

Bioassays of

Waterway Estates Wastewater Treatment Facility

Lee County

NPDES #FL0030325

Sampled March 9, 2004

June 2004

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Waterway Estates Wastewater Treatment Facility, 1667 Inlet Drive, Fort Myers, Lee County, Florida, NPDES #FL0030325. Effluent samples for this facility were collected on March 9, 2004.

Introduction

This wastewater treatment facility has a monthly design flow of 1.5 million gallons per day (MGD) and an annual average daily flow limit of 1.25 MGD. Flow during March 2004 averaged 0.901 MGD and flow during the inspection on March 9, 2004, was 0.953 MGD. Treatment includes an extended-aeration/activated-sludge process with nutrient removal using a rotating drum screen, two comminutors, a flow equalization basin, two aeration basins with anoxic zones and clarifier units, an aerobic digestion basin, three denitrification filters, two post aeration basins, two ultraviolet disinfection basins, and a reuse/effluent pumping station (reuse is no longer occurring). The effluent discharges at the six foot contour line of the Caloosahatchee River, a Class III marine surface water, 2,600 feet out bearing ~120 degrees from the canal mouth, near green marker 15 (facility information provided by Albert Walton and Mark Johnson, FDEP, South District).

Methods

Samples were collected from the NPDES sampling point by Albert Walton (FDEP South District, Punta Gorda) 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 toxicity and algal growth potential tests discussed in this report were performed following internal DEP SOP's TA07_01,TA07_02, and TA08_01 through TA08_06. All internal DEP SOP's are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp.

Toxicity Test Results

Tests were performed March 10 - 12, 2004.

Ceriodaphnia dubia 48-hr acute screening bioassay – Not Toxic; LC_{50} >100%, 0% mortality in 100% sample at 48 hours

Cyprinella leedsi 48-hr acute screening bioassay – Not Toxic; LC_{50} >100%, 0% mortality in 100% sample at 48 hours

See Appendix 1 for bioassay bench sheets.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 6.49 mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. The nutrient data suggests that the effluent is nitrogen-limited, and there is no evidence of growth inhibition.

Raschke and Shultz (1987) found that Algal Growth Potential (AGP) values above 5.0 mg dry weight/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. Effluent AGP was above the freshwater "problem" threshold, but it is not clear if this level would be a "problem" for the marine waters of the Caloosahatchee River.

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine and total ammonia were not detected in the bioassay sample in the laboratory. The total residual chlorine detected in the field (0.1 mg/L), however, exceeded the Class III Water Quality Criterion for marine and fresh waters (≤ 0.01 mg/L, 62-302.530(19) F.A.C.).

The organic pollutant atrazine was detected in the effluent at a level above the practical quantitation level (PQL).

Aluminum, iron and zinc were detected in the effluent sample above the PQL. Lead was detected in the effluent sample at levels above the minimum detection limit, but below the PQL. Metals in the effluent sample complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.).

See Table 2 for results of analytes detected in the effluent.

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

Conclusion

The effluent samples collected from this facility on March 9, 2004, did not show acute toxicity to either test species during the 48-hour bioassay tests. Total residual chlorine detected in the field exceeded the Class III Water Quality Criterion for marine and fresh waters (≤ 0.01 mg/L, 62-302.530(19) F.A.C.).

Literature Cited

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

Table 1. *Measured and predicted algal growth potential (AGP) for total soluble nitrogen (TSIN) limitation for the sample of effluent collected at Waterway Estates Wastewater Treatment Facility on March 9, 2004, data in mg dry weight/L*

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Inorganic N:P ratio
Effluent	6.49	2.51 ± 0.502	0.8

Table 2. *Effluent limits, Class III Marine Criteria and chemical data from samples collected from the Waterway Estates Advanced Wastewater Treatment Plant sampled on March 9, 2004*

