

Bioassays of

Mandarin Water Reclamation Facility

Duval County

NPDES #FL0023493

Sampled July 23 and 24, 2006

October 2006

Biology Section
Bureau of Laboratories
Division of Resource Assessment and Management

Quality Manual No. 870346G
NELAC Certification No. E31780

Mandarin Water Reclamation Facility, 10828 Hampton Road, Jacksonville, Duval County, Florida, NPDES #FL0023493. Effluent samples for this facility were collected on July 23 and 24, 2006.

Introduction

The Mandarin Water Reclamation Facility is an advanced secondary domestic wastewater treatment plant. The facility has a design flow of 7.5 million gallons per day. The facility had an average annual daily flow (AADF) of 6.06 MGD from August 2005 through July 2006. The facility consists of two automatic influent screens with bypass capability for manual screening, four vortex grit removal units, a Parshall flume influent flow meter, four fine-bubble diffused air activated-sludge trains with associated blowers, internal recycle, and return activated-sludge using the Bionutre process, two peripheral feed clarifiers, twelve up-flow (continuous backwash) filter cells with four units per cell, and an effluent flow meter. There are two parallel basic-level ultraviolet (UV) disinfection channels for in-plant reuse water and the surface water discharge. The facility also has a high-level UV disinfection channel, a flow meter, and a hypochlorination (including related pumps, piping, and appurtenances) unit for the public access reuse reclaimed water. Additionally, the facility includes a bio-filter odor control system, rotary drum sludge thickeners, sludge holding and storage tanks, and a sludge truck pumping and loading station.

The final treated effluent is either discharged at Outfall D-001 to the Class III Marine waters of the St. Johns River or reused via spray irrigation to the public reuse system (after high-level disinfection). Outfall D-001 is 359.7 m (1,180 feet) in length, discharges at a depth of 3.04 m (10 feet), and is located approximately at latitude 30º 11' 08" N and longitude 81º 38" 29" W. The reuse system (R-001) currently discharges to two reuse sites (Deerwood Golf Course and Deer Creek Golf Course). Domestic residuals are transported to the Buckman Biosolids Disposal Facility (BDF) for final treatment and disposal.

There are no outstanding Administrative Orders or Consent Orders for this facility. The facility has no mixing zones. A review of Discharge Monitoring Report data for January 2005 through May 2006 showed a single excursion of fecal coliforms from the permitted limits in August 2005. Semiannual acute toxicity tests from September 2001 through August 2005 did not show acute toxicity to either test species (*Americamysis bahia* and *Menidia beryllina*). (Facility information provided by Chet McGhee of FDEP Northeast District).

Methods

Samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Tom Kallemeyn and Chet McGhee (FDEP Northeast District) following DEP-SOP-001/01 FS 2400 Wastewater Sampling. All DEP SOPs are available on the web at: http://www.floridadep.org/labs/qa/sops.htm.

See Appendix A for the completed chain of custody form.

The 96-hour acute screening toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_03, TA07_04, and TA08_01 through TA08_09. All internal DEP SOPs are available on the web at: http://www.floridadep.org/labs/cgi-bin/sop/biosop.asp. Bioassays were performed on each of four samples which were collected over a 24-hour period (one sample every six hours).

The bioassay samples used in these tests were salinity adjusted from an apparent salinity of approximately 0.5 parts per thousand (ppth) to approximately 20 ppth using artificial sea salts (40 Fathoms® Bioassay Laboratory Grade Marine Mix) per permit requirements. The salt control used for this test was prepared by salting well water with artificial sea salts to an approximate salinity of 20 ppth. The purpose of the salt control was to confirm that there was no effect of adding artificial sea salts to the sample. There was no mortality in the salt controls for either test species.

Due to the significant decrease in the dissolved oxygen (DO) concentration in each of the *A. bahia* bioassay tests at 24 hours, aeration at the rate of approximately 100 bubbles per minute was initiated in

the controls and 100% sample concentrations in each *A. bahia* test and was continued for the duration of the tests.

The salinity of an aliquot of the AGP sample was increased from approximately 0.5 ppth to 7 ppth to meet the minimum salinity requirements of the marine test species.

Toxicity Test Results

Tests were performed July 25 - 29, 2006.

Americamysis bahia 96-hour acute screening bioassay 1 –	LC_{50} > 100%, 5% mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute screening bioassay 1 –	LC_{50} > 100%, 0% mortality in 100% sample at 96 hours
Americamysis bahia 96-hour acute screening bioassay 2 –	LC_{50} > 100%, 0% mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute screening bioassay 2 –	LC_{50} > 100%, 0% mortality in 100% sample at 96 hours
Americamysis bahia 96-hour acute screening bioassay 3 –	LC_{50} > 100%, 0% mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute screening bioassay 3 –	LC_{50} > 100%, 10% mortality in 100% sample at 96 hours
Americamysis bahia 96-hour acute screening bioassay 4 –	LC_{50} > 100%, 5% mortality in 100% sample at 96 hours
Menidia beryllina 96-hour acute screening bioassay 4 –	LC_{50} > 100%, 0% mortality in 100% sample at 96 hours

The bioassay samples were not acutely toxic to the test organisms.

See Appendix B for bioassay bench sheets. See Appendix C for results of the last 20 standard reference toxicant (SRT) tests and the bench sheets and statistical analyses of the SRT tests that correspond to these facility tests. See Appendix D for test organism receipts.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 86.4 mg dry wt/L of the unicellular green alga, *Pseudo-kirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. 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 analytical chemistry suggests that the effluent is nitrogen limited. The predicted AGP based on inorganic nitrogen concentrations was 77.41 (±20%) mg dry wt/L (Table 1; Miller et al. 1978).

The effluent salinity-adjusted Algal Growth Potential (AGP) was 35.5 mg dry wt/L of the saltwater species, *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).

See Table 1 for AGP results.

Chemistry Results

Total residual chlorine was detected in bioassay sample # 3 at a concentration of 0.03 mg/L but was not detected in the other bioassay samples. This detection was thought to be due to interferences within the sample rather than residual chlorine. Total ammonia was not detected in any of the bioassay samples in the laboratory. The total ammonia concentration in the sample collected and preserved for chemical analysis was 0.037 mg/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.

Iron and zinc were detected in the effluent at levels that comply with Class III marine water quality criteria (62-302.530, F.A.C.). Aluminum, copper, lead, and nickel were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

See Table 2 for results of analytes detected in the effluent, and corresponding limits. See Appendix E for a complete list of chemical analyses performed.

Conclusion

The effluent samples collected from Outfall D-001 for this facility on July 23 and 24, 2006, were not acutely toxic to either test species during the 96-hour acute screen bioassays. The effluent AGP result exceeded the "problem" threshold for marine receiving waters. Effluent water quality samples did not exceed any applicable water quality standards or violate any permit conditions.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

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; mg dry weight/L) of the freshwater species Psuedokirchneriella subcapitata *for total nitrogen (TN) and total soluble inorganic nitrogen (TSIN) limitation, the AGP (salinity adjusted) of the saltwater species* Dunaliella tertiolecta, *and ratios of nitrogen to phosphorus for samples collected from Mandarin Water Reclamation Facility on July 24, 2006.*

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	AGP (salinity adjusted)	Inorganic N:P ratio	Total N:P ratio
Effluent Samples	86.4	77.41 ± 15.482	107.92 ± 21.584	35.5	1.02	1.29

Table 2. Effluent limits, Class III Marine Criteria, and chemical and microbiological data for samples collected from the Mandarin Water Reclamation Facility on July 24, 2006.

