

Bioassays of

Indian River County Utilities Department/ South County Reverse Osmosis Potable Water Treatment Plant

Indian River County

NPDES #FL0037940

Sampled May 9, 2005

July 2005

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Indian River County Utility Department/South County RO Potable Water Treatment Plant, 1550 S.W. 9th Avenue, Vero Beach, Indian River County, Florida, NPDES #FL0037940. Effluent samples for this facility were collected on May 9, 2005.

Introduction

The Indian River County Utilities Department/South County Reverse Osmosis Water Treatment Plant has a design flow of 1.5 million gallons per day (MGD). The average flow from May 2004, through April 2005, was 0.948 MGD. Treatment of potable water byproduct (concentrate) consists of aeration, to increase oxygen and reduce hydrogen sulfide, and chlorination, to eliminate residual hydrogen sulfide. Effluent is continuously discharged into the Indian River County South Relief Canal, a Class III fresh water body, downstream of a control structure and thence 10,000 feet downstream into the Indian River, which is classified as a Class III marine water body at that point.

The facility has mixing zones for Combined Radium^{226} and Radium^{228}, Gross Alpha Particle Activity and Specific Conductance. Each mixing zone extends from 50 feet upstream (of discharge point EFF-01) to 50 feet, 150 feet, and 250 feet, respectively, downstream of the outfall. Compliance with Class III fresh surface water standards (62-302.530 F.A.C.) is required at the edge of the mixing zone. The specific conductance limit of ≤ 2,190 µmhos/cm at the edge of the mixing zone is based on the Class III freshwater criterion of the background specific conductance plus (+) 50% (specifically, "shall not be increased more than 50% above background or to 1,275 µmhos/cm, whichever is greater" (62-302.530(23) F.A.C)). The calculated end-of-pipe specific conductance required to meet the edge of mixing zone limit of ≤ 2,190 µmhos/cm is ≤ 5,400 µmhos/cm.

The facility has had violations of permit toxicity requirements for both *Americamysis bahia* (March, April, August, October, 2004 and February, 2005) and *Menidia beryllina* (October, 2004) (facility information provided by Phil Kane, Ali Kazi, and Michael Eckoff of FDEP Central District).

Methods

Samples were collected from the EFF-01 NPDES sampling point by Phil Kane, Steve Kent, Carile Etienne and Michael Eckoff (FDEP Central District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOP's are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

The 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOP's TA07_03, TA07_04, and TA08_01 through TA08_07. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

The salinity of the sample collected for the bioassay tests was 2.8 parts per thousand (ppth). Per the facility's NPDES permit, the salinity of an aliquot of the sample was adjusted by the addition of artificial sea salts (Forty Fathoms®) to approximately 7 ppth for the *A. bahia* test. Sample salinity was not adjusted for the *M. beryllina* test. Artificial sea water (ASW) controls were prepared by diluting 20 ppth ASW with well water to 7 and 2.8 ppth for the *A. bahia* and *M. beryllina* tests, respectively. A salt-added control was prepared by adding artificial sea salts to adjust the salinity of ASW (previously diluted with well water to match the salinity of the original sample) to the salinity of the 100% *A. bahia* test concentration. The purpose of the salt-added controls was to ensure that any observed toxicity in the effluent tests could not be attributed to the sea salt addition. The sample of effluent for the AGP test was salinity adjusted from 2.8 ppth to 7 ppth to meet the salinity requirement of the test species per SOP TA08_01.

The Trimmed Spearman-Karber statistical procedure was used to determine the LC50 of the mysid test (available at http://www.epa.gov/ceampubl/fchain/LC50/index.htm).

Toxicity Test Results

Tests were performed May 10 - 14, 2005.

Americamysis bahia 96-hr acute definitive bioassay –	LC_{50} = 81.05%, 70% mortality in 100% sample at 96 hours
Menidia beryllina 96-hr acute definitive bioassay –	LC_{50} > 100%, 10% mortality in 100% sample at 96 hours

The bioassay sample was acutely toxic to the mysid shrimp, *Americamysis bahia*, but not to the fish, *Menidia beryllina*, according to the permit conditions.