Waterway Estates Advanced Wastewater Treatment Facility	Class III Marine Stds	Effluent Limits	Effluent
Organic Constituents (µg/L)			
Atrazine	-	-	0.26
Metals (µg/L unless otherwise noted)			
Aluminum	≤ 1500	-	151
Antimony	≤ 4300	-	5 U
Arsenic	≤ 50	-	9 U
Cadmium	≤ 9.3	-	0.025 U
Calcium (mg/L)	-	-	56.2
Chromium-III	-	-	3 U
Copper	≤ 3.7	-	1 U
Iron	≤ 300	-	93
Lead	≤ 8.5	-	0.18 I
Magnesium (mg/L)	-	-	24.1
Mercury	≤ 0.025	-	0.1 U
Nickel	≤ 8.3	-	4 U
Selenium	≤ 71	-	1 U
Silver	≤ 2.3	-	0.02 U
Zinc	≤ 86	-	22
Nutrients (mg/L)			
Ortho-phosphate	-	-	0.082
Total Phosphorus	-	1.0 s	0.14
Ammonia	-	-	0.066
Nitrate+Nitrite	-	-	0.004 U
Total Kjeldahl Nitrogen	-	-	1.4
Organic Nitrogen	-	-	1.33 c
Total Nitrogen	-	6.0 s	1.4 c
General Physical and Chemical Parameters			
Dissolved Oxygen (mg/L)	≥ 4	≥ 4	5.9
pH (S.U.)	6.5-8.5	6.5-8.5	7.4
Conductivity (umhos/cm)	-	-	1186
Temperature (C)	-	-	26.9
Oil and Grease (mg/L)	≤ 5	-	1.6 I
TSS (mg/L)	-	60.0 s	4 U
Hardness (mg/L)	-	-	239.6 c
AGP (mg DryWt/L)	-	-	6.49
Flow (MGD)	-	1.25	-
MBAS (mg/L) e	≤ 0.5	-	0.05 I
Total Residual Chlorine (mg/L) (field)	≤ 0.01	≤ 0.01	0.1
Total Residual Chlorine (mg/L) (lab)	≤ 0.01	≤ 0.01	<0.03 U

Value exceeds Class III Water Quality Criteria

a -Annual average

b - Value is calculated based on hardness.

c - calculated value.

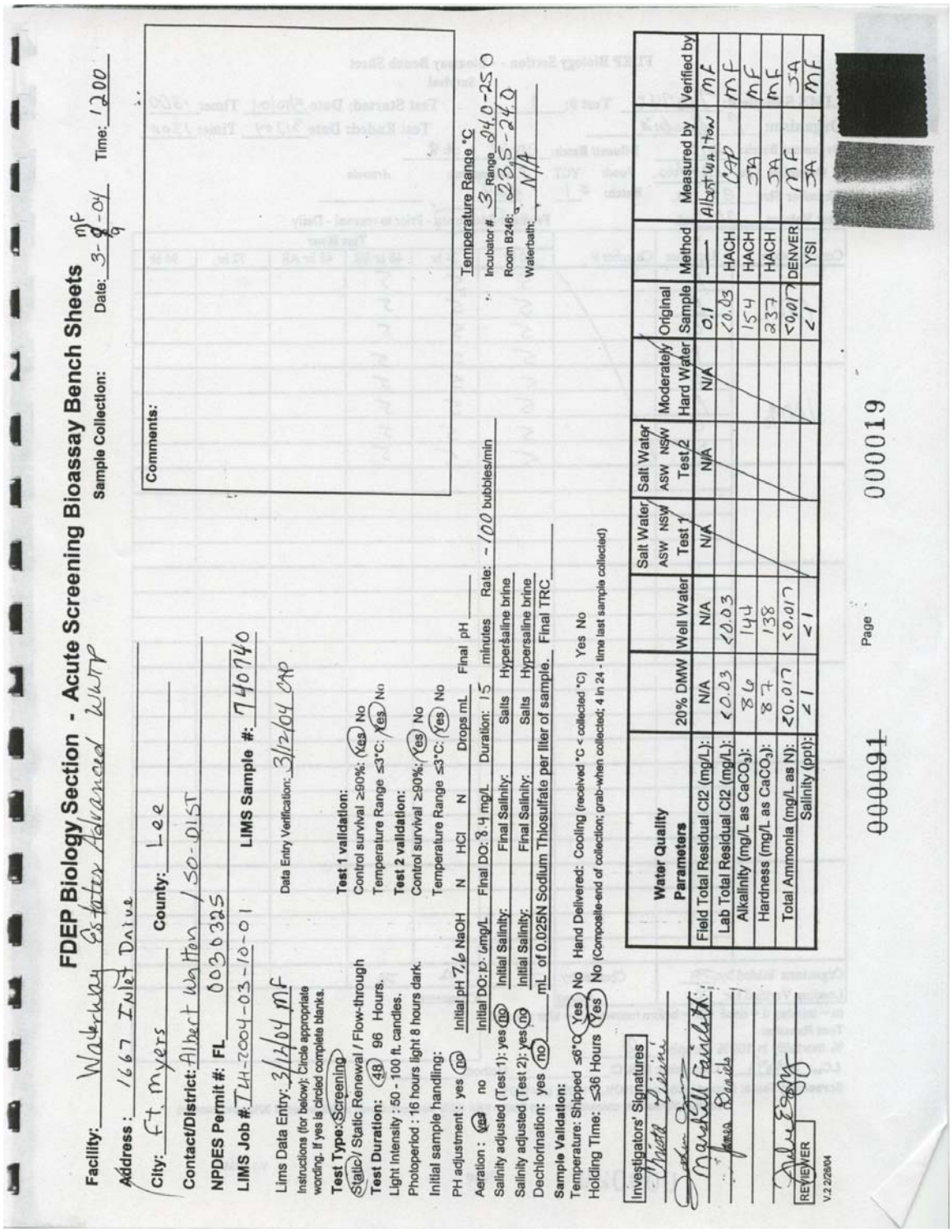
e - MBAS - Methylene blue anionic surfactants.