Mandarin Water Reclamation Facility NPDES# FL0023493	Class III Marine Standards	Effluent Limits	Effluent Sample
Organic Constituents (µg/L)			
None Detected	-	-	-
Metals (µg/L unless otherwise noted)			
Aluminum	≤ 1,500	-	15 I
Arsenic	≤ 50	-	0.5 U
Cadmium	≤ 9.3	-	0.05 U
Calcium (mg/L)	-	-	71.2
Chromium-III	-	-	0.3 U
Copper	≤ 3.7	-	0.7 I
Iron	≤ 300	-	33
Lead	≤ 8.5	-	0.27 I
Magnesium (mg/L)	-	-	34.3
Nickel	≤ 8.3	-	1.6 I
Selenium	≤ 71	-	0.5 U
Silver	≤ 2.3	-	0.025 U
Zinc	≤ 86	-	45
Nutrients (mg/L)			
Ortho-phosphate	-	Report	2
Total Phosphorus	-	Report	2.2
Ammonia	-	Report	0.037
Unionized Ammonia	-	-	< 0.02 c
Nitrate+Nitrite	-	Report	2
Total Kjeldahl Nitrogen	-	Report	0.84
Organic Nitrogen	-	Report	0.8 c
Total Nitrogen	-	≤ 10.68 s	2.84 c
General Physical and Chemical Parameters			
Alpha, Total (pCi/L)	≤ 15	-	2.4 U
Alpha-Counting Error (pCi/L)	-	-	1.3
Radium 226 (pCi/L)	-	-	0.2 U
Radium 226-Counting Error (pCi/L)	-	-	0.1
Radium 228 (pCi/L)	-	-	0.9 U
Radium 228-Counting Error (pCi/L)	-	-	0.5
Radium 226 + Radium 228 (pCi/L)	≤ 5	-	0.9 U
TSS (mg/L)	-	≤ 60 s	4 U
Dissolved Oxygen (mg/L)	≥ 4	≥ 5	7.3
pH (S.U.)	6.5 - 8.5	6.0 - 8.5	7.36
Conductivity (umhos/cm)	-	-	1,128
Temperature (C)	-	-	30.8
CBOD (mg/L)	-	≤ 13.34 s	-
Flow (MGD)	-	≤ 7.5 a	6.0632 a
Hardness (mg/L)	-	-	319 c
Microbiology (# counts/100ml)			
Fecal Coliforms *	≤ 800 s	≤ 800 s	33 B

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

a - Annual average

c - Calculated value

s - Single sample

B - Results based on colony counts outside the accepatable range

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

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

* - Analyses conducted at the DEP Northeast District Lab

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2006-07-24-~~88~~ 50
~~PCS Phosphate~~ MANDARIN WWTP
NO B or C groups
Customer: NE-DIST
Project ID: FYI5
PMAS: 1163

Requester: Shannan Bogdanov
Collected By: Tom Kallemeyn / Chet McGee
Sampling Agency: DEP NED

Field Report Prepared By:
Send Final Report To Melissa Long

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	MANDARIN WWTP Final Effluent	☐ Comp ☒ Grab	Date 7-23-06 Time 1810	Date Time	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 7.3	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C) 30.78 pH 7.36	Sample Depth ☐ m ☐ ft 1128	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " Longitude o ' "	Comments 1800 Tox grab			

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	MANDARIN WWTP Final Effluent	☐ Comp ☒ Grab	Date 7-24-06 Time 0001	Date Time	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 7.25	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C) 30.52 pH 7.39	Sample Depth ☐ m ☐ ft 1114	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " Longitude o ' "	Comments 0001 Tox grab			

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	MANDARIN WWTP Final Effluent	☐ Comp ☒ Grab	Date 7-24-06 Time 0610	Date Time	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C) 30.51 pH 7.08	Sample Depth ☐ m ☐ ft 1106	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " Longitude o ' "	Comments 0600 Tox grab + Sample			

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	MANDARIN WWTP Final Effluent	☐ Comp ☒ Grab	Date 7-24-06 Time	Date Time	A
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L) 8.27	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc) Temp (C) 30.69 pH 7.36	Sample Depth ☐ m ☐ ft 1097	☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number	
	Latitude o ' " Longitude o ' "	Comments 1800 Tox grab 9Bioassay 30 1012 7.25.06			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Tom Kallemeyn	7-24-06	DHL	Tom E	7/25/06 9:10				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2006-07-24-~~139~~ 50
PCS Phosphate

Event ID *

Customer: NE-DIST
Project ID: FYI5
PMAS: 1163

Requester: Shannan Bogdanov
Collected By: Tom Kallemeyn / Chet McGee
Sampling Agency: DEP NED

Field Report Prepared By:
Send Final Report To Melissa Long

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Equipment Blank	☐ Comp ☒ Grab Date 7-24-06 Time Eastern Central	Date Time Eastern Central	D
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc): DI	Temp (C): 24.48 pH: 7.53	Sample Depth ☐ m ☐ ft: 2 ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments: MANDARIN	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C): pH:	Sample Depth ☐ m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C): pH:	Sample Depth ☐ m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (Include type e.g. Salt, Fresh, etc):	Temp (C): pH:	Sample Depth ☐ m ☐ ft ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude o ' "	Longitude o ' "	Comments	

Relinquished By	Date/Time	Shipping Method	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
Tom Kallemeyn	7-24-06	DHC	Tom K	7/25/06 9:10				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

FDEP Biology Section - Acute Screen 4/24 Bioassay Bench Sheets

Facility: Mandarin Water Reclamation Facility (WRF)
Address: 10828 Hampton Road
City: Jacksonville County: Duval
Contact/District: Chet McGhee / Northeast District
NPDES Permit #: FL 0023493
LIMS Job # TLH-20060-07-25-82 LIMS Sample #: 8Se 938891
Lims Data Entry: 7-31-06 SF Data Entry Verification: MK 8-2-06

Sample Collection: Date: 7-23-06 Time: 1810
Hold Time Start: Date: 7-24-06 Time: 1200
Sample: 1 of 4

Comments:
Sample salinity adjusted to 20 parts per thousand per permit requirements. Salt control prepared by salting well water with artificial sea salts to match approximate salinity of test sample.
A.balua test aerated at ~100 bubbles/minute due to decreased DO. SP (initiated at 24 hours and continued for duration of test)

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

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.

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

Initial sample handling:
PH adjustment : yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration (yes) no Initial DO: 10.1 mg/L Final DO: 8.0 mg/L Duration: 30 minutes Rate: ~100 bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 0.52 Final Salinity: ~20 (Salts) Hypersaline brine
Salinity adjusted (Test 2): (yes) no Initial Salinity: 0.52 Final Salinity: ~20 (Salts) Hypersaline brine
Dechlorination: yes (no) ____mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: ____

Sample Validation:
Temperature: Shipped ≤8°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)

Temperature Range °C
Incubator # 2 Range 24.0 - 26.3 A.bahia only
Room B246: 24.9 - 25.9
Waterbath: 25.3 - 26.8 A.bahia only

Investigators' Signatures
Sarah Pritchard
Eric Sarff
Brad Albaugh
Marshall Faircloth
Yves Duval
Mindy Weller
REVIEWER

Water Quality Parameters	20% DMW	Moderately Hard Water/ Well Water	Salt Water (ASW) NSW Test 1	Salt Water (ASW) NSW Test 2	Other: Salt Control	Original	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	N/A	N/A	N/A	N/A	N/A	not measured		—	SP
Lab Total Residual Cl2 (mg/L):			<0.03	<0.03	<0.03	<0.03	HACH	Eric/SP	BA
Alkalinity (mg/L as $CaCO_3$):			186	186	204	156	HACH	BA	SP
Hardness (mg/L as $CaCO_3$):			–	–	–	306	HACH	BA	SP
Total Ammonia (mg/L as N):			<0.034	<0.034	(A) ~~Tancy 7-24-06~~	<0.017	DENVER	SP	BA
Salinity (ppt):			19.89	19.84	~20	0.52	YSI / Mettler	BA/SP	Eric