The chemistry results confirmed that the ion makeup of the sample was not in seawater proportions and that the apparent 2.8 ppth salinity of the sample was due to elevated levels of groundwater ions. The observed mortality in the *A. bahia* test is likely due to the seawater-ion imbalance of the sample. Previous research conducted by the FDEP Biology Section demonstrated that *A. bahia* is much more sensitive to seawater-ion imbalances than is *M. beryllina* (FDEP, 1995). The calcium concentration was 202 mg/L at 2.8 ppth salinity (salinity based on conductivity and temperature), which is approximately 603% greater than the normal concentration for calcium (~ 33.5 mg/L) in seawater of this salinity. The magnesium concentration was 188 mg/L at 2.8 ppth salinity, which is approximately 183% greater than the normal concentration (~103 mg/L) for magnesium in seawater of this salinity. In the salinity adjusted bioassay test sample, the calculated calcium and magnesium concentrations were ~ 299% and ~132%, respectively, more than the nominal concentrations of each in seawater of similar salinity. The elevated calcium concentration is one potential source of toxicity in this sample, but other unidentified sources of toxicity cannot be ruled out without performing the major-seawater-ion imbalance toxicity testing protocols cited above.

See Appendix 1 for bioassay bench sheets.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was less than the laboratory method detection limit (MDL) of 0.300 mg dry wt/L of *Dunaliella tertiolecta.* Raschke and Shultz found that AGP values above 10.0 mg dry weight/L represent a “problem” threshold for marine receiving waters, implying nutrient enrichment (personal communication with Ron Raschke USEPA Region 4 1987). The analytical chemistry suggests that the effluent sample was extremely phosphorus limited.

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine was not detected in the bioassay sample in either the field or the laboratory. Total ammonia in the bioassay sample was 0.385 mg/L. The total ammonia concentration in the sample collected and preserved for chemical analysis was 3 mg/L. Based on the pH, salinity and temperature of the effluent as collected, the calculated unionized ammonia concentration was 0.03 mg/L, which exceeded the Class III freshwater criterion of < 0.02 mg/L (62-302.530(3), F.A.C.).

Iron was detected in the effluent at levels that comply with Class III freshwater quality criteria. Chromium III was detected between the laboratory minimum detection limit (MDL) and practical quantitation limit (PQL). The effluent total nitrogen concentration (2.63 mg/L) exceeded the permitted limit of 2.0 mg/L.

See Table 2 for results of analytes detected in the effluent, and corresponding limits.

See Appendix 2 for a complete list of chemical analyses performed.

Conclusion

The effluent sample collected from Outfall EFF-01 for this facility on May 9, 2005, was not acutely toxic to the fish, *Menidia beryllina*, but was acutely toxic to the mysid shrimp, *Americamysis bahia*, during the 96-hour definitive bioassays. The elevated calcium concentration is one potential source of toxicity in this sample, but other unidentified sources of toxicity cannot be ruled out without performing the major-seawater-ion imbalance toxicity testing protocols. The effluent AGP result was less than the "problem" threshold for marine receiving waters and by inference less than the problem threshold for fresh receiving waters. Effluent unionized ammonia exceeded Class III freshwater quality standards, and effluent total nitrogen exceeded its permit limit.

Literature Cited

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 p.

FDEP. 1995. Protocols for determining Major-Seawater-Ion Toxicity in Membrane-Technology Water-Treatment Concentrate. Biology and Chemistry Section, FDEP Bureau of Laboratories, Tallahassee, Florida. 99 pp.

Table 1. Algal growth potential (AGP; mg dry wt/ L) of Dunaliella tertiolecta *and ratios of Nitrogen to Phosphorus for a sample collected from IRCUD South County RO WTP on May 9, 2005.*

Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent Sample	0.3 U	303.3	131.5

U - Material analyzed for but not detected; value reported is the minimum detection limit.

Table 2. Effluent limits, Class III freshwater criteria and chemical data for a sample collected from IRCUD South County RO WTP on May 9, 2005.

IRCUD / South County Reverse Osmosis Plant NPDES FL0037940	Class III Freshwater Stds	Effluent Limits	Effluent Samples
Metals (µg/L unless otherwise noted)			
Aluminum	-	-	5 U
Arsenic	≤ 50	-	6 U
Cadmium	≤ 3.4 b	-	0.25 U
Calcium (mg/L)	-	-	202
Chromium-III	≤ 268.2 b	-	2.1 I
Copper	≤ 30.5 b	-	2.5 U
Iron	≤ 1000	-	71
Lead	≤ 18.6 b	-	0.38 U
Magnesium (mg/L)	-	-	188
Nickel	≤ 168.5 b	-	2 U
Selenium	≤ 5	-	5 U
Silver	≤ 0.07	-	0.25 U
Zinc	≤ 387.8 b	-	3 U
Nutrients (mg/L)			
Ortho-phosphate	-	-	0.01
Total Phosphorus	-	≤ 1 s	0.02 UJ
Ammonia	-	-	3 A
Unionized Ammonia	≤ 0.02	-	0.03 c
Nitrate+Nitrite	-	-	0.033
Total Kjeldahl Nitrogen	-	-	2.6 A
Organic Nitrogen	-	-	0 c
Total Nitrogen	-	≤ 2 s	2.63 c
General Physical and Chemical Parameters			
Dissolved Oxygen (mg/L)	≥ 5 s	≥ 5	8.6
pH (S.U.)	6.5-8.5	6.0-8.5	7.1
Specific Conductance (umhos/cm)	≤ 2,190	≤ 5,400 *s	5,180
Temperature (C)	-	Report	25.4
Flow (MGD)	-	≤ 1.5	0.6
Hardness (mg/L)	-	-	1278.6 c
Total Residual Chlorine (mg/L)	≤ 0.01	≤ 0.01 s	< 0.03