I - Value reported is < the practical quantitation limit, and ≥ the minimum detection limit.

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

s - Single sample

Appendix 1.
Bioassay Bench Sheets



FDEP Biology Section - Acute Screening Bioassay Bench Sheets

Facility: Waterway Estates Advanced WWTP Sample Collection: Date: 3-9-04 mf Time: 1200

Address: 1667 Inlet Drive

City: Ft. Myers County: Lee

Contact/District: Albert Walton / SO-DIST

NPDES Permit #: FL 0036325

LIMS Job #: TLH-2004-03-10-01 LIMS Sample #: 740740

Lims Data Entry: 3/12/04 mf Data Entry Verification: 3/12/04 CAP

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

Test Type: Screening

(Static) / Static Renewal / Flow-through

Test Duration: (48) 96 Hours.

Light Intensity : 50 - 100 ft. candles.

Photoperiod : 16 hours light 8 hours dark.

Initial sample handling:

PH adjustment : yes (no) Initial pH 7.6 NaOH N HCl N Drops mL ____ Final pH ____

Aeration : (yes) no Initial DO: 8.4 mg/L Final DO: ____mg/L Duration: 15 minutes Rate: ~100 bubbles/min

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

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

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

Sample Validation:

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

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

Comments:

Temperature Range °C

Incubator # 3 Range 24.0-25.0

Room B246: 23.5-24.0

Waterbath: N/A

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	0.1	—	Albatwa Tow	MF
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03				<0.03	HACH	CAP	MF
Alkalinity (mg/L as $CaCO_3$):	86	144				154	HACH	SA	MF
Hardness (mg/L as $CaCO_3$):	87	138				337	HACH	SA	MF
Total Ammonia (mg/L as N):	<0.017	<0.017				<0.017	DENVER	MF	SA
Salinity (ppt):	<1	<1				<1	YSI	SA	MF

Investigators' Signatures

Page 000091 000019

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V.2 2/2/04

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FDEP Biology Section - - Bioassay Bench Sheet

Survival

LIMS Sample #: 740740 Test #: 1 Test Started: Date 3/10/04 Time: 1300

Organism: C. dubia Test Ended: Date 3.12.04 Time: 1300

Organism Batch: #10 Diluent/ Batch: DMW / #8

Organism Age: <24 hrs. Food: YCT *P. subcapitata* *Artemia*

Chamber Size 30 mL Batch: #1 #24

Test Volume 20 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		5	5	5			
	B		5	5	5			
	C		5	5	5			
	D		5	5	5			
100%	A		5	5	5			
	B		5	5	5			
	C		5	5	5			
	D		5	5	5			