(A) Salt control ammonia value <0.034 SP

V 2.0 4/12/05

Appendix B. (continued)

938891

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: ~~898891~~ Test #: 1 Test Started: Date 7-25-06 Time: 13:00

Organism: A.bahia SOP #: TA 07_03 Test Ended: Date 7-29-06 Time: 1225

Organism Batch: 23-06 Diluent/ Batch: ASW 114-06

Organism Age: 5 days Food: YCT P. subcapitata Artemia

Chamber Size: 1000 mL Batch: - - GSL-530-90

Test Volume: ~~500~~ 400 (A) 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	B13	5	5	5	5	5	5
	B	B14	5	5	5	5	5	5
	C	B15	5	5	5	5	5	5
	D	B16	5	5	5	5	5	5
Salt CTRL	A	B17	5	5	5	5	5	5
	B	B18	5	5	5	5	5	5
	C	B19	5	5	5	5	5	5
	D	B20	5	5	5	5	5	5
100%	A	B21	5	5	5	5	5	5
	B	B22	5	5	5	5	5	5
	C	B23	5	5	5	5	5	5
	D	B24	5	5	4 m	4	4	4
Organisms loaded by: TO		Checked by:		DD	DD	DD	DP	SP
Loading Verified by: GW								

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

Comments:
(A) sample volume reduced because bioassay jugs were not full (Sample Containers)
Test 7-25-06 SP

Test Results:

% mortality in 100% sample: 5

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 B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938891 Test #: 2 Test Started: Date 7-25-06 Time: 13:00
Organism: M. beryllina SOP #: TA 07_04 Test Ended: Date 7-29-06 Time: 1335
Organism Batch: 23-06 Diluent/ Batch: ASW, 14-06
Organism Age: 12 days Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL Batch: — — GSL-536-90
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	B1	5	5	5	5	5	5
	B	B2	5	5	5	5	5	5
	C	B3	5	5	5	5	5	5
	D	B4	5	5	5	5	5	5
Salt CTRL	A	B5	5	5	5	5	5	5
	B	B6	5	5	5	5	5	5
	C	B7	5	5	5	5	5	5
	D	~~B12~~ B8	5	5	5	5	5	5
100%	A	B9	5	5	5	5	5	5
	B	B10	5	5	5	5	5	5
	C	B11	5	5	5	5	5	5
	D	B12	5	5	5	5	5	5
Organisms loaded by: JH		Checked by: [redacted]	SP	SP	JH	SP	SP	
Loading Verified by: CW								

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

Comments:

Test Results:
% mortality in 100% sample: 0
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).

V 2.1 11/01/2005

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938891 Test #: 1 of 2

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

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.)	8.4	8.2	8.2	8.3	8.2	8.3
Temperature °C	24.8	24.6	24.5	24.3	24.4 BA2	24.1
Dissolved Oxygen mg/L	6.6	4.9	5.9	6.3	6.4	7.7 (A)
Conductivity µmhos (mmhos)	31.5	32.5	31.1	31.3	32.0	32.3
(initials) Measured by:	BA	BA	BA	BA	BA	SP
(initials) Recorded by:	BA	BA	BA	BA	BA	SP

Comments: (A) DO. 6.8 salinity knob on wrong setting SP

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.)	8.5	8.3	8.2	8.4	8.3	8.2
Temperature °C	25.2	24.6	24.6	24.4	24.4	24.5
Dissolved Oxygen mg/L	6.7	5.0	5.8	6.5	6.6	6.7
Conductivity µmhos (mmhos)	31.9	32.8	32.3	31.9	32.9	32.5
(initials) Measured by:	BA	BA	BA	BA	BA	SP
(initials) Recorded by:	BA	BA	BA	BA	BA	SP

Comments:

Concentration 100%	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	BA	B	C	C	D	A
pH (S.U.)	8.1	8.3	8.2	8.4	8.3	8.3
Temperature °C	25.5	24.4	24.5	25.0	24.3	24.6
Dissolved Oxygen mg/L	6.7	5.0	5.8	6.2	6.5	6.7
Conductivity µmhos (mmhos)	32.3	33.9	34.1	32.7	33.3	33.4
(initials) Measured by:	BA	BA	BA	BA	BA	SP
(initials) Recorded by:	BA	BA	BA	BA	BA	SP

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:

000024

V 2.0 2/24/04

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938891 Test #: 2 of 2

TEST SOP #: TA07_04 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* (*Menidia beryllina*) Other:_____

Concentration CTRL	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B1	C	C	D	A
pH (S.U.)	8.4	8.3	8.3	8.3	8.2	8.2
Temperature °C	24.9	24.5	24.9	~~25.0~~	24.3	25.4
Dissolved Oxygen mg/L	6.6	6.2	5.8	6.2	6.4	6.1
Conductivity µmhos (mmhos)	30.5	31.7	31.4	~~32.7~~	32.0	33.0
(initials) Measured by:	BA	BA	BA	BA	BA	SP
(initials) Recorded by:	BA	BA	BA	BA	BA	SP

Comments: (A) Transcription err. 29.4°/31.1 ms/cm BA

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.)	8.5	8.4	8.3	8.5	8.3	8.3
Temperature °C	25.2	24.6	24.2	24.3	24.4	24.9
Dissolved Oxygen mg/L	6.6	6.2	5.8	6.3	6.2	5.9
Conductivity µmhos (mmhos)	31.7	32.7	32.4	31.8	33.2	33.5
(initials) Measured by:	BA	BA	BA	BA	BA	SP/JD
(initials) Recorded by:	BA	BA	BA	BA	BA	SP/JD

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.)	8.6	8.5	8.4	8.5	8.4	8.3
Temperature °C	25.4	24.4	24.3	24.4	24.6	25.0
Dissolved Oxygen mg/L	6.7	6.1	5.9	6.2	6.0	6.0
Conductivity µmhos (mmhos)	32.1	32.9	32.7	32.6	33.2	33.5
(initials) Measured by:	BA	BA	BA	BA	BA	SP
(initials) Recorded by:	BA	BA	BA	BA	BA	SP

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 2.0 2/24/04

FDEP Biology Section - Acute Screen 4/24 Bioassay Bench Sheets

Facility: Mandarin WRF
Address: 10888 Hampton Road
City: Jacksonville County: Duval
Contact/District: Chet McGhee / Northeast District
NPDES Permit #: FL 0023493
LIMS Job #: TLH 2006-07-25-82 LIMS Sample #: 938890
Lims Data Entry: 7-31-06 SP Data Entry Verification: MF 8-2-06

Sample Collection: Date: 7-24-06 Time: 0001
Hold Time Start: Date: 7-24-06 Time: 1200
Sample: 2 of 4

Comments:
Sample Salinity adjusted to 20 parts per thousand per permit requirements. Salt control prepared by salting well water with artificial sea salts to match approximate salinity of test sample.

