	U	3.8	15
9/22/2003 11:45	WEST R	BNA-Water	Safrole	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.8
9/22/2003 11:45	WEST R	BNA-Water	m,p-Cresols	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	o-Cresol	1.9	ug/L	U	1.9	7.7
9/22/2003 11:45	WEST R	BNA-Water	o-Toluidine	0.96	ug/L	U	0.96	3.8
9/22/2003 11:45	WEST R	Bio-AGP/LimNut	Algal Growth Potential	9.86	mg DryWt/L		0.1	0.3
9/22/2003 11:45	WEST R	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.96	ug/L	U	0.96	2.9
9/22/2003 11:45	WEST R	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.96	ug/L	U	0.96	2.9
9/22/2003 11:45	WEST R	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L		
9/22/2003 11:45	WEST R	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L		
9/22/2003 11:45	WEST R	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
9/22/2003 11:45	WEST R	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
9/22/2003 11:45	WEST R	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
9/22/2003 11:45	WEST R	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Diazinon	0.048	ug/L	UJ	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Ethion	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
9/22/2003 11:45	WEST R	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
9/22/2003 11:45	WEST R	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
9/22/2003 11:45	WEST R	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
9/22/2003 11:45	WEST R	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
9/22/2003 11:45	WEST R	GC-Water	Naled	0.76	ug/L	UJ	0.76	3.04
9/22/2003 11:45	WEST R	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
9/22/2003 11:45	WEST R	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
9/22/2003 11:45	WEST R	GC-Water	Phorate	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	GC-Water	Prometryn	0.14	ug/L	UJ	0.14	0.56
9/22/2003 11:45	WEST R	GC-Water	Simazine	0.048	ug/L	U	0.048	0.192
9/22/2003 11:45	WEST R	Mercury-Water	Mercury	0.1	ug/L	U	0.1	0.4
9/22/2003 11:45	WEST R	Metals-Water	Aluminum	7	ug/L	U	7	28
9/22/2003 11:45	WEST R	Metals-Water	Arsenic	6	ug/L	U	6	24

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
9/22/2003 11:45	WEST R	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
9/22/2003 11:45	WEST R	Metals-Water	Calcium	29.1	mg/L	A	0.05	0.2
9/22/2003 11:45	WEST R	Metals-Water	Chromium	3	ug/L	U	3	12
9/22/2003 11:45	WEST R	Metals-Water	Copper	1.2	ug/L	U	1.2	4.8
9/22/2003 11:45	WEST R	Metals-Water	Iron	26	ug/L	I	15	60
9/22/2003 11:45	WEST R	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
9/22/2003 11:45	WEST R	Metals-Water	Magnesium	12.8	mg/L	A	0.02	0.08
9/22/2003 11:45	WEST R	Metals-Water	Nickel	3	ug/L	U	3	12
9/22/2003 11:45	WEST R	Metals-Water	Selenium	1	ug/L	U	1	4
9/22/2003 11:45	WEST R	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
9/22/2003 11:45	WEST R	Metals-Water	Zinc	4	ug/L	U	4	16
9/22/2003 11:45	WEST R	Nutrients-Liquid	Alkalinity	93	mg CaCO3/L	0.65	2.5	
9/22/2003 11:45	WEST R	Nutrients-Liquid	Ammonia-N	0.055	mg N/L		0.01	0.02
9/22/2003 11:45	WEST R	Nutrients-Liquid	Chloride	170	mg Cl/L	A	2	5
9/22/2003 11:45	WEST R	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
9/22/2003 11:45	WEST R	Nutrients-Liquid	N_KJEL_TOT	1.4	mg N/L		0.06	0.2
9/22/2003 11:45	WEST R	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
9/22/2003 11:45	WEST R	Nutrients-Liquid	Sulfate	58	mg SO4/L	A	2	5
9/22/2003 11:45	WEST R	Nutrients-Liquid	Total-P	0.05	mg P/L	I	0.02	0.06

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	**ND**
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	**ND**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**ND**
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	**1.3**
Total Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.01 U**
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	**0.04**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	**0.18**	0.25	0.39	0.74	1.51	**0.23**
Orthophosphate	0.01	0.01	0.03	0.04	0.05	0.08	**0.11**	0.17	0.27	0.59	1.37	**0.11**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**ND**

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	**ND**
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	**ND**
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	15	17	21.5	26	29	32	**ND**
Dipnet Taxa Richness	9	12	17	20	**22**	24.5	26	28	31	37	53	**24**
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	**1.7**
Total Ammonia	0.02	**0.02**	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	**0.023**
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	**0.029**
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	**0.39**	0.74	1.51	**0.52**
Orthophosphate	0.01	0.01	0.03	0.04	**0.05**	0.08	0.11	0.17	0.27	0.59	1.37	**0.062**
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	**ND**

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

Toxicological results

Table 1. concluded Data recorded during the 96-hour acute screening renewal bioassay of a sample of effluent from Indian River County Utilities WWTF, 8405 8th Street, Vero Beach, Indian River County, Florida, NPDES# FL0041637, performed from 23 to 27, September, 2003.