Value exceeds the Class III Fresh Water Quality Criteria (62-302, F.A.C.) and/or Effluent Limits

* End-of Pipe limit to meet limit of ≤ 2,190 umhos/cm at edge of mixing zone

b - Value is calculated based on hardness

c - calculated value

s - Single sample

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

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

J - Estimated value

U - Material analyzed for but not detected; value reported is the minimum detection limit

FDEP Biology Section - Acute ~~4/24~~ 96 Definitive Bioassay Bench Sheets

Facility: Indian River County Utility District / South County Reverse Osmosis
Address: 1550 S.W. 9th Avenue
City: Vero Beach County: Indian River
Contact/District: Phil Kane / Central District
NPDES Permit #: FL 0037940
LIMS Job #: TLH-2005-05-10-04 LIMS Sample #: 834001

Sample Collection: Date: 5-9-05 Time: 1045
Hold Time Start: Date: 5-9-05 Time: 1045
Sample: 1 of ~~1~~ 8P

Comments: Sample salinity adjusted from 2.8 parts per thousand (ppth) with Forty Fathoms® marine mix seasalts for the A. bahia test per permit. MF 5-10-05
Salinity of mysid test was not adjusted, salt control for A. bahia test made by diluting RSW (32ppth) to 2.8ppth then adding seasalts to increase salinity to 7ppth. MF 5-10-05

Lims Data Entry: 5-19-05 MF
Instructions (for below): Circle appropriate wording. If yes is circled complete blanks.
Data Entry Verification: 5-19-05 SP
SOP# 07_03/04

Test Type: Definitive
Static (Static Renewal) Flow-through
Test Duration: 48 (96) Hours.
Light Intensity : 50 - 100 ft. candles.
Photoperiod : 16 hours light 8 hours dark.
Initial sample handling:

Test 1 validation: Test 1: SOP TA 07-03
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

Test 2 validation: Test 2: SOP TA 07.04
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No

PH adjustment : yes (no) Initial pH NaOH N HCl N Drops mL Final pH
Aeration : yes (no) Initial DO: . mg/L Final DO: mg/L Duration: minutes Rate: ~ bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 2.8 Final Salinity: 7.0 (Salts) Hypersaline brine
Salinity adjusted (Test 2): yes (no) Initial Salinity: Final Salinity: Salts Hypersaline brine
Dechlorination: yes (no) mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC

Temperature Range °C
Incubator # 3 Range 23.4 - 24.5
Room B246: 22.9 - 24.2
Waterbath: N/A

Sample Validation:
Temperature: Shipped ≤6°C (Yes) No Hand Delivered: Cooling (received °C < collected °C) Yes No
Holding Time: ≤36 Hours (Yes) No (Composite-end of collection; grab-when collected; 4 in 24 - time last sample collected)

Investigators' Signatures
Sarah Pritchard
Erin Lorig
Debra McNicholson
James Daniels
Marshall Faircloth
Mike Wellendorf
REVIEWER

Water Quality Parameters	20% DMW	Well Water	Salt Water (ASW) NSW Test 1	Salt Water (ASW) NSW Test 2	Moderately Hard Water	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	N/A	N/A	N/A	N/A	N/A	<0.01	—	P. Kane	MF
Lab Total Residual Cl2 (mg/L):			<0.03	<0.03		<0.03	HACH	SP	
Alkalinity (mg/L as $CaCO_3$):			229	150		312	HACH		SP
Hardness (mg/L as $CaCO_3$):			NA	NA		NA	HACH		MF
Total Ammonia (mg/L as N):			<0.0688	<0.0688		0.385	DENVER		SP
Salinity (ppt):			7.0	2.8		2.8	YSI / Mettler	MF	SP

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Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet
Survival