A. balua test ~~ate~~ aerated at ~ 100 bubbles/minute due to decreased D.O. SP (initiated at 24 hours and continued for duration of test)

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

Test 1 validation:
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No
Test 1: SOP TA 07_03

Test 2 validation:
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No
Test 2: SOP TA 07_04

Initial sample handling:
PH adjustment: yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration (yes) no Initial DO: 11.0 mg/L Final DO: 8.1 mg/L Duration: 30 minutes Rate: ~ 100 bubbles/min
Salinity adjusted (Test 1) (yes) no Initial Salinity: 0.50 Final Salinity: ~20 (Salts) Hypersaline brine
Salinity adjusted (Test 2): (yes) no Initial Salinity: 0.50 Final Salinity: ~20 (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)

Investigators' Signatures
Leigh Pritchard
Erin Cupp
Brad Alexander
Mandy Faircloth
Jose Davis
Mazell Wallendorf
REVIEWER

Water Quality Parameters	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	not measured		—	SP
Lab Total Residual Cl2 (mg/L):	<0.03	HACH	Erin/SP	BA
Alkalinity (mg/L as $CaCO_3$):	155	HACH	BA	SP
Hardness (mg/L as $CaCO_3$):	309	HACH	BA	SP
Total Ammonia (mg/L as N):	<0.017	DENVER	SP	BA
Salinity (ppt):	0.5	YSI / Mettler	SP	BA

V 2.0 4/12/05

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Appendix B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 930890 Test #: 1 Test Started: Date 7-25-06 Time: 13:00
Organism: A. bahia SOP #: TA 07_03 Test Ended: Date 7-29-06 Time: 1235
Organism Batch: 23-06 Diluent/ Batch: ASW / 14-06
Organism Age: 5 days Food: YCT — P. subcapitata — Artemia GSL-536-90
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	C1	5	5	5	5	5	5
	B	C2	5	5	5	5	5	5
	C	C3	5	5	5	5	5	5
	D	C4	5	5	5	5	5	5
Salt CTRL	A	C5	5	5	5	5	5	5
	B	C6	5	5	5	5	5	5
	C	C7	5	5	5	5	5	5
	D	C8	5	5	5	5	5	5
100%	A	C9	5	5	5	5	5	5
	B	C10	5	5	5	5	5	5
	C	C11	5	5	5	5	5	5
	D	C12	5	5	5	5	5	5
Organisms loaded by: JD		Checked by:		JD	JD	JD	JD	SP
Loading Verified by: [illegible]								

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

Comments:

Test Results:
% mortality in 100% sample: 0
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 B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938890 Test #: 2 Test Started: Date 7-25-06 Time: 13:00
Organism: ~~A. bahia~~ M. beryllina SOP #: TA 07_04 Test Ended: Date 7-29-06 Time: 1340
Organism Batch: 23-06 Diluent/ Batch: ASW 1 14-06
Organism Age: 12 days Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL Batch: — — GSL-536-90
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 D13 SP	D13	5	5	5	5	5	5
	B	D14	5	5	5	5	5	5
	C	D15	5	5	5	5	5	5
	D	D16	5	5	5	5	5	5
Salt CTRL	A	D17	5	5	5	5	5	5
	B	D18	5	5	5	5	5	5
	C	D19	5	5	5	5	5	5
	D	D20	5	5	5	5	5	5
100%	A	D21	5	5	5	5	5	5
	B	D22	5	5	5	5	5	5
	C	D23	5	5	5	5	5	5
	D ~~24~~ SP	D24	5	5	5	5	5	5
Organisms loaded by: SP		Checked by: [redacted]	SP	SP	SP	SP	SP	
Loading Verified by: EW								

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

Comments:

Test Results:
% mortality in 100% sample: 0
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 B. (continued)

FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 238880 Test #: 1 of 2

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

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.)	8.4	8.1	8.1	8.3	8.2	8.2
Temperature °C	24.9	24.3	24.5	24.9	24.0	24.0
Dissolved Oxygen mg/L	6.6	4.7	5.9	6.5	6.4	6.0
Conductivity µmhos mmhos	30.5	31.9	31.5	30.9	31.9	32.0
(initials) Measured by:	BA	BA	BA	BA	BA	CS
(initials) Recorded by:	BA	BA	BA	BA	BA	CS

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.)	8.5	8.3	8.2	8.5	8.3	8.3
Temperature °C	25.1	24.3 24.3	24.6	24.4	24.2	24.9
Dissolved Oxygen mg/L	6.7	4.8	5.9	6.4	6.5	6.5
Conductivity µmhos mmhos	31.7	32.8	32.5	31.9	32.8	33.3
(initials) Measured by:	BA	BA	BA	BA	BA	CS
(initials) Recorded by:	BA	BA	BA	BA	BA	CS

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.)	8.6	8.4	8.3	8.5	8.4	8.3
Temperature °C	25.4	24.0	24.7	25.0	24.5	24.0
Dissolved Oxygen mg/L	6.6	5.1	6.0	6.4	6.5	6.6
Conductivity µmhos mmhos	31.7	32.4	32.7	32.0	32.6	32.8
(initials) Measured by:	BA	BA	BA	BA	BA	CS
(initials) Recorded by:	BA	BA	BA	BA	BA	CS

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:

000029

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938890 **Test #:** 2 of 2

TEST SOP #: TA07_04 **Test Species:** *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* (*Menidia beryllina*) Other:_____

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.)	8.4	8.3	8.3	8.3	8.3	8.2
Temperature °C	24.9	24.5	24.5	24.4	24.5	25.0
Dissolved Oxygen mg/L	6.7	6.3	6.0	6.5	6.5	6.3
Conductivity µmhos (mmhos)	30.2	32.1	32.0	31.0	32.2	32.3
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.5	8.4	8.3	8.5	8.3	8.3
Temperature °C	~~24.9~~ 25.2	24.5	24.9	24.2	24.3	~~25.2~~ 25.2 (B)
Dissolved Oxygen mg/L	6.8	6.3	6.0	6.5	6.3	
Conductivity µmhos (mmhos)	~~30.2~~ 31.6 (A)	32.8	32.6	31.9	33.0	33.1
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

Comments: (A) 0 hr' parameters Temp & cond. Recorded from Ctrl BA
(B) DO 6.1 BA

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.)	8.6	8.5	8.4	8.5	8.4	8.3
Temperature °C	25.2	24.8	24.6	24.9	24.2	25.0
Dissolved Oxygen mg/L	6.7	6.3	6.0	6.5	6.4	6.1
Conductivity µmhos (mmhos)	32.0	32.8	32.4	31.9	32.6	33.4
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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:

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FDEP Biology Section - Acute Screen 4/24 Bioassay Bench Sheets

Facility: Mandarin WRF
Address: 10828 Hampton Road
City: Jacksonville County: Duval
Contact/District: Chet McGhee/ Northeast District
NPDES Permit #: FL 0023493
LIMS Job #: TLH-2006-07-25-82 LIMS Sample #: 936117
Lims Data Entry: 7-31-06 SP Data Entry Verification: MF 8-2-06

Sample Collection: Date: 7-24-06 Time: 0610
Hold Time Start: Date: 7-24-06 Time: 1200
Sample: 3 of 4

Comments:
Sample salinity adjusted to 20 parts per thousand per permit requirements. Salt control prepared by salting well water with artificial sea salts to match approximate salinity of test sample.
A. bahia test aerated at ~100 bubbles/minute due to decreased D.O. SP (initiated at 24 hours and continued for duration of test).