Organisms loaded by: JA Checked by: JD JA JD

Loading Verified by: JD (Initials)

Comments:

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

Test Results:

% mortality in 100% sample Ø

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

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

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

000020 Page

V.1 2/23/04

FDEP Biology Section - - Bioassay Bench Sheet
Survival

LIMS Sample #: 740740 Test #: 2
Organism: C. leedsi
Organism Batch: #5 Diluent/ Batch: Well 1 -
Organism Age: 9 days Food: YCT P. subcapitata Artemia
Chamber Size 1000 mL Batch: — — #0194025G
Test Volume 500 mL

Test Started: Date 3/10/04 Time: 1400
Test Ended: Date 3.12.04 Time: 1400

Feeding: Prior to test - Prior to renewal - Daily

Concentration	Replicate	Chamber #	0 hr	24 hr	48 hr BR	48 hr AR	72 hr	96 hr
CTRL	A	B1	5	5	5			
	B	B2	5	5	5			
	C	B3	5	5	5			
	D	B4	5	5	5			
100%	A	B5	5	5	5			
	B	B6	5	5	5			
	C	B7	5	5	5			
	D	B8	5	5	5			
Checked by: (initials)			JA	JA	JD			

Organisms loaded by: JD
Loading Verified by: JA

Comments:

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

Test Results:

% mortality in 100% sample Ø

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

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

000021 Page V.1 2/23/04

Bioassay Parameters

LIMS Sample # : 740740 **Test # :** 1 **of** 2

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

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B			
pH (S.U.)	8.2		8.3			
Temperature °C	24.7		24.7			
Dissolved Oxygen mg/L	8.5		7.2			
Conductivity (µmhos) mmhos	190		187			
(initials) Measured by:	JA		JD			
(initials) Recorded by:	JA		JD			

Comments:

Concentration 100 %	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A		B			
pH (S.U.)	8.0		8.6			
Temperature °C	25.6		24.5			
Dissolved Oxygen mg/L	8.4		7.4			
Conductivity (µmhos) mmhos	1145		1227			
(initials) Measured by:	JA		JD			
(initials) Recorded by:	JA		JD			

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:

000022

V.1 2/24/04

Page

Bioassay Parameters

LIMS Sample # : 740740 **Test # :** 2 **of** 2

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

V.1 2/24/04

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	8.1	8.3	8.4			
Temperature °C	24.0	25.4	25.2			
Dissolved Oxygen mg/L	8.5	7.7	6.9			
Conductivity (µmhos) mmhos	260	265	267			
(initials) Measured by:	JA	JA	JD			
(initials) Recorded by:	JA	JA	JD			

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	A			
pH (S.U.)	8.0	8.3	8.0			
Temperature °C	25.5	24.8	25.0			
Dissolved Oxygen mg/L	8.3	7.6	4.8			
Conductivity (µmhos) mmhos	1150	1150	1172			
(initials) Measured by:	JA	JA	JD			
(initials) Recorded by:	JA	JA	JD			

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:

000023

Appendix 2. Chemical Analyses performed on the effluent from the Waterway Estates Wastewater Treatment Facility sampled on March 9, 2004.