LIMS Sample #: 834001 Test #: 1 Test Started: Date 5-10-05 Time: 1410
Organism: A. bahia Test Ended: Date 5-14-05 Time: 1130
Organism Batch: 10-05 Diluent/ Batch: ASW 1 5-05
Organism Age: 3 days Food: YCT *P. subcapitata* (Artemia) 351364256B
Chamber Size 1000 mL Batch: ___ ___
Test Volume 500 mL Feeding: Prior to test / Prior to renewal / Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	G1	5	4 D	4	4	4	4
	B	G2	5	5	5	5	5	5
	C	G3	5	5	5	4 D	4	4
	D	G4	5	5	5	5	5	5
Salt CTRL	A	A1	5	5	5	4 D	4	4
	B	A2	5	5	5	5	5	5
	C	A3	5	5	5	5	5	5
	D	A4	5	5	5	5	5	5
6.25%	A	G5	5	5	4 D	4	4	4
	B	G6	5	5	5	5	5	5
	C	G7	5	5	5	5	5	5
	D	G8	5	5	5	5	5	5
12.5%	A	G9	5	5	5	5	5	5
	B	G10	5	5	4 D	4	4	4
	C	G11	5	5	5	5	5	5
	D	G12	5	5	5	5	5	5
25%	A	G13	5	5	5	5	5	5
	B	G14	5	5	5	5	5	5
	C	G15	5	5	4 D	4	4	4
	D	G16	5	4 D	4	4	4	4
50%	A	G17	5	4 D	3 D	3	3	3
	B	G18	5	4 D	4	4	4	4
	C	G19	5	5	5	5	5	5
	D	G20	5	5	5	5	5	5
100%	A	G21	5	2 D	2	2	2	1 D
	B	G22	5	4 D	2 D	2	2	1 D
	C	G23	5	4 D	3 D	2 D	2	2
	D	G24	5	5	2 D	2	2	2
Organisms loaded by: JD		Checked by: [redacted]		JD	JD	JD	MF	MF
Loading Verified by: [redacted]		(initials)						

Comments: Probit analysis - LC50 84.27
95% CI (69.69-109.665)

m = missing d = dead BR = before renewal AR = after renewal
Test Results:
% mortality in 100% sample ~~80%~~ 70% MF math error 5-19-05
LC_{50}: 84.05 If Calculated: 95% CI 67.90-116.76 Method: TSK

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Screening Tests: Report LC50 as >100%, =100%, or <100%.
Substitute highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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Appendix 1. Bench Sheets (continued)

FDEP Biology Section - - Bioassay Bench Sheet
Survival

LIMS Sample #: 83400! Test #: 2 Test Started: Date 5-10-05 Time: 1400
Organism: M. beryllina Test Ended: Date 5-14-05 Time: 1130
Organism Batch: 09-05 Diluent/ Batch: ASW / 5-05
Organism Age: 11 days Food: YCT *P. subcapitata* Artemia
Chamber Size 1000 mL Batch: ___ ___ 35136 435 GB
Test Volume 500 mL Feeding: Prior to test / Prior to renewal - Daily

Concentration	Replicate	Chamber #	Test Hour 0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	F1	5	5	5	5	5	5
	B	F2	5	5	5	5	5	5
	C ®	~~F3~~	5	5	5	5	5	5
	D	~~F4~~	5	5	5	5	5	5
6.25%	A	F5	5	5	5	5	5	5
	B	F6	5	5	5	5	5	5
	C	~~F7~~	5	5	5	5	5	5
	D	~~F8~~	5	5	5	5	5	5
12.5%	A	F9	5	5	5	5	5	5
	B	F10	5	5	5	5	5	5
	C	~~F11~~	5	5	5	5	5	5
	D	~~F12~~	5	5	5	5	5	5
25%	A	F13	5	5	5	5	5	5
	B	F14	5	5	5	5	5	5
	C	~~F15~~	5	5	5	5	5	5
	D	~~F16~~	5	5	5	5	5	5
50%	A	F17	5	5	5	5	5	5
	B	F18	5	5	5	5	5	5
	C	~~F19~~	5	5	5	5	5	5
	D	~~F20~~	5	5	5	5	5	5
100%	A	F21	5	5	5	5	5	5
	B	F22	5	4	4	4	4	4
	C	~~F23~~	5	4	4	4	4	4
	D	~~F24~~	5	5	5	5	5	5
Organisms loaded by: JD		Checked by:	5	JD	JD	JD	MF	MK
Loading Verified by: SC		(initials)						

Comments: ®replicates C & D and corresponding chamber numbers incorrectly crossed out SC

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

Test Results:
% mortality in 100% sample 10%
LC_{50}: >100% If Calculated: 95% CI ___ Method: ___

Screening Tests: Report LC50 as >100%, =100%, or <100%.
Substitue highest test concentration used if other than 100% (example: Ocean outfall tested at 30% concentration).