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

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

Test 2 validation:
Control survival ≥90%: (Yes) No — straymark MF 8/2/06
Temperature Range ≤3°C: (Yes) No
Test 2: SOP TA 07_ 04

Initial sample handling:
PH adjustment: yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration: yes (no) Initial DO: ____mg/L Final DO: ____mg/L Duration: ____minutes Rate: ~____bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 0.49 Final Salinity: ~20 (Salts) Hypersaline brine
Salinity adjusted (Test 2): (yes) no Initial Salinity: 0.49 Final Salinity: ~20 (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)

Investigators' Signatures
Sarah Fairchild
Brad Alden
Marshall Faircloth
James Daniel

REVIEWER

Water Quality Parameters	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	not measured	—		SP
Lab Total Residual Cl2 (mg/L):	~~<0.05~~ (A)	HACH	aw/s	DA
Alkalinity (mg/L as $CaCO_3$):	158	HACH	BA	SP
Hardness (mg/L as $CaCO_3$):	304	HACH	BA	SP
Total Ammonia (mg/L as N):	<0.017	DENVER	SP	BA
Salinity (ppt):	0.49	YSI / Mettler	SP	BA

(A) total residual chlorine 0.03 suspect sample interference SP

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Appendix B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938117 Test #: 1 Test Started: Date 7-25-06 Time: 13:00
Organism: A. bahia SOP #: TA 07_ 03 Test Ended: Date 7-29-06 Time: 1235
Organism Batch: 23-06 Diluent/ Batch: ASW / 14-06
Organism Age: 5 days Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL Batch: - - GSL-530-90
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	D1	5	5	5	5	5	5
	B	D2	5	5	5	5	5	5
	C	D3	5	5	5	5	5	5
	D	D4	5	5	5	5	5	5
Salt CTRL	A	D5	5	5	5	5	5	5
	B	D6	5	5	5	5	5	5
	C	D7	5	5	5	5	5	5
	D	D8	5	5	5	5	5	5
100%	A	D9	5	5	5	5	5	5
	B	D10	5	5	5	5	5	5
	C	D11	5	5	5	5	5	5
	D	D12	5	5	5	5	5	5
Organisms loaded by: JD		Checked by:		JD	JD	JD	JD	JD
Loading Verified by: G.J								

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

Comments:

Test Results:
% mortality in 100% sample: 0
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 B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938117 Test #: 2 Test Started: Date 7-25-06 Time: 13:00
Organism: M. beryllina SOP #: TA 07_ 04 Test Ended: Date 7-29-06 Time: 1350
Organism Batch: 23-06 Diluent/ Batch: ASW 1.14-06
Organism Age: 12 days Food: YCT P. subcapitata Artemia
Chamber Size: 1000 mL Batch: — — GSL-536-90
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	A1	5	4 ID	4	4	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
Salt CTRL	A	A5	5	5	5	5	5	5
	B	A6	5	5	5	5	5	5
	C	A7	5	5	5	5	5	5
	D	A8	5	5	5	5	5	5
100%	A	A9	5	4 ID	4	4	4	4
	B	A10	5	5	5	5	5	5
	C	A11	5	5	5	5	5	5
	D	A12	5	5	5	5	4 ID	4
Organisms loaded by: TO	Checked by: [redacted]		SF	SF	SF	SF	SF	
Loading Verified by: EW								

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

Comments:

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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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938117 Test #: 1 of 2

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

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.)	8.4	8.2	8.2	8.3	8.2	8.2
Temperature °C	24.8	24.0	24.3	24.3	24.0	24.7
Dissolved Oxygen mg/L	6.6	(A) 4.5	6.3	6.1	6.4	6.5
Conductivity µmhos (mmhos)	29.9	31.9	31.7	31.0	31.7	31.9
(initials) Measured by:	BA	BA	BA	BA	BA	SB
(initials) Recorded by:	BA	BA	BA	BA	BA	SB

Comments: (A) wrong # recorded BA

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.)	8.5	8.3	8.3	8.5	8.3	8.3
Temperature °C	25.0	24.0	24.4	24.3	24.1	24.9
Dissolved Oxygen mg/L	6.7	4.7	6.2	6.3	6.4	6.7
Conductivity µmhos (mmhos)	31.5	33.0	32.1	32.1	32.7	33.2
(initials) Measured by:	BA	BA	BA	BA	BA	SB
(initials) Recorded by:	BA	BA	BA	BA	BA	SB

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.)	8.4	8.4	8.2	8.5	8.3	8.4
Temperature °C	25.1	24.4	24.6	24.8	24.4	25.1
Dissolved Oxygen mg/L	6.8	4.8	6.2	6.4	6.5	6.8
Conductivity µmhos (mmhos)	31.9	33.4	33.1	32.5	33.0	33.5
(initials) Measured by:	BA	BA	BA	BA	BA	SB
(initials) Recorded by:	BA	BA	BA	BA	BA	SB

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:

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938117 Test #: 2 of 2

TEST SOP #: TA07_04 Test Species: *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:_____

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.)	8.4	8.3	8.3	8.3	8.2	8.2
Temperature °C	24.7	24.0	24.7	24.4	24.1	25.0
Dissolved Oxygen mg/L	6.8	6.3	6.2	6.4	6.4	6.1
Conductivity µmhos (mmhos)	30.1	31.8	31.7	31.1	32.1	33.2
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.5	8.4	~~8.4~~ BA 8.4	8.5	8.4	8.3
Temperature °C	25.0	24.1	24.5	24.2	24.2	24.8
Dissolved Oxygen mg/L	6.7	6.0	6.2	6.9	6.2	6.1
Conductivity µmhos (mmhos)	31.7	32.7	32.1	31.9	33.0	33.2
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	~~8.1~~ BA 8.6	8.5	8.4	8.5	8.4	8.3
Temperature °C	24.9	24.3	24.6	24.8	24.1	24.8
Dissolved Oxygen mg/L	6.8	6.1	6.2	6.4	6.2	6.0
Conductivity µmhos (mmhos)	318	324	32.6	32.5	33.2	33.6
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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 2.0 2/24/04

FDEP Biology Section - Acute Screen 4/24 Bioassay Bench Sheets

Facility: Mandarin WRF
Address: 10828 Hampton Road
City: Jacksonville County: Duval
Contact/District: Chet McGhee / Northeast District
NPDES Permit #: FL 0073493
LIMS Job #: TLH-20060-07-25-82 LIMS Sample #: 738872
Lims Data Entry: 7-31-06 SB Data Entry Verification: MF 8-2-06

Sample Collection: Date: 7-24-06 Time: 1200
Hold Time Start: Date: 7-24-06 Time: 1200
Sample: 4 of 4

Comments:
Sample salinity adjusted to 20 parts per thousand per permit requirements. Salt control prepared by salting well water with artificial sea salts to match approximate salinity of test sample.
A. bahia test aerated at ~100 bubbles/minute due to decreased D.O. SP (initiated at 24 hours and continued for duration of test)

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

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

Test 2 validation:
Control survival ≥90%: (Yes) No
Temperature Range ≤3°C: (Yes) No
Test 2: SOP TA 07_ 04

Initial sample handling:
PH adjustment: yes (no) Initial pH: ____ NaOH N HCl N ____ Drops mL Final pH: ____
Aeration (yes) no Initial DO: 11.4 mg/L Final DO: 8.7 mg/L Duration: 20 minutes Rate: ~100 bubbles/min
Salinity adjusted (Test 1): (yes) no Initial Salinity: 0.47 Final Salinity: ~20 (Salts) Hypersaline brine
Salinity adjusted (Test 2): (yes) no Initial Salinity: 0.47 Final Salinity: ~20 (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)

Investigators' Signatures
Sonal Phillard
Eric Bryd
Bud Alembo
Marshall Fairbrother
Steve Daniel
Nicole Wellendorf
REVIEWER

Water Quality Parameters	Original Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	not measured		—	SP
Lab Total Residual Cl2 (mg/L):	~~<0.03~~ (A)	HACH	[illegible] SP	BA
Alkalinity (mg/L as $CaCO_3$):	153	HACH	BA	SP
Hardness (mg/L as $CaCO_3$):	303	HACH	BA	SP
Total Ammonia (mg/L as N):	<0.017	DENVER	SP	BA
Salinity (ppt):	0.47	YSI / Mettler	SP	BA