Facility:	**Indian River County Utilities WWTF**		**NPDES #:**	**FL0041637**	]Facility Type: **WWTF**	**Analysts:**	Christa Pierini
Location:	8405 8th Street, Vero Beach		Contact/District:	Phil Kane/Central			Joshua Ayres
County:	Indian River		Test type:	static renewal acute screen			James Daniels
Sample Collection Date:	9/22/2003	Time: 1145	# tests:	2	Receiving Water: Indian River Lagoon		Marshall Faircloth
Test Beginning Date:	9/23/2003	Time: 1430	Chlorination Type:	chlorinated			
Test Ending Date:	9/27/2003	Time: 1320	FDEP SOP#:	TA07_01 / 02	**Page 2 of 2**	**Reviewer:**	Rob Buda

Sample aerated 20 minutes at 0 hours to increase Dissolved Oxygen from 5.2mg/L to 7.9 mg/L.

Organism: ***Cyprinella leedsi*** (fish) Life stage: 13 days Chamber size: 1000 ml [A]Feeding: *Artemia* Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature (°C)			Diss. Oxygen (mg/L)			[B]Conductivity	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	7.8	8.3	8.4	24.4	25.0	25.0	7.6	7.1	6.9	270	280
Control B	0/20	5	5	5	7.8	8.3	8.4	24.4	24.8	25.0	7.8	7.1	6.6	270	280
Control C	0/20	5	5	5	7.8	8.3	8.4	24.4	24.8	24.9	7.8	7.3	6.8	265	280
Control D	0/20	5	5	5	7.8	8.3	8.4	24.3	24.6	25.1	7.9	7.3	6.6	265	280
100% A	20/0	5	5	5	7.9	8.2	8.1	24.7	24.6	25.0	7.4	7.1	6.8	820	870
100% B	20/0	5	5	5	7.9	8.2	8.1	24.8	24.9	25.1	7.6	7.0	6.3	850	880
100% C	20/0	5	5	5	7.9	8.2	8.1	24.8	24.6	24.9	7.4	6.7	6.5	860	910
100% D	20/0	5	5	5	7.9	8.2	8.1	24.8	24.7	25.1	7.4	6.8	6.3	855	900

[A]Organisms fed prior to testing.

[B]Conductivity value is uncorrected µmhos/cm.

Temperatures of room and test incubator were continuously recorded on a strip chart recorder.

Room Temperature range for the test period was 23.5 - 25.0°C.

Incubator #3 temperature range for the test period was 25.0 - 26.0°C.

Light Intensity during the test was 50-100 foot candles.

Photoperiod during the test was 16 hours of light : 8 hours of dark.

Organism: ***Cyprinella leedsi*** (fish) Life stage: 13 days Chamber size: 1000 ml [C]Feeding: *Artemia* Food Batch #: 0194025G

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature (°C)			Diss. Oxygen (mg/L)			[D]Conductivity	
Concentrations	Volume(mL)	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	96 hr
Control A	0/500	5	5	5	8.0	8.1	7.9	24.8	24.7	25.5	6.6	6.5	5.8	265	280
Control B	0/500	5	5	5	8.0	8.1	7.9	24.8	24.7	26.1	6.7	6.6	5.4	270	295
Control C	0/500	5	5	5	8.0	8.1	7.9	24.8	25.3	25.5	7.3	6.2	5.4	265	285
Control D	0/500	5	5	5	8.0	8.1	7.9	24.8	25.1	25.9	7.4	6.1	5.0	265	290
100% A	500/0	5	5	5	8.0	8.0	7.7	24.6	25.4	26.1	7.5	5.9	5.0	780	900
100% B	500/0	5	5	5	8.0	8.0	7.7	24.5	25.6	25.7	7.4	5.9	5.1	830	915
100 % C	500/0	5	5	5	8.0	8.0	7.7	24.5	25.1	26.2	7.4	6.1	5.1	840	915
100% D	500/0	5	5	5	8.1	8.0	7.7	24.4	24.7	25.7	7.3	6.0	5.2	840	910

[C]Organisms fed prior to testing.

[D]Conductivity value is uncorrected µmhos/cm.

LIMS	
Job number:	TLH-2003-09-23-24
sample number:	704265

Data Transcription Verification
date: 1-16-04
James Daniels/Josh Ayres

Total Residual CL2	mg/L	Method
Field 100% sample:	-	-
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water:	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	139	131
100% Sample:	104	116

Mortality	Percent
Control water:	0%
100 % sample:	0%

[E]Salinity	ppt
Control water:	<1
100 % sample:	<1

[E]salinity based on conductivity and temperature.