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Appendix 1. Bench Sheets (continued)

Bioassay Parameters

LIMS Sample #: 834001 Test #: 1 of 2

TEST SOP: TA07_03 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:

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Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.2	8.1	8.1	8.2	8.1	8.1
Temperature °C	24.3	24.8	24.6	24.9	24.1	25.8
Dissolved Oxygen mg/L	7.7	6.5	5.2	6.9	6.6	6.3
Conductivity µmhos mmhos	12.03	12.3	12.8	12.2	12.4	12.7
(initials) Measured by:	SP	DN	JN	DN	SP	MF
(initials) Recorded by:	SP	SP	JN	DN/SP	JN/DN	MF

Comments:

Concentration Salt CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.2	8.1	8.1	8.2	8.2	8.1
Temperature °C	24.1	25.3	25.5	25.0	25.5	24.5
Dissolved Oxygen mg/L	7.6	6.5	5.8	6.9	6.6	6.2
Conductivity µmhos mmhos	12.3	12.4	12.8	12.2	12.5	12.5
(initials) Measured by:	SP	DN	JN	DN	SP	MF
(initials) Recorded by:	SP	SP	JN	DN/SP	JN/DN	MF

Comments:

Concentration 6.25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.2	8.1	8.1	8.3	8.1	8.1
Temperature °C	24.3	25.3	25.3	25.1	24.1	25.9
Dissolved Oxygen mg/L	7.7	6.5	6.0	7.0	6.2	6.3
Conductivity µmhos mmhos	12.4	12.5	12.8	12.2	12.6	12.8
(initials) Measured by:	SP	DN	JN	DN	SP	MF
(initials) Recorded by:	SP	SP	JN	DN/SP	JN/DN	MF

Comments:

Concentration 12.5%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.1	8.1	8.2	8.1	8.1	8.2
Temperature °C	24.4	24.3	25.4	25.5	25.5	25.2
Dissolved Oxygen mg/L	7.6	6.8	6.0	6.9	6.1	6.2
Conductivity µmhos mmhos	12.3	12.6	12.8	12.3	12.8	12.7
(initials) Measured by:	SP	DN	JN	DN	SP	MF
(initials) Recorded by:	SP	SP	JN	DN/SP	JN/DN	MF

Comments:

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(Bioassay Parameters

LIMS Sample # : 834001 **Test # :** 1 of 2

TEST SOP: TA07_ 03 **Test Species:** *Ceriodaphnia dubia Cyprinella leedsi Pimephales promelas* (*Americamysis bahia*) *Menidia beryllina* Other:_____

V.1 2/24/04

Concentration 25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.9	8.0	8.2	8.0	8.1	8.2
Temperature °C	24.5	24.2	25.1	25.1	26.0	25.9
Dissolved Oxygen mg/L	7.6	6.4	5.1	6.8	6.4	6.4
Conductivity µmhos (mmhos)	12.4	12.5	12.5	12.2	12.8	12.9
(initials) Measured by:	SP	DN	JD	DN	SP	MK
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MK

Comments:

Concentration 50%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.6	8.0	8.3	7.7	8.1	8.2
Temperature °C	24.6	24.0	24.7	25.1	25.7	25.3
Dissolved Oxygen mg/L	7.6	6.6	5.9	6.8	6.3	6.6
Conductivity µmhos (mmhos)	12.4	12.6	12.6	12.2	12.6	12.6
(initials) Measured by:	SP	DN	JD	DN	SP	MK
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MK

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.4	8.1	8.4	7.5	8.1	8.2
Temperature °C	24.7	24.5	24.9	25.4	25.4	25.7
Dissolved Oxygen mg/L	7.7	6.5	6.2	6.5	6.6	6.7
Conductivity µmhos (mmhos)	12.3	12.7	12.8	12.4	12.6	12.9
(initials) Measured by:	SP	DN	JD	DN	SP	MK
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MK

Comments:

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

Comments:

V.1 2/24/04

Bioassay Parameters

LIMS Sample # : 834001 **Test # :** 2 **of** 2

TEST SOP: TA07_ 04 **Test Species:** *Ceriodaphnia dubia Cyprinella leedsi Pimephales promelas Americamysis bahia Menidia beryllina* Other:_____

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.1	8.1	8.4	8.1	8.1	8.2
Temperature °C	24.6	24.2	24.9	25.1	24.5	25.1
Dissolved Oxygen mg/L	7.5	7.2	6.5	7.2	6.5	7.2
Conductivity µmhos mmhos	5.27	5.54	5.71	5.24	5.32	5.48
(initials) Measured by:	BP	DN	JD	DN	SP	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