(A) <0.03 correct total residual chlorine SP

V 2.0 4/12/05

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Appendix B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938892 Test #: 1 Test Started: Date 7-25-06 Time: 13:00
Organism: A. bahia SOP #: TA 07_03 Test Ended: Date 7-29-06 Time: 1245
Organism Batch: 23-06 Diluent/ Batch: ASW 1 14-06
Organism Age: 5 days Food: YCT P. subcapitata Artemia GSL-536 .90
Chamber Size: 1000 mL Batch: — — —
Test Volume: ~~500~~ 400 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	C13	5	5	5	5	5	5
	B	C14	5	5	5	5	5	5
	C	C15	5	5	5	5	5	5
	D	C16	5	5	5	5	5	5
Salt CTRL	A	C17	5	5	5	5	5	5
	B	C18	5	5	5	5	5	5
	C	C19	5	5	5	5	5	5
	D	C20	5	5	5	5	5	5
100%	A	C21	5	5	5	5	5	5
	B	C22	5	5	5	5	5	5
	C	C23	5	5	5	5	5	5
	D	C24	5	5	4 (1)	4	4	4
Organisms loaded by: JD	Checked by: [redacted]		JD	JD	JD	JD	SP	
Loading Verified by: GW								

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

Comments:
(1) test volume reduced because bioassay jugs were not full (Sample Containers)
7-25-06 SP

Test Results:
% mortality in 100% sample: 5%
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 B. (continued)

FDEP Biology Section - Bioassay Survival Sheet

LIMS Sample #: 938892 Test #: 2 Test Started: Date 7-25-06 Time: 1300
Organism: M.beryllina SOP #: TA 07_ 04 Test Ended: Date 7-29-06 Time: 1355
Organism Batch: 23-06 Diluent/ Batch: ASW 1.14-06
Organism Age: 12 days Food: YCT P. subcapitata (Artemia)
Chamber Size: 1000 mL Batch: — — GSL-536-90
Test Volume: ~~500~~ 450 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	A13	5	5	5	5	5	4 D
	B	A14	5	5	5	5	5	5
	C	A15	5	5	5	5	5	5
	D	A16	5	5	5	5	5	4 D
Salt CTRL	A	A17	5	5	5	5	5	5
	B	A18	5	5	5	5	5	5
	C	A19	5	5	5	5	5	5
	D	A20	5	5	5	5	5	5
100%	A	A21	5	5	5	5	5	5
	B	A22	5	5	5	5	5	5
	C	A23	5	5	5	5	5	5
	D	A24	5	5	5	5	5	5
Organisms loaded by: JD		Checked by:	SP	SP	SP	SP	SP	SP
Loading Verified by: EW								

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

Comments:
D test volume reduced because bioassay jugs were not full (sample 2 liters)
7-25-06 SP

Test Results:
% mortality in 100% sample: 0
LC_{50}: >100 If Calculated: 95% CI _____ Method: _____

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

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938892 Test #: 1 of 2

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

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.)	8.3	8.2	8.2	8.3	8.3	8.2
Temperature °C	24.7	24.3	24.4	24.2	24.3	25.0
Dissolved Oxygen mg/L	6.5	5.3	6.6	7.0	6.7	6.5
Conductivity µmhos (mmhos)	30.2	31.8	31.6	30.4	31.7	31.9
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.5	8.3	8.2	8.4	8.3	8.2
Temperature °C	24.9	24.5	24.4	24.1	24.4	25.1
Dissolved Oxygen mg/L	6.6	5.4	6.5	6.6	6.7	6.6
Conductivity µmhos (mmhos)	31.6	32.6	33.2	32.2	32.8	33.5
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.5	8.3	8.2	8.5	8.2	8.3
Temperature °C	25.5	24.7	24.4	24.5	24.2	25.1
Dissolved Oxygen mg/L	6.8	5.3	6.5	6.5	6.6	6.5
Conductivity µmhos (mmhos)	32.0	33.1	32.9	32.0	32.6	33.0
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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:

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FDEP Biology Section - Bioassay Parameter Sheet

LIMS Sample # : 938892 **Test #:** 2 of 2

TEST SOP #: TA07_04 **Test Species:** *Ceriodaphnia dubia* *Cyprinella leedsi* *Pimephales promelas* *Americamysis bahia* *Menidia beryllina* Other:

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.)	8.4	8.4	8.3	8.4	8.2	8.3
Temperature °C	24.9	24.2	24.8	24.1	24.1	24.8
Dissolved Oxygen mg/L	6.8	6.2	6.1	6.5	5.5	6.1
Conductivity µmhos (mmhos)	30.3	31.8	31.6	30.8	31.7	32.1
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.5	8.4	8.3	8.5	8.3	8.3
Temperature °C	24.9	24.1	24.8	24.0	24.4	24.8
Dissolved Oxygen mg/L	6.8	6.3	6.2	6.9	5.7	6.2
Conductivity µmhos (mmhos)	31.7	32.6	32.0	32.1	33.0	33.6
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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.)	8.6	8.4	8.4	8.5	8.4	8.3
Temperature °C	25.5	24.1	24.8	24.5	24.1	25.0
Dissolved Oxygen mg/L	6.8	6.3	6.1	6.5	5.8	6.3
Conductivity µmhos (mmhos)	32.3	33.2	33.3	32.0	32.6	33.4
(initials) Measured by:	BA	BA	BA	BA	BA	BA
(initials) Recorded by:	BA	BA	BA	BA	BA	BA

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:

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Appendix C. SRT Bench Sheets and Statistical Analysis

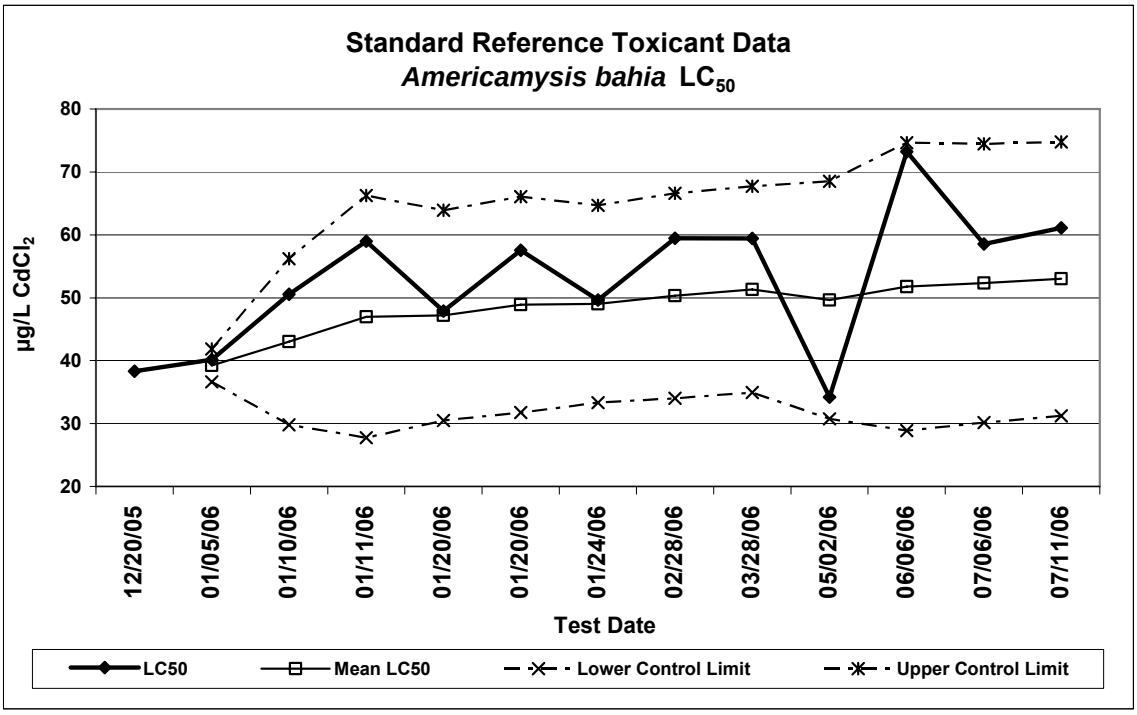
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Americamysis bahia (mysid shrimp) - Cadmium Chloride ($CdCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
12/20/05	38.30				
01/05/06	40.16	39.23	1.32	36.60	41.86
01/10/06	50.55	43.00	6.60	29.80	56.21
01/11/06	58.98	47.00	9.64	27.72	66.27
01/20/06	47.91	47.18	8.36	30.47	63.89
01/20/06	57.54	48.91	8.59	31.73	66.08
01/24/06	49.65	49.01	7.84	33.32	64.70
02/28/06	59.45	50.32	8.15	34.03	66.61
03/28/06	59.42	51.33	8.20	34.93	67.73
05/02/06	34.19	49.62	9.44	30.73	68.50
06/06/06	73.23	51.76	11.44	28.88	74.65
07/06/06	58.53	52.33	11.08	30.16	74.49
07/11/06	61.12	53.00	10.89	31.22	74.78

Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 20.54
EPA reference 75th quartile CV = 26%



*Fewer than 20 points are charted due to recent initiation of SRT testing using $CdCl_2$.