Table 1. Data recorded during the 96-hour acute screening renewal bioassay of a sample of effluent from Indian River County Utilities WWTF, 8405 8th Street, Vero Beach, Indian River County, Florida, NPDES# FL0041637, performed from 23 to 27, September, 2003.
continued

Facility:	**Indian River County Utilities WWTF**		**NPDES #:**	**FL0041637**	Facility Type: **WWTF**	**Analysts:**	Christa Pierini
Location:	8405 8th Street, Vero Beach		Contact/District:	Phil Kane/Central			Joshua Ayres
County:	Indian River		Test type:	static renewal acute screen			James Daniels
Sample Collection Date:	9/22/2003	Time: 1145	# tests:	2	Receiving Water: Indian River Lagoon		Marshall Faircloth
Test Beginning Date:	9/23/2003	Time: 1430	Chlorination Type:	chlorinated			
Test Ending Date:	9/27/2003	Time: 1320	FDEP SOP#:	TA07_01 / 02	**Page 1 of 2**	**Reviewer:**	Rob Buda

Sample aerated 20 minutes at 0 hours to increase Dissolved Oxygen from 5.2mg/L to 7.9 mg/L.

Organism: ***Ceriodaphnia dubia*** (water flea) Life stage: <24 hours Chamber size: 30 mL [A]Feeding: YCT/Algae Food Batch #: YCT 2/P. sub. 19

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature (°C)			Diss. Oxygen (mg/L)			[B] Conductivity	
Concentrations	Volume(mL)	0 hr	24 hr	48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control A	0/20	5	5	5	8.0	-	7.9	24.0	-	24.5	7.8	-	5.9	185	205
Control B	0/20	5	5	5	-	-	7.9	-	-	24.7	-	-	6.4	-	200
Control C	0/20	5	5	5	-	-	7.9	-	-	24.9	-	-	6.6	-	190
Control D	0/20	5	5	5	-	-	8.0	-	-	24.9	-	-	6.7	-	190
100% A	20/0	5	5	5	7.9	-	8.0	25.0	-	24.8	7.7	-	6.8	830	760
100% B	20/0	5	5	5	-	-	8.0	-	-	24.7	-	-	6.8	-	915
100% C	20/0	5	5	5	-	-	8.1	-	-	24.8	-	-	6.8	-	970
100% D	20/0	5	5	5	-	-	8.1	-	-	25.0	-	-	6.7	-	995

[A]Organisms fed prior to testing.
[B]Conductivity value is uncorrected µmhos/cm.
Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5 - 25.0°C.
Incubator #3 temperature range for the test period was 25.0 - 26.0°C.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

LIMS
Job number: TLH-2003-09-23-24
sample number: 704265

Data Transcription Verification
date: 1-16-04
by: James Daniels/Josh Ayres

Total Residual CL2	mg/L	Method
Field 100% sample:	-	-
Lab 100% sample:	<0.03	Hach
Control water:	<0.03	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water:	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water:	81	81
100% Sample:	104	116

Organism: ***Ceriodaphnia dubia*** (water flea) Life stage: <24 hours Chamber size: 30 mL [C]Feeding: YCT/Algae Food Batch #: YCT 2/P. sub. 19

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature (°C)			Diss. Oxygen (mg/L)			[D]Conductivity	
Concentrations	Volume(mL)	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	72 hr	96 hr	48 hr	96 hr
Control A	0/20	5	5	5	8.1	-	8.0	24.7	-	24.4	6.7	-	6.6	185	195
Control B	0/20	5	5	5	-	-	8.0	-	-	24.3	-	-	6.5	-	195
Control C	0/20	5	5	5	-	-	8.0	-	-	24.2	-	-	6.5	-	195
Control D	0/20	5	5	5	-	-	8.0	-	-	24.2	-	-	6.4	-	195
100% A	20/0	5	5	5	8.0	-	8.0	24.8	-	24.1	7.3	-	6.3	845	965
100% B	20/0	5	5	5	-	-	8.0	-	-	24.0	-	-	6.4	-	1010
100% C	20/0	5	5	5	-	-	8.0	-	-	24.0	-	-	6.4	-	1010
100% D	20/0	5	5	5	-	-	7.9	-	-	23.9	-	-	6.4	-	1090

[C]Organisms fed prior to testing.
[D]Conductivity value is uncorrected µmhos/cm.
Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5 - 25.0°C.
Incubator #3 temperature range for the test period was 25.0 - 26.0°C.
Light Intensity during the test was 50-100 foot candles.
Photoperiod during the test was 16 hours of light : 8 hours of dark.

Mortality	Percent
Control water:	0%
100 % sample:	0%

[E]Salinity	ppt
Control water:	<1
100 % sample:	<1

[E]salinity based on conductivity and temperature.

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: 30 SUBMITTING AGENCY NAME: FDEP CENTRAL	STORET STATION NUMBER:	DATE (M/D/Y): 08/5/03	TIME 1000	RECEIVING BODY OF WATER: LATERAL CANAL
REMARKS: NON WADABLE	COUNTY: INDIAN RIVER	LOCATION: INCLD WEST REGIONAL UPSTREAM WRF		FIELD ID/NAME: UPSTREAM

RIPARIAN ZONE/STREAM FEATURES

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

NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
		15%	75% GROVE				20% WRF WETLAND

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: 0

LIST & MAP DOMINANT VEGETATION ON BACK

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT — 10 m wide

>2 m/s PK	m/s	m/s
>2 m deep	>2 m deep	>2 m deep

135
155

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

ARTIFICIALLY IMPOUNDED ☑ yes

HIGH WATER MARK: 1M (m above present water level) + >2M (present depth in m) = >3M (m above bed)