Concentration 6.25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	8.0	8.1	8.3	8.1	8.1	8.2
Temperature °C	24.5	24.0	24.0	25.1	24.0	25.2
Dissolved Oxygen mg/L	7.10	7.3	6.8	7.1	6.7	7.2
Conductivity µmhos mmhos	5.31	5.61	5.71	5.30	5.40	5.50
(initials) Measured by:	BP	DN	JD	DN	SP	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

Concentration 12.5%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.8	8.1	8.3	7.9	8.1	8.2
Temperature °C	24.5	24.7	24.0	25.2	25.1	25.4
Dissolved Oxygen mg/L	7.4	7.4	6.9	7.2	6.5	7.2
Conductivity µmhos mmhos	5.27	5.63	5.73	5.33	5.46	5.47
(initials) Measured by:	SP	DN	JD	DN	SP	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

Concentration 25%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.7	8.1	8.3	7.8	8.1	8.3
Temperature °C	24.7	24.8	24.7	25.0	24.0	24.0
Dissolved Oxygen mg/L	7.4	7.3	7.0	7.2	6.7	7.2
Conductivity µmhos mmhos	5.37	5.66	5.72	5.31	5.43	5.48
(initials) Measured by:	SP	DN	JD	DN	SP	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

V.1 2/24/04

Bioassay Parameters

LIMS Sample # : 834001 **Test # :** 2 **of** 2

TEST SOP: TA07_ 04 **Test Species:** *Ceriodaphnia dubia Cyprinella leedsi Pimephales promelas Americamysis bahia Menidia beryllina* Other:_____

V.1 2/24/04

Concentration 50%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.5	8.0	8.3	7.5	8.1	8.3
Temperature °C	25.0	24.2	24.2	25.0	25.1	25.5
Dissolved Oxygen mg/L	7.5	6.9	6.9	7.2	6.7	7.4
Conductivity µmhos (mmhos)	5.28	5.56	5.51	5.34	5.43	5.61
(initials) Measured by:	SP	DN	JD	DN	JD	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.U.)	7.2	~~8.1~~ 7.9 SP	8.4	7.3	8.1	8.3
Temperature °C	25.4	24.0	24.0	24.8	24.4	25.4
Dissolved Oxygen mg/L	7.0	7.1	6.7	7.1	6.7	7.3
Conductivity µmhos (mmhos)	5.30	5.41	5.52	5.26	5.31	5.41
(initials) Measured by:	SP	DN	JD	DN	JD	MF
(initials) Recorded by:	SP	SP	JD	DN/SP	JD/DN	MF

Comments:

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

Comments:

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

Comments:

V.1 2/24/04

Appendix 2. Chemical Analyses performed on the effluent from the Indian River County Utilities Department/ South County RO Potable Water Treatment Plant Outfall EFF-01, sampled on May 9, 2005

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 10:45	OSLO	Bio-AGP/LimNut	Algal Growth Potential	0.3	mg DryWt/L	AU	0.3	0.9
5/9/2005 10:45	OSLO	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
5/9/2005 10:45	OSLO	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
5/9/2005 10:45	OSLO	Bio-Toxicology	Bioassay-Acute-Def-SW-Fish, LC50	100	LC50	L		
5/9/2005 10:45	OSLO	Bio-Toxicology	Bioassay-Acute-Def-SW-Mysid, LC50	81.1	LC50			
5/9/2005 10:45	OSLO	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
5/9/2005 10:45	OSLO	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
5/9/2005 10:45	OSLO	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
5/9/2005 10:45	OSLO	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
5/9/2005 10:45	OSLO	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
5/9/2005 10:45	OSLO	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Benzidine	95	ug/L	U	95	380
5/9/2005 10:45	OSLO	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 10:45	OSLO	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57
5/9/2005 10:45	OSLO	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
5/9/2005 10:45	OSLO	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
5/9/2005 10:45	OSLO	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
5/9/2005 10:45	OSLO	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
5/9/2005 10:45	OSLO	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
5/9/2005 10:45	OSLO	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
5/9/2005 10:45	OSLO	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
5/9/2005 10:45	OSLO	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
5/9/2005 10:45	OSLO	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
5/9/2005 10:45	OSLO	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	11
5/9/2005 10:45	OSLO	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 10:45	OSLO	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 10:45	OSLO	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	1,2,4-Trichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	1,2-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	1,3-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	1,4-Dichlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,4,6-Trichlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,4-Dichlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,4-Dimethylphenol	48	ug/L	U	48	190
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,4-Dinitrophenol	14	ug/L	U	14	57
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,4-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2,6-Dinitrotoluene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2-Chloronaphthalene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2-Chlorophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	2-Nitrophenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
5/9/2005 11:10	OSLO BLANK	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	4-Chloro-3-methylphenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.6
5/9/2005 11:10	OSLO BLANK	BNA-Water	4-Nitrophenol	14	ug/L	U	14	57
5/9/2005 11:10	OSLO BLANK	BNA-Water	Acenaphthene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Acenaphthylene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzidine	95	ug/L	U	95	380
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzo(a)anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzo(a)pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzo(b)fluoranthene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzo(g,h,i)perylene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Benzo(k)fluoranthene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Bis(2-chloroethyl)ether	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L	U	14	57