Appendix C. (continued)

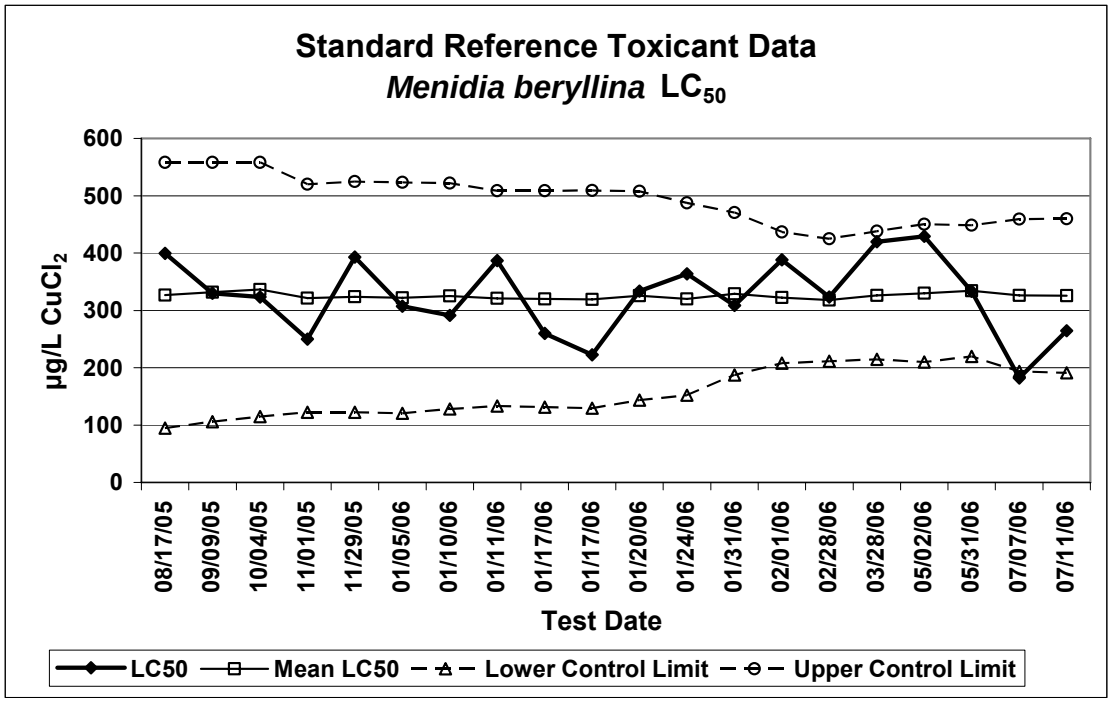
Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 48-hour Acute Toxicity
Menidia beryllina (inland silverside) - Copper Chloride ($CuCl_2$)

Date	LC50	Mean LC50	Std Dev	Lower Control Limit	Upper Control Limit
08/17/05	399.46	326.40	115.88	94.63	558.16
09/09/05	329.88	331.94	113.09	105.75	558.13
10/04/05	323.49	336.45	110.73	115.00	557.90
11/01/05	250.00	321.21	99.50	122.21	520.21
11/29/05	392.98	323.59	100.67	122.25	524.94
01/05/06	307.20	321.88	100.64	120.60	523.16
01/10/06	291.06	325.02	98.52	127.97	522.07
01/11/06	386.84	320.92	93.81	133.29	508.54
01/17/06	259.80	319.91	94.38	131.15	508.67
01/17/06	222.49	319.27	95.03	129.21	509.32
01/20/06	333.67	325.74	91.10	143.54	507.95
01/24/06	363.93	319.79	83.89	152.01	487.58
01/31/06	308.77	328.86	70.76	187.34	470.39
02/01/06	388.25	322.40	57.22	207.96	436.83
02/28/06	323.38	318.11	53.47	211.18	425.04
03/28/06	419.55	326.32	55.87	214.58	438.07
05/02/06	429.19	330.10	60.20	209.69	450.51
05/31/06	333.13	334.26	57.18	219.91	448.61
07/07/06	181.98	326.28	66.48	193.32	459.25
07/11/06	264.59	325.48	67.16	191.17	459.79

Means are of the last 20 SRT tests.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev

CV = 20.63
EPA reference 75th quartile CV = 21%



Appendix C. (continued)

FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: (Americamysis bahia) Method 2007.0 | Menidia beryllina Method 2006.0 | Hyalella azteca Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0 | Cyprinella leedsi Method 2000.0 | Pimephales promelas Method 2000.0 | Other:

Method from EPA-821-R-02-012
Test Type: Definitive
Static / (Static Renewal)
Test Page 1 of 2

Diluent/ Batch#: ASW 13-060
Toxicant/ Batch# $CaCl_2$ 9-06

Test Beginning: Date: 7-11-06 Time: 1315
Test Ending: Date: 7-15-06 Time: 1210

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	SR
Alkalinity (mg/L as $CaCO_3$):	184	Hach	BA
Hardness (mg/L as CaCO3):	—	Hach	—
Total Ammonia (mg/L as N):	<0.03	Denver	MF
Salinity (ppth):	21.1	Mettler	SR

Organism Batch #/ Age: 21-060 5 days
Feeding: (Prior to test) (Prior to renewal) / Daily
Food: YCT P.subcapitata Artemia
Food Batch: — — GSL-536-90
Chamber size: 400 mL
Test volume: 250 mL per replicate

Conc. (ug/L) g/L	Rep.	Chamber#	Number Live 0 hr / ~~48 hr~~	Number Live 24 hr / ~~72 hr~~	Number Live 48 hr / ~~96 hr~~	pH (SU) 0 hr / ~~48 hr~~	pH (SU) 24 hr / ~~72 hr~~	pH (SU) 48 hr / ~~96 hr~~	Temperature (° C) 0 hr / ~~48 hr~~	Temperature (° C) 24 hr / ~~72 hr~~	Temperature (° C) 48 hr / ~~96 hr~~	D.O. (mg/l) 0 hr / ~~48 hr~~	D.O. (mg/l) 24 hr / ~~72 hr~~	D.O. (mg/l) 48 hr / ~~96 hr~~	UNCORRECTED Cond. (mmhos/cm) 0 hr / ~~48 hr~~	UNCORRECTED Cond. (mmhos/cm) 24 hr / ~~72 hr~~	UNCORRECTED Cond. (mmhos/cm) 48 hr / ~~96 hr~~
Control	A	25	5	5	5	8.3		8.0	24.1			6.7			33.9		35.4
	B	26	5	4[D]	4		8.1	[illegible]		24.2			5.4			35.0	
	C	27	5	5	4[D]			8.0			25.3			5.7			35.4
	D	28	5	5	5												
20	A	29	5	5	4[D]	8.3			24.5			6.6			34.2		
	B	30	5	5	5		8.1			24.5			5.5			34.5	
	C	31	5	5	5			7.9			24.2			5.6			36.5
	D	32	5	5	5												
30	A	33	5	5	4[D]	8.3			24.7			6.6			34.1		
	B	34	5	5	4[D]		8.2			24.5			5.6			34.4	
	C	35	5	5	4[D]			7.9			24.3			5.5			36.9
	D	36	5	5	5												
45	A	37	5	5	4[D]	8.3			24.8			6.6			34.0		
	B	38	5	5	5		8.2			24.4			5.7			34.3	
	C	39	5	4[D]	4			8.0			24.1			5.5			37.3
	D	40	5	5	4[D]												
60	A	41	5	3[D]	3	8.4			24.8			6.6			33.9		
	B	42	5	5	0[D]		8.2			24.4			5.4			34.6	
	C	43	5	5	1[D]			8.0			24.1			5.7			36.8
	D	44	5	5	4[D]												
100	A	45	5	0[D]	—	8.4			25.0			6.6			33.9		
	B	46	5	3[D]	0[D]		8.2			24.2			6.0			34.7	
	C	47	5	2[D]	0[D]			8.1			24.1			5.8			36.4
	D	48	5	3[D]	0[D]												
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	BA	BA	BA	BA	BA	JD/BD	BA	BA	BA	BA	BA	BA
Recorded by:			BA	JD	JD	BA	BA	BA	BA	BA	JD/BD	BA	BA	BA	BA	BA	BA