CANOPY COVER %: OPEN: ☑ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE 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)				SAND	45%		
LEAF PACKS OF MATS				MUD/MUCK/SILT	25%		
AQUATIC VEGETATION	25%			OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	5%			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	.05	27.58	6.92	0.95	1051 SLK	0.2M
MID-DEPTH						
BOTTOM						

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

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: ☑ BROWN

WEATHER CONDITIONS/NOTES: CLEAR

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

SAMPLING TEAM: KANE, KENT

SIGNATURE: Phil Kane

DATE: 8/5/03

FDEP-SOP-001/01: Form FD 9000-5 (June 1, 2001)

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: FDEP 32 SUBMITTING AGENCY NAME: FDEP CENTRAL	STORET STATION NUMBER:	DATE (M/D/Y): 8/5/03	RECEIVING BODY OF WATER: LATERAL D CANAL

REMARKS: NWADABLE	COUNTY: I.R.	LOCATION: IRLNO WEST REGIONAL WRF	FIELD ID/NAME: UPSTREAM

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 6	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 12	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 5 Primary Score 32	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** 3	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	Many 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 4 Left Bank 1	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 1	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12m 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 5 Left Bank 4 Secondary Score 21	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody machrophytes. 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 ozone 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 streambank 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

53 **TOTAL SCORE**

ANALYSIS DATE: 8/5/03	ANALYST: KANE, KENT	SIGNATURE: Phil Kane

NOW WADEABLE

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

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: 30 SUBMITTING AGENCY NAME: FDEP CENTRAL	STORET STATION NUMBER:	DATE (M/D/Y): 8/5/03	TIME 1030	RECEIVING BODY OF WATER: LATERAL O CANAL
REMARKS: NON WADABLE	COUNTY: INDIAN RIVER	LOCATION: IRCUD WEST REGIONAL DOWNSTREAM WRF	FIELD ID/NAME: DOWNSTREAM	

RIPARIAN ZONE/STREAM FEATURES

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

NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
		15%	75% GROVE				10% WRF WETLAND

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: 0

LIST & MAP DOMINANT VEGETATION ON BACK

TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT: 10 m wide

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

ARTIFICIALLY IMPOUNDED ☑ yes more sinuous

	m/s	m/s	m/s
	15S		
	13S		
	>2 m deep	>2m deep	>2m deep

HIGH WATER MARK: 1m (m above present water level) + >2m (present depth in m) = >3m (m above bed)

CANOPY COVER %: OPEN: ☑ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☑ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐

SEDIMENT OILS: ABSENT: ☑ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT SEVERE (MODERATE) SILT SMOTHERING: NONE SLIGHT SEVERE (MODERATE) OTHER: _____

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)				SAND	45%		
LEAF PACKS OF MATS				MUD/MUCK/SILT	25%		
AQUATIC VEGETATION	25%			OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS	5%			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								0.2m
MID-DEPTH								
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: ☑ BROWN

WEATHER CONDITIONS/NOTES: CLEAR/SUN

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

SAMPLING TEAM: KANE, KEN

SIGNATURE: Phil Kane

DATE: 8/5/03

STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: 30 SUBMITTING AGENCY NAME: FDEP CENTRAL	STORET STATION NUMBER:	DATE (M/D/Y): 8/5/03	RECEIVING BODY OF WATER: LATERAL D CANAL

REMARKS: UNWADABLE	COUNTY: T.R.	LOCATION: TRUCKWEST REGIONAL	FIELD ID/NAME: DOWNSTREAM

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 6	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 12	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 5 Primary Score 32	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** 3	No artificial channelization or dredging. Stream with normal, sinuous pattern 20 19 18 17 16	Many 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 4 Left Bank 1	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 1	Width of native vegetation (least buffered side) greater than 18 m 10 9	Width of native vegetation (least buffered side) 12m 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 5 Left Bank 4 Secondary Score 21	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody machrophytes. 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 ozone 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 streambank 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

53 **TOTAL SCORE**

ANALYSIS DATE: 8/5/03	ANALYST: KANE, KENT	SIGNATURE: Kent Kane

NON WADEABLE

Appendix 8a

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of IRCUD West Regional facility (9/22/03). 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		
Allonais paraguayensis	3	-
Bratislavia unidentata	-	1
Dero digitata complex	1	1
Dero furcata	8	-
Dero lodeni	1	-
Dero pectinata	17	-
Slavina appendiculata	1	-
Arthropoda		
Arachnida		
Acariformes		
Arrenurus sp.	3	1
Crustacea		
Amphipoda		
Hyalella azteca	2	8
Decapoda		
Palaemonetes sp.	6	2
Insecta		
Coleoptera		
Curculionidae	-	1
Diptera		
Cantopelopia gesta	-	1
Ceratopogonidae	-	10
Chironomus sp.	-	1
Dasyhelea sp.	4	-
Goeldichironomus cf. *natans*	6	4
Goeldichironomus holoprasinus	20	28
Hedriodiscus sp.	1	-
Labrundinia neopilosella	1	-
Larsia decolorata	-	4
Odontomyia	-	1
Parachironomus carinatus	10	-
Parachironomus directus	14	4
Parachironomus supparilis	1	-
Polypedilum beckae	2	3
Polypedilum illinoense grp.	-	1
Polypedilum trigonum	21	18
Tanytarsus sp. F Epler	2	2
Tanytarsus sp. G Epler	1	-
Ephemeroptera		
Caenis sp.	5	4
Heteroptera		
Pelocoris femoratus	-	1