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 11:10	OSLO BLANK	BNA-Water	Butyl benzyl phthalate	4.8	ug/L	U	4.8	19
5/9/2005 11:10	OSLO BLANK	BNA-Water	Chrysene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Di-n-butyl phthalate	4.8	ug/L	U	4.8	19
5/9/2005 11:10	OSLO BLANK	BNA-Water	Di-n-octyl phthalate	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Dibenzo(a,h)anthracene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Dieldrin	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Diethyl phthalate	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Dimethyl phthalate	48	ug/L	U	48	190
5/9/2005 11:10	OSLO BLANK	BNA-Water	Endosulfan I	3.8	ug/L	U	3.8	15
5/9/2005 11:10	OSLO BLANK	BNA-Water	Endosulfan II	3.8	ug/L	U	3.8	15
5/9/2005 11:10	OSLO BLANK	BNA-Water	Endosulfan sulfate	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Endrin	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Endrin aldehyde	3.8	ug/L	U	3.8	15
5/9/2005 11:10	OSLO BLANK	BNA-Water	Fluoranthene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Fluorene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	Hexachlorobenzene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Hexachlorobutadiene	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Indeno(1,2,3-cd)pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Isophorone	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	N-Nitrosodi-n-propylamine	1.9	ug/L	U	1.9	7.6
5/9/2005 11:10	OSLO BLANK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.6
5/9/2005 11:10	OSLO BLANK	BNA-Water	N-Nitrosodiphenylamine	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Naphthalene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Nitrobenzene	1.9	ug/L	U	1.9	7.6
5/9/2005 11:10	OSLO BLANK	BNA-Water	Pentachlorophenol	2.9	ug/L	U	2.9	11
5/9/2005 11:10	OSLO BLANK	BNA-Water	Phenanthrene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Phenol	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	Pyrene	0.95	ug/L	U	0.95	3.8
5/9/2005 11:10	OSLO BLANK	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 11:10	OSLO BLANK	BNA-Water	gamma-BHC	1.4	ug/L	U	1.4	5.7
5/9/2005 10:45	OSLO	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
5/9/2005 10:45	OSLO	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 10:45	OSLO	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Azinphos Methyl	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
5/9/2005 10:45	OSLO	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
5/9/2005 10:45	OSLO	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Ethoprop	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
5/9/2005 10:45	OSLO	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Malathion	0.15	ug/L	UJ	0.15	0.6
5/9/2005 10:45	OSLO	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
5/9/2005 10:45	OSLO	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
5/9/2005 10:45	OSLO	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
5/9/2005 10:45	OSLO	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
5/9/2005 10:45	OSLO	GC-Water	Norflurazon	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
5/9/2005 10:45	OSLO	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
5/9/2005 10:45	OSLO	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
5/9/2005 10:45	OSLO	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
5/9/2005 10:45	OSLO	GC-Water	Simazine	0.05	ug/L	U	0.05	0.2
5/9/2005 11:10	OSLO BLANK	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.3
5/9/2005 11:10	OSLO BLANK	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Atrazine	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
5/9/2005 11:10	OSLO BLANK	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
5/9/2005 11:10	OSLO BLANK	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Diazinon	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Ethion	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
5/9/2005 11:10	OSLO BLANK	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 11:10	OSLO BLANK	GC-Water	Malathion	0.14	ug/L	UJ	0.14	0.56
5/9/2005 11:10	OSLO BLANK	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
5/9/2005 11:10	OSLO BLANK	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.9
5/9/2005 11:10	OSLO BLANK	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
5/9/2005 11:10	OSLO BLANK	GC-Water	Naled	0.76	ug/L	U	0.76	3
5/9/2005 11:10	OSLO BLANK	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
5/9/2005 11:10	OSLO BLANK	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
5/9/2005 11:10	OSLO BLANK	GC-Water	Phorate	0.048	ug/L	U	0.048	0.19
5/9/2005 11:10	OSLO BLANK	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
5/9/2005 11:10	OSLO BLANK	GC-Water	Simazine	0.048	ug/L	U	0.048	0.19
5/9/2005 10:45	OSLO	Metals-Water	Aluminum	5	ug/L	U	5	20
5/9/2005 10:45	OSLO	Metals-Water	Arsenic	6	ug/L	U	6	24
5/9/2005 10:45	OSLO	Metals-Water	Cadmium	0.25	ug/L	U	0.25	1
5/9/2005 10:45	OSLO	Metals-Water	Calcium	202	mg/L		0.15	0.6
5/9/2005 10:45	OSLO	Metals-Water	Chromium	2.1	ug/L	I	2	8
5/9/2005 10:45	OSLO	Metals-Water	Copper	2.5	ug/L	U	2.5	10
5/9/2005 10:45	OSLO	Metals-Water	Iron	71	ug/L		10	40
5/9/2005 10:45	OSLO	Metals-Water	Lead	0.38	ug/L	U	0.38	1.5
5/9/2005 10:45	OSLO	Metals-Water	Magnesium	188	mg/L		0.04	0.16
5/9/2005 10:45	OSLO	Metals-Water	Nickel	2	ug/L	U	2	8
5/9/2005 10:45	OSLO	Metals-Water	Selenium	5	ug/L	U	5	20
5/9/2005 10:45	OSLO	Metals-Water	Silver	0.25	ug/L	U	0.25	1
5/9/2005 10:45	OSLO	Metals-Water	Zinc	3	ug/L	U	3	12
5/9/2005 11:10	OSLO BLANK	Metals-Water	Aluminum	5	ug/L	U	5	20
5/9/2005 11:10	OSLO BLANK	Metals-Water	Arsenic	6	ug/L	U	6	24
5/9/2005 11:10	OSLO BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
5/9/2005 11:10	OSLO BLANK	Metals-Water	Calcium	0.075	mg/L	U	0.075	0.3
5/9/2005 11:10	OSLO BLANK	Metals-Water	Chromium	2	ug/L	U	2	8
5/9/2005 11:10	OSLO BLANK	Metals-Water	Copper	0.5	ug/L	U	0.5	2
5/9/2005 11:10	OSLO BLANK	Metals-Water	Iron	10	ug/L	U	10	40
5/9/2005 11:10	OSLO BLANK	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3
5/9/2005 11:10	OSLO BLANK	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
5/9/2005 11:10	OSLO BLANK	Metals-Water	Nickel	2	ug/L	U	2	8
5/9/2005 11:10	OSLO BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
5/9/2005 11:10	OSLO BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
5/9/2005 11:10	OSLO BLANK	Metals-Water	Zinc	3	ug/L	U	3	12