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/9/2004 12:00	DW-030804-1BA	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100	LC50	L		
3/9/2004 12:00	DW-030804-1BA	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100	LC50	L		
3/8/2004 10:48	DW-030804-1G	Bio-AGP/LimNut	Algal Growth Potential	6.49	mg DryWt/L		0.1	0.3
3/8/2004 10:48	DW-030804-1G	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/8/2004 10:48	DW-030804-1G	Bio-Chl-a	Phaeophytin-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.6
3/8/2004 10:48	DW-030804-1G	Bio-Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50		LC50			
3/8/2004 10:48	DW-030804-1G	Bio-Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50		LC50			
3/8/2004 10:48	DW-030804-1G	BNA-Water	1,2,4-Trichlorobenzene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	1,2-Dichlorobenzene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	1,3-Dichlorobenzene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	1,4-Dichlorobenzene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,4,6-Trichlorophenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,4-Dichlorophenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,4-Dimethylphenol	50	ug/L	U	50	200
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	59
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,4-Dinitrotoluene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2,6-Dinitrotoluene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2-Chloronaphthalene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2-Chlorophenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	2-Nitrophenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	U	40	160
3/8/2004 10:48	DW-030804-1G	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	4-Bromophenyl phenyl ether	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	4-Chloro-3-methylphenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	7.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	4-Nitrophenol	15	ug/L	U	15	59
3/8/2004 10:48	DW-030804-1G	BNA-Water	Acenaphthene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Acenaphthylene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Aldrin	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Anthracene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzidine	99	ug/L	U	99	400
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzo(a)anthracene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzo(a)pyrene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzo(b)fluoranthene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzo(g,h,i)perylene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Benzo(k)fluoranthene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Bis(2-chloroethoxy)methane	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Bis(2-chloroethyl)ether	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	59
3/8/2004 10:48	DW-030804-1G	BNA-Water	Butyl benzyl phthalate	5	ug/L	U	5	20
3/8/2004 10:48	DW-030804-1G	BNA-Water	Chrysene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Di-n-butyl phthalate	5	ug/L	U	5	20
3/8/2004 10:48	DW-030804-1G	BNA-Water	Di-n-octyl phthalate	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Dibenzo(a,h)anthracene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Diethyl phthalate	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Dimethyl phthalate	50	ug/L	U	50	200
3/8/2004 10:48	DW-030804-1G	BNA-Water	Endosulfan I	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-1G	BNA-Water	Endosulfan II	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-1G	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Endrin	1.5	ug/L	U	1.5	5.9

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/8/2004 10:48	DW-030804-1G	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-1G	BNA-Water	Fluoranthene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Fluorene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Hexachlorobenzene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Hexachlorobutadiene	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Indeno(1,2,3-cd)pyrene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Isophorone	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	7.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	7.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	N-Nitrosodiphenylamine	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Naphthalene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Nitrobenzene	2	ug/L	U	2	7.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	Pentachlorophenol	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	BNA-Water	Phenanthrene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Phenol	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	Pyrene	0.99	ug/L	U	0.99	4
3/8/2004 10:48	DW-030804-1G	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	5.9
3/8/2004 10:48	DW-030804-1G	GC-Water	Alachlor	0.57	ug/L	U	0.57	2.28
3/8/2004 10:48	DW-030804-1G	GC-Water	Ametryn	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Atrazine	0.26	ug/L		0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Azinphos Methyl	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Bromacil	0.19	ug/L	U	0.19	0.76
3/8/2004 10:48	DW-030804-1G	GC-Water	Butylate	0.19	ug/L	U	0.19	0.76
3/8/2004 10:48	DW-030804-1G	GC-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Chlorpyrifos Methyl	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Diazinon	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Ethion	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Ethoprop	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
3/8/2004 10:48	DW-030804-1G	GC-Water	Fonofos	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Hexazinone	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
3/8/2004 10:48	DW-030804-1G	GC-Water	Metalaxyl	0.24	ug/L	U	0.24	0.96
3/8/2004 10:48	DW-030804-1G	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.92
3/8/2004 10:48	DW-030804-1G	GC-Water	Metribuzin	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
3/8/2004 10:48	DW-030804-1G	GC-Water	Naled	0.76	ug/L	U	0.76	3.04
3/8/2004 10:48	DW-030804-1G	GC-Water	Norflurazon	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Parathion Ethyl	0.14	ug/L	UJ	0.14	0.56
3/8/2004 10:48	DW-030804-1G	GC-Water	Parathion Methyl	0.095	ug/L	U	0.095	0.38
3/8/2004 10:48	DW-030804-1G	GC-Water	Phorate	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	GC-Water	Prometryn	0.14	ug/L	U	0.14	0.56
3/8/2004 10:48	DW-030804-1G	GC-Water	Simazine	0.048	ug/L	U	0.048	0.192
3/8/2004 10:48	DW-030804-1G	Mercury-Water	Mercury	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-1G	Metals-Water	Aluminum	151	ug/L		7	28
3/8/2004 10:48	DW-030804-1G	Metals-Water	Antimony	5	ug/L	U	5	20
3/8/2004 10:48	DW-030804-1G	Metals-Water	Arsenic	9	ug/L	U	9	36
3/8/2004 10:48	DW-030804-1G	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
3/8/2004 10:48	DW-030804-1G	Metals-Water	Calcium	56.2	mg/L		0.05	0.2
3/8/2004 10:48	DW-030804-1G	Metals-Water	Chromium	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-1G	Metals-Water	Copper	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-1G	Metals-Water	Iron	93	ug/L		10	40