Investigators' Signatures
Marshall Grimsley
Sarah Pritchard
Bruce Pedersen
Jason Daniel
Thiel Wetterhof
REVIEWER

Concentrations prepared by: JD
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.9 max. 25.6 mean 24.5
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 23.6 max. 24.2 mean 23.9

Remarks:

Statistical Results: Method: Spearman-Karber
(48)/ 96 hour LC50: 61.12
95% Confidence Interval: lower 54.61 upper 68.41

Revised 02/21/06

Page 000002

Appendix C. (continued)

FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: ~~Americamysis bahia~~ Method 2007.0 | Menidia beryllina Method 2006.0 | Hyalella azteca Method 100.1 EPA-600-R-99-064
Ceriodaphnia dubia Method 2002.0 | Cyprinella leedsi Method 2000.0 | Pimephales promelas Method 2000.0 | Other:

Method from EPA-821-R-02-012
Test Type: Definitive
Static / (Static Renewal)
Test Page 1 of 2

Diluent/ Batch#: ASW 1-13-06
Toxicant/ Batch#: CdCl2 1-9-06

Test Beginning: Date: 7-11-06 Time: 1315
Test Ending: Date: 7-15-06 Time: 1210

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	BP
Alkalinity (mg/L as $CaCO_3$):	184	Hach	BA
Hardness (mg/L as CaCO3):	—	Hach	—
Total Ammonia (mg/L as N):	<0.034	Denver	MF
Salinity (ppth):	31.1	Mettler	BP

Organism Batch #/ Age: 21-06 15 days
Feeding: (Prior to test) (Prior to renewal) (Daily)
Food: YCT P.subcapitata Artemia
Food Batch: — — GSL 536 90
Chamber size: 400 mL
Test volume: 250 mL per replicate

Conc. (%) g/L	Rep.	Chamber#	Number Live 0 hr / 24 hr / 48 hr	pH (SU) 0 hr / 24 hr / 48 hr	Temperature (° C) 0 hr / 24 hr / 48 hr	D.O. (mg/l) 0 hr / 24 hr / 48 hr	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhom/cm) 0 hr / 24 hr / 48 hr
			48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	48 hr / 72 hr / 96 hr	96 hr
Control	A	25	5 / 5 / 5	8.3	24.6	7.4	33.8
	B	26	4 / 4 / 4				
	C	27	4 / 4 / 4	8.1	25.0	5.8	36.0
	D	28	5 / 5 / 5	8.2	24.6	6.6	35.2
20	A	29	4 / 4 / 4	8.3	24.8	7.2	34.1
	B	30	5 / 5 / 5				
	C	31	5 / 5 / 5	8.1	24.5 / 25.1	5.2	36.2
	D	32	5 / 5 / 5	8.2	24.2 / 25.04	6.3	35.2
30	A	33	4 / 3 1D / 3	8.3	24.8	6.4	34.2
	B	34	4 / 4 / 4				
	C	35	4 / 4 / 4	8.1	25.0	5.2	35.9
	D	36	5 / 4 10 / 4	8.2	24.5	6.3	34.8
45	A	37	4 / 2 2D / 2	8.3	24.7	6.8	34.0
	B	38	5 / 4 1D / 3 1D				
	C	39	4 / 3 1D / 2 1D	8.1	24.9	5.3	35.4
	D	40	4 / 3 1D / 3	8.2	24.4	6.1	34.7
60	A	41	3 / 1 2D / 0 10	8.3	24.6	6.8	33.8
	B	42	— / — / —				
	C	43	1 / 1 / 0 10	8.2	24.7	5.9	34.9
	D	44	4 / 3 1D / 0 30	8.2	24.6	6.7	34.4
100	A	45	— / — / —	—	—	—	—
	B	46	— / — / —				
	C	47	— / — / —	—	—	—	—
	D	48	— / — / —	—	—	—	—
	A						
	B						
	C						
	D						
Loaded / measured by:			JD / BA / BP	BA / BA / BP	BA / BA / BP	BA / BA / BP	BA / BA / BP
Recorded by:			JD / BA / BP	BA / BA / BP	BA / BA / BP	BA / BA / BP	BA / BA / BP

Investigators' Signatures
Marshall Faircloth
Frank Pritchard
Bruce Pittman
James Dimick

Nicole Wellenhof
REVIEWER

Concentrations prepared by: BP
Loading verified by: JD
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.9 max. 25.6 mean 24.5
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 23.6 max. 24.2 mean 23.9

Remarks:

Statistical Results: Method: Spearman-Karber
48 (96) hour LC50: 41.04
95% Confidence Interval: lower 36.95 upper 45.58

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Appendix C. (continued)

FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) *Menidia beryllina* (Method 2006.0) *Hyalella azteca* (Method 100.1 EPA-600-R-99-064)
Ceriodaphnia dubia (Method 2002.0) *Cyprinella leedsi* (Method 2000.0) *Pimephales promelas* (Method 2000.0) Other:_____

Method from EPA-821-R-02-012
Test Type: Definitive
Static / Static Renewal
Test Page 1 of 2

Diluent/ Batch#: ASW 113-06
Toxicant/ Batch# CuCl2 1 8-06

Test Beginning: Date: 7-11-06 Time: 1330
Test Ending: Date: 7-15-06 Time: 1200

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	88
Alkalinity (mg/L as $CaCO_3$):	184	Hach	BA
Hardness (mg/L as CaCO3):	–	Hach	–
Total Ammonia (mg/L as N):	<0.034	Denver	MF
Salinity (ppth):	21.1	Mettler	BK

Organism Batch #/ Age: 21-06 / 14 days
Feeding: Prior to test / Prior to renewal / Daily
Food: YCT P.*subcapitata* Artemia
Food Batch: – – GSL 5360-90
Chamber size: 1000 mL
Test volume: 500 mL per replicate

Conc. µg/L g/L	Rep.	Chamber#	Number Live 0 hr (48 hr)	Number Live 24 hr (72 hr)	Number Live 48 hr (96 hr)	pH (SU) 0 hr (48 hr)	pH (SU) 24 hr (72 hr)	pH (SU) 48 hr (96 hr)	Temperature (° C) 0 hr (48 hr)	Temperature (° C) 24 hr (72 hr)	Temperature (° C) 48 hr (96 hr)	D.O. (mg/l) 0 hr (48 hr)	D.O. (mg/l) 24 hr (72 hr)	D.O. (mg/l) 48 hr (96 hr)	UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) 0 hr (48 hr)	24 hr (72 hr)	48 hr (