(continued on next page)

Appendix 8a (continued)

	Control Site	Test Site
Lepidoptera		
Noctuidae	3	-
Undetermined Lepidoptera	-	1
Odonata		
Aeshnidae	-	1
Coenagrionidae	1	-
Enallagma sp.	-	1
Ischnura sp.	-	1
Libellulidae	2	-
Cnidaria		
Hydrozoa		
Hydra sp.	3	-
Mollusca		
Gastropoda		
Ferrissia hendersoni	3	-
Physella sp.	1	-

Appendix 8b

Qualitative benthic macroinvertebrate collections (n = 20 discrete dipnet sweeps) upstream and downstream of IRCUD West Regional facility (9/22/03). Taxa list and number of individuals counted.

	Control Site	Test Site
Annelida		
Oligochaeta		
Allonais paraguayensis	-	3
Bratislavia unidentata	1	-
Dero digitata complex	1	1
Dero furcata	-	8
Dero lodeni	-	1
Dero pectinata	-	17
Slavina appendiculata	-	1
Arthropoda		
Arachnida		
Acariformes		
Arrenurus sp.	1	3
Crustacea		
Amphipoda		
Hyalella azteca	8	2
Decapoda		
Palaemonetes sp.	2	6
Insecta		
Coleoptera		
Curculionidae	1	-
Diptera		
Cantopelopia gesta	1	-
Ceratopogonidae	10	1
Chironomidae	7	8
Chironomus sp.	1	0
Dasyhelea sp.	0	3
Goeldichironomus sp.	1	0
Goeldichironomus cf. *natans*	4	5
Goeldichironomus holoprasinus	22	18
Hedriodiscus sp.	0	1
Labrundinia neopilosella	0	1
Larsia sp.	1	0
Larsia decolorata	3	0
Odontomyia sp.	1	0
Parachironomus sp.	2	2
Parachironomus carinatus	0	8
Parachironomus directus	2	12
Parachironomus supparilis	0	1
Polypedilum sp.	0	1
Polypedilum beckae	3	2
Polypedilum illinoense grp.	1	0
Polypedilum trigonum	16	17
Tanytarsus sp. F Epler	2	2
Tanytarsus sp. G Epler	0	1

(continued on next page)

Appendix 8b (continued)

	Control Site	Test Site
Ephemeroptera		
Caenis sp.	4	5
Heteroptera		
Pelocoris femoratus	1	0
Lepidoptera		
Noctuidae	0	2
Undetermined Lepidoptera	1	1
Odonata		
Aeshnidae	1	0
Coenagrionidae	0	1
Enallagma sp.	1	0
Ischnura sp.	1	0
Libellulidae	0	2
Cnidaria		
Hydrozoa		
Hydra sp.	0	3
Mollusca		
Gastropoda		
Ancylidae	0	2
Ferrissia hendersoni	0	1
Physella sp.	0	1

Appendix 9

DMR summary report

Permit Number: FL0041637
Facility Name: INDIAN RIV CTY-WEST REGIONAL
Outfall Indicator: 001-1
Monitoring Location Code: 1
Time Period is: 07/01/2002 to 11/30/2003

Parameter Code	Description	Limit	Statistical Base	Units	Average	Maximum	Minimum
P 00010	TEMPERATURE, WATER DEG CENTRIGRADE	ADDMON (8/1/99 to 7/31/2004)	MO AVG	DEG.C	23.9419	28.6	13.35
P 00094	CONDUCTIVITY	1890 (8/1/99 to 7/31/2004)	MAXIMUM	UMHO/ CM	1077.8125	1328	716
P 00300	OXYGEN, DISSOLVED (DO)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.8781	2.94	0.14
P 00400	PH	8.5 (8/1/99 to 7/31/2004)	MAXIMUM	SU	7.2938	7.7	7.1
P 00400	PH	6.0 (8/1/99 to 7/31/2004)	MINIMUM	SU	6.8063	7	6.6
P 00410	ALKALINITY, TOTAL (AS CACO3)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	69.0338	104.25	35.68
P 00530	SOLIDS, TOTAL SUSPENDED	6.0 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	1.46	2.7	0.9
P 00530	SOLIDS, TOTAL SUSPENDED	3.75 (8/1/99 to 7/31/2004)	MO AVG	MG/L	1.132	2.7	0
P 00600	NITROGEN, TOTAL (AS N)	2.0 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	1.0625	1.88	0.17
P 00600	NITROGEN, TOTAL (AS N)	1.25 (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.7975	1.2	0.14
P 00610	NITROGEN, AMMONIA TOTAL (AS N)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.1331	0.35	0.03
P 00612	NITROGEN, AMMONIA, TOT UNIONIZED (AS N)	0.02 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	0.0012	0.004	0.0001
P 00625	NITROGEN, KJELDAHL TOTAL (AS N)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.7913	1.17	0.43
P 00630	NITRITE PLUS NITRATE TOTAL 1 DET (AS N)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.1133	0.894	0.031
P 00665	PHOSPHORUS, TOTAL (AS P)	0.2 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	0.07	0.53	0.02
P 00665	PHOSPHORUS, TOTAL (AS P)	0.13 (8/1/99 to 7/31/2004)	MO AVG	MG/L	0.0319	0.15	0.01
P 00900	HARDNESS, TOTAL (AS CACO3)	ADDMON (8/1/99 to 7/31/2004)	SINGSAMP	MG/L	147	160	121
P 00940	CHLORIDE (AS CL)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	130.5006	195	79.5
P 00945	SULFATE, TOTAL (AS SO4)	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	35.906	55.65	21.28
P 00980	IRON, TOTAL RECOVERABLE	1.0 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	0.0395	0.0485	0.035
P 01094	ZINC, TOTAL RECOVERABLE	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	UG/L	0.0539	0.0539	0.0539