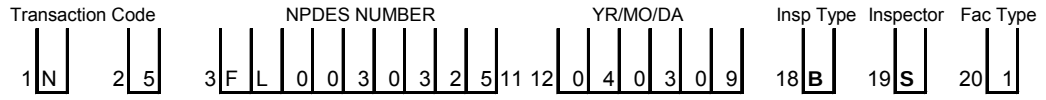
DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/8/2004 10:48	DW-030804-1G	Metals-Water	Lead	0.18	ug/L	I	0.05	0.2
3/8/2004 10:48	DW-030804-1G	Metals-Water	Magnesium	24.1	mg/L		0.02	0.08
3/8/2004 10:48	DW-030804-1G	Metals-Water	Nickel	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-1G	Metals-Water	Selenium	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-1G	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
3/8/2004 10:48	DW-030804-1G	Metals-Water	Zinc	22	ug/L		5	20
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	Ammonia-N	0.066	mg N/L		0.01	0.02
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	N_KJEL_TOT	1.4	mg N/L		0.06	0.2
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	O-Phosphate-P	0.082	mg P/L		0.004	0.01
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	TSS	4	mg/L	U	4	16
3/8/2004 10:48	DW-030804-1G	Nutrients-Liquid	Total-P	0.14	mg P/L		0.02	0.06
3/8/2004 10:48	DW-030804-1G	Overflow	MBAS	0.05	mg/L	I		
3/8/2004 10:48	DW-030804-1G	Overflow	Oil and Grease	1.6	mg/L	I		
3/8/2004 10:48	DW-030804-2	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2,4-Dichlorophenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2,4-Dimethylphenol	51	ug/L	U	51	200
3/8/2004 10:48	DW-030804-2	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	61
3/8/2004 10:48	DW-030804-2	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2-Chlorophenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	2-Nitrophenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	U	40	160
3/8/2004 10:48	DW-030804-2	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	4,4'-DDT	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8.1
3/8/2004 10:48	DW-030804-2	BNA-Water	4-Nitrophenol	15	ug/L	U	15	61
3/8/2004 10:48	DW-030804-2	BNA-Water	Acenaphthene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Acenaphthylene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Anthracene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzidine	100	ug/L	U	100	400
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzo(a)anthracene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	61
3/8/2004 10:48	DW-030804-2	BNA-Water	Butyl benzyl phthalate	5.1	ug/L	U	5.1	20
3/8/2004 10:48	DW-030804-2	BNA-Water	Chrysene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Di-n-butyl phthalate	5.1	ug/L	U	5.1	20
3/8/2004 10:48	DW-030804-2	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Diethyl phthalate	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Dimethyl phthalate	51	ug/L	U	51	200
3/8/2004 10:48	DW-030804-2	BNA-Water	Endosulfan I	4	ug/L	U	4	16