Appendix 2 (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
5/9/2005 10:45	OSLO	Nutrients-Liquid	Ammonia-N	3	mg N/L	A	0.5	1
5/9/2005 10:45	OSLO	Nutrients-Liquid	Kjeldahl Nitrogen	2.6	mg N/L	A	0.06	0.2
5/9/2005 10:45	OSLO	Nutrients-Liquid	NO2NO3-N	0.033	mg N/L		0.004	0.01
5/9/2005 10:45	OSLO	Nutrients-Liquid	O-Phosphate-P	0.01	mg P/L		0.004	0.01
5/9/2005 10:45	OSLO	Nutrients-Liquid	Total-P	0.02	mg P/L	UJ	0.02	0.06
5/9/2005 11:10	OSLO BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
5/9/2005 11:10	OSLO BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.06	mg N/L	U	0.06	0.2
5/9/2005 11:10	OSLO BLANK	Nutrients-Liquid	NO2NO3-N	0.039	mg N/L		0.004	0.01
5/9/2005 11:10	OSLO BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
5/9/2005 11:10	OSLO BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06

The Bioassay of Indian River County Utilities Department/ South County Reverse Osmosis Potable Water Treatment Plant effluent sampled on May 9, 2005, NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 0 5 0 5 0 9	18 B	19 S	20 1

Remarks

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The Priority Pollutants Analysis of Indian River County Utilities Department/ South County Reverse Osmosis Potable Water Treatment Plant effluent sampled on May 9, 2005, NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 0 5 0 5 0 9	18 X	19 S	20 1

Remarks

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Biological Analyses of Indian River County Utilities Department/ South County Reverse Osmosis Potable Water Treatment Plant effluent sampled on May 9, 2005, NPDES #FL0037940.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 7 9 4 0 11	12 0 5 0 5 0 9	18 S	19 S	20 1

Remarks

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