P 01094	ZINC, TOTAL RECOVERABLE	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	UG/L	0.0539	0.0539	0.0539
P 01113	CADMIUM, TOTAL RECOVERABLE	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	UG/L	0.0098	0.0098	0.0098
P 01114	LEAD, TOTAL RECOVERABLE	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	UG/L	0.0098	0.0098	0.0098
P 01119	COPPER, TOTAL RECOVERABLE	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	UG/L	0.003	0.003	0.003
P 32230	CHLOROPHYLL A	ADDMON (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	9.7213	80.2	0.64
P 50050	FLOW	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MGD	1.2326	2.619	0.177
P 70507	PHOSPHOROUS, IN TOTAL ORTHOPHOSPHATE	ADDMON (8/1/99 to 7/31/2004)	MO AVG	MG/L	71.53	156.25	0.0035
P 74055	COLIFORM, FECAL GENERAL	ADDMON (8/1/99 to 7/31/2004)	MO AVG	#/ 100ML	123.7844	603.5	9
P 74056	COLIFORM, TOTAL GENERAL	ADDMON (8/1/99 to 7/31/2004)	MO AVG	#/ 100ML	532.8488	2157.5	74
P 80082	BOD, CARBONACEOUS 05 DAY, 20C	6.0 (8/1/99 to 7/31/2004)	MAXIMUM	MG/L	4.8169	12.7	2.2
P 80082	BOD, CARBONACEOUS 05 DAY, 20C	3.75 (8/1/99 to 7/31/2004)	MO AVG	MG/L	3.175	7.83	1.78

Permit Number: FL0041637
Facility Name: INDIAN RIV CTY-WEST REGIONAL
Outfall Indicator: 001-1
Monitoring Location Code: Y

Parameter Code	Description	Limit	Statistical Base	Units	Average	Maximum	Minimum
P 00530	SOLIDS, TOTAL SUSPENDED	3.0 (8/1/99 to 7/31/2004)	ANNL AVG	MG/L	0.8664	1.24	0.18
P 00600	NITROGEN, TOTAL (AS N)	1.0 (8/1/99 to 7/31/2004)	ANNL AVG	MG/L	0.7482	0.96	0.12
P 00665	PHOSPHORUS, TOTAL (AS P)	0.1 (8/1/99 to 7/31/2004)	ANNL AVG	MG/L	0.0785	0.898	0.013
P 50050	FLOW	4.0 (8/1/99 to 7/31/2004)	ANNL AVG	MGD	1.0101	1.638	0.642
P 80082	BOD, CARBONACEOUS 05 DAY, 20C	3.0 (8/1/99 to 7/31/2004)	ANNL AVG	MG/L	2.3724	3.69	1

Permit Number: FL0041637
Facility Name: INDIAN RIV CTY-WEST REGIONAL
Outfall Indicator: 001-T
Monitoring Location Code: P

Parameter Code	Description	Limit	Statistical Base	Units	Average	Maximum	Minimum
P TAN3B	LC50 STATRE 96HR ACU CERIODAPHNIA	100 (8/1/99 to 7/31/2004)	MINIMUM	PER-CENT	100	100	100
P TAN6H	LC50 STATRE 96HR ACUCYPRINELLA LEEDSI	100 (8/1/99 to 7/31/2004)	MINIMUM	PER-CENT	100	100	100