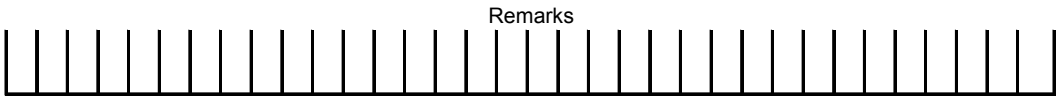
DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/8/2004 10:48	DW-030804-2	BNA-Water	Endosulfan II	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-2	BNA-Water	Endosulfan sulfate	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Endrin	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-2	BNA-Water	Fluoranthene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Fluorene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Hexachlorobutadiene	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Isophorone	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8.1
3/8/2004 10:48	DW-030804-2	BNA-Water	N-Nitrosodimethylamine	2	ug/L	U	2	8.1
3/8/2004 10:48	DW-030804-2	BNA-Water	N-Nitrosodiphenylamine	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Naphthalene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Nitrobenzene	2	ug/L	U	2	8.1
3/8/2004 10:48	DW-030804-2	BNA-Water	Pentachlorophenol	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	BNA-Water	Phenanthrene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Phenol	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	Pyrene	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	BNA-Water	alpha-BHC	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6.1
3/8/2004 10:48	DW-030804-2	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
3/8/2004 10:48	DW-030804-2	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Azinphos Methyl	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
3/8/2004 10:48	DW-030804-2	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
3/8/2004 10:48	DW-030804-2	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Ethoprop	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Fenamiphos	0.2	ug/L	U	0.2	0.8
3/8/2004 10:48	DW-030804-2	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Malathion	0.15	ug/L	U	0.15	0.6
3/8/2004 10:48	DW-030804-2	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
3/8/2004 10:48	DW-030804-2	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
3/8/2004 10:48	DW-030804-2	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
3/8/2004 10:48	DW-030804-2	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
3/8/2004 10:48	DW-030804-2	GC-Water	Norflurazon	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Parathion Ethyl	0.15	ug/L	UJ	0.15	0.6
3/8/2004 10:48	DW-030804-2	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
3/8/2004 10:48	DW-030804-2	GC-Water	Simazine	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	Mercury-Water	Mercury	0.1	ug/L	U	0.1	0.4
3/8/2004 10:48	DW-030804-2	Metals-Water	Aluminum	7	ug/L	U	7	28
3/8/2004 10:48	DW-030804-2	Metals-Water	Antimony	5	ug/L	U	5	20
3/8/2004 10:48	DW-030804-2	Metals-Water	Arsenic	9	ug/L	U	9	36
3/8/2004 10:48	DW-030804-2	Metals-Water	Cadmium	0.025	ug/L	U	0.025	0.1
3/8/2004 10:48	DW-030804-2	Metals-Water	Calcium	0.05	mg/L	U	0.05	0.2

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	PQL
3/8/2004 10:48	DW-030804-2	Metals-Water	Chromium	3	ug/L	U	3	12
3/8/2004 10:48	DW-030804-2	Metals-Water	Copper	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	Metals-Water	Iron	10	ug/L	U	10	40
3/8/2004 10:48	DW-030804-2	Metals-Water	Lead	0.05	ug/L	U	0.05	0.2
3/8/2004 10:48	DW-030804-2	Metals-Water	Magnesium	0.02	mg/L	U	0.02	0.08
3/8/2004 10:48	DW-030804-2	Metals-Water	Nickel	4	ug/L	U	4	16
3/8/2004 10:48	DW-030804-2	Metals-Water	Selenium	1	ug/L	U	1	4
3/8/2004 10:48	DW-030804-2	Metals-Water	Silver	0.02	ug/L	U	0.02	0.08
3/8/2004 10:48	DW-030804-2	Metals-Water	Zinc	5	ug/L	U	5	20
3/8/2004 10:48	DW-030804-2	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
3/8/2004 10:48	DW-030804-2	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
3/8/2004 10:48	DW-030804-2	Nutrients-Liquid	N_KJEL_TOT	0.06	mg N/L	U	0.06	0.2
3/8/2004 10:48	DW-030804-2	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
3/8/2004 10:48	DW-030804-2	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
3/8/2004 10:48	DW-030804-2	Overflow	MBAS	0.039	mg/L	U		
3/8/2004 10:48	DW-030804-2	Overflow	Oil and Grease	2.3	mg/L	I		

The Bioassay of the Waterway Estates Wastewater Treatment Facility effluent sampled on 9 March 2004, NPDES #FL0030325.

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





The Priority Pollutants Analysis for Bioassay of the Waterway Estates Wastewater Treatment Facility effluent sampled on 9 March, 2004, NPDES #FL0030325.

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