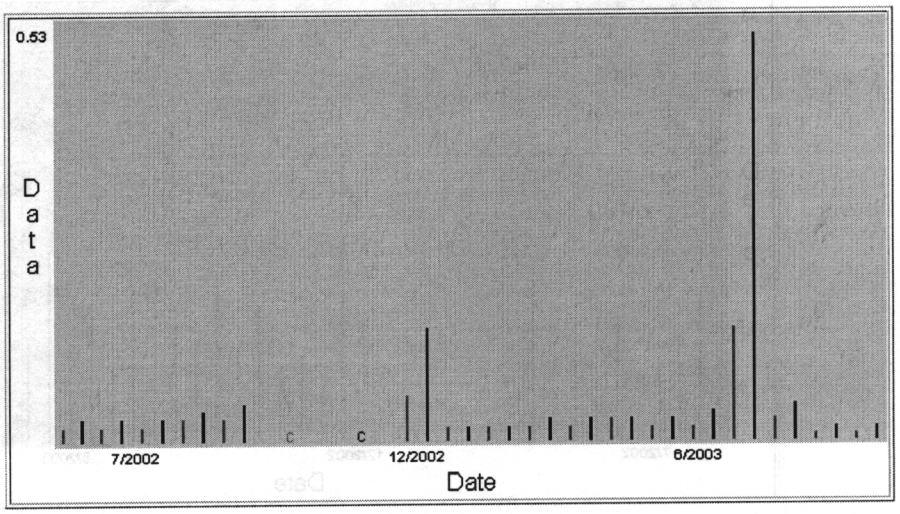
Permit Number: FL0041637
Facility Name: INDIAN RIV CTY-WEST REGIONAL
Outfall Indicator: 001-T
Monitoring Location Code: Q

Parameter Code	Description	Limit	Statistical Base	Units	Average	Maximum	Minimum
P TAN3B	LC50 STATRE 96HR ACU CERIODAPHNIA	100 (8/1/99 to 7/31/2004)	MINIMUM	PER-CENT	100	100	100
P TAN6H	LC50 STATRE 96HR ACUCYPRINELLA LEEDSI	100 (8/1/99 to 7/31/2004)	MINIMUM	PER-CENT	100	100	100

You might include some header here to say that this goes with the following graphs.

A letter or number is printed on the graph in place of a bar, this is the NODI code indicating why there is not a data value for the reporting period. An asterisk (*) indicates that the data was reported as being above or below some detection limit, and therefore cannot be plotted

PHOSPHORUS, TOTAL (AS P) versus TIME



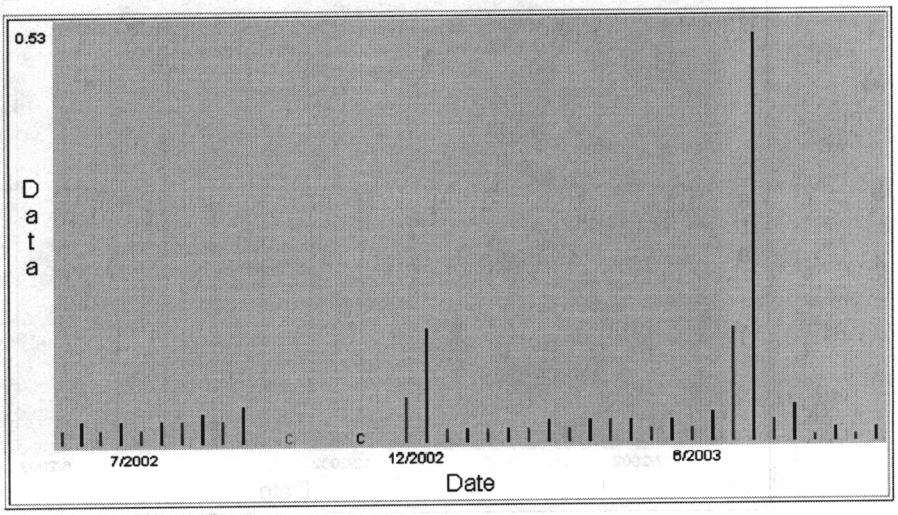
Permit Number: FL0041637
Outfall Number & Report Indicator: 001-1

Facility Name: INDIAN RIV CTY-WEST REGIONAL
Monitoring Location Code: 1

Limit starting 8/1/99 and ending 7/31/2004: 0.13
Statistical Base: MO AVG
Units: MG/L
Highest Data Value: 0.15
Lowest Data Value: 0.01
Data Average: 0.0312

Limit starting 8/1/99 and ending 7/31/2004: 0.2
Statistical Base: MAXIMUM
Units: MG/L
Highest Data Value: 0.53
Lowest Data Value: 0.02
Data Average: 0.0676

PHOSPHORUS, TOTAL (AS P) versus TIME



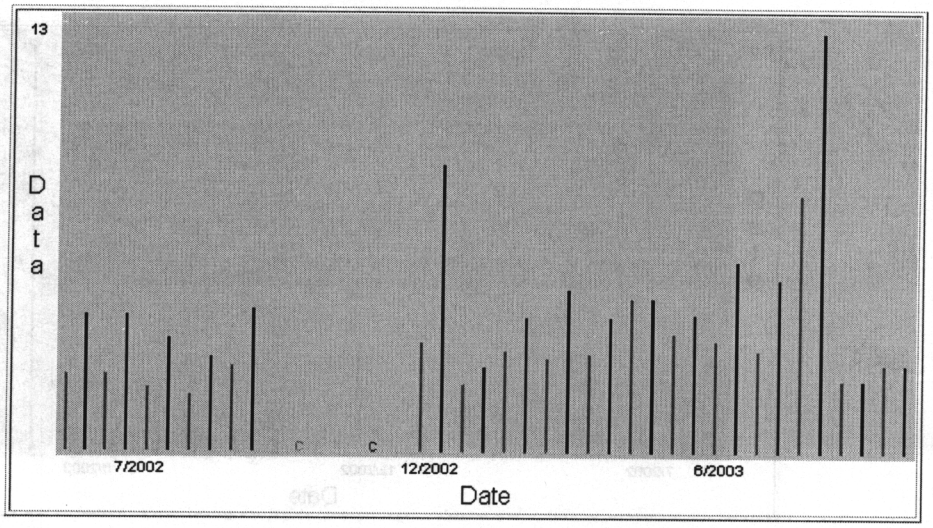
Permit Number: FL0041637
Outfall Number & Report Indicator: 001-1

Facility Name: INDIAN RIV CTY-WEST REGIONAL
Monitoring Location Code: 1

Limit starting 8/1/99 and ending 7/31/2004: 0.13
Statistical Base: MO AVG
Units: MG/L
Highest Data Value: 0.15
Lowest Data Value: 0.01
Data Average: 0.0312

Limit starting 8/1/99 and ending 7/31/2004: 0.2
Statistical Base: MAXIMUM
Units: MG/L
Highest Data Value: 0.53
Lowest Data Value: 0.02
Data Average: 0.0676

BOD, CARBONACEOUS 05 DAY, 20C versus TIME



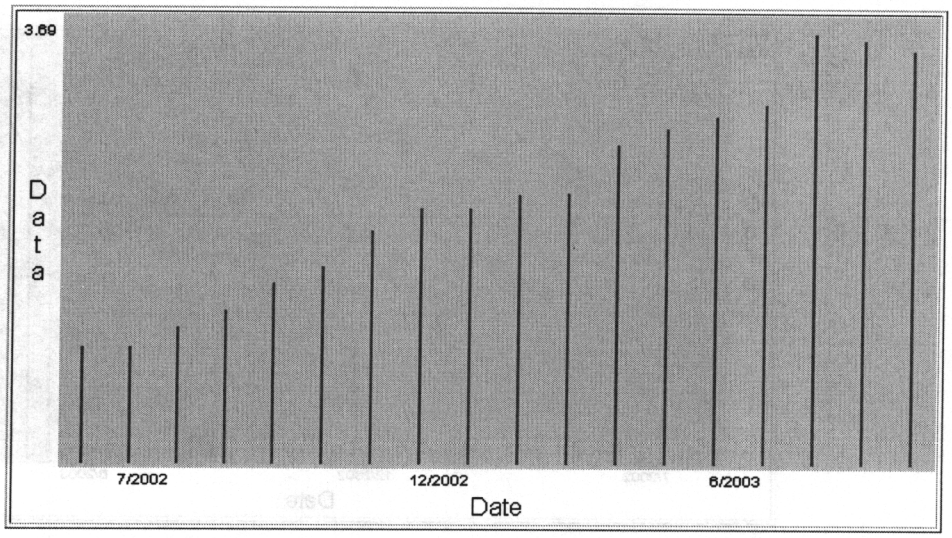
Permit Number: FL0041637
Outfall Number & Report Indicator: 001-1

Facility Name: INDIAN RIV CTY-WEST REGIONAL
Monitoring Location Code: 1

Limit starting 8/1/99 and ending 7/31/2004: 3.75
Statistical Base: MO AVG
Units: MG/L
Highest Data Value: 7.83
Lowest Data Value: 1.78
Data Average: 3.1294

Limit starting 8/1/99 and ending 7/31/2004: 6.0
Statistical Base: MAXIMUM
Units: MG/L
Highest Data Value: 12.7
Lowest Data Value: 2.2
Data Average: 4.7806

BOD, CARBONACEOUS 05 DAY, 20C versus TIME



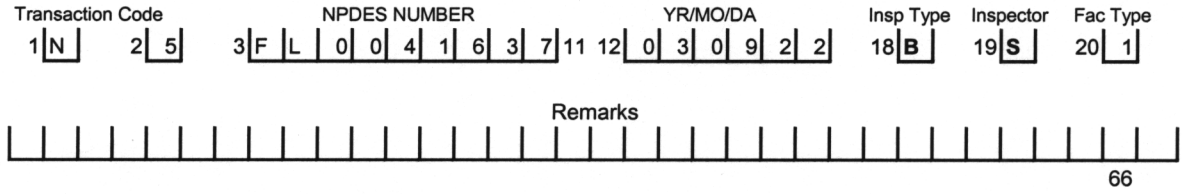
Permit Number: FL0041637
Outfall Number & Report Indicator: 001-1

Facility Name: INDIAN RIV CTY-WEST REGIONAL
Monitoring Location Code: Y

Limit starting 8/1/99 and ending 7/31/2004: 3.0
Statistical Base: ANNL AVG
Units: MG/L
Highest Data Value: 3.69
Lowest Data Value: 1
Data Average: 2.2961

The Bioassay of Indian River County Utilities WWTF effluent sampled on September 22, 2003, NPDES #FL0041637.

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



The Priority Pollutants Analysis for Bioassay of Indian River County Utilities WWTF effluent sampled on September 22, 2003, NPDES #FL0041637.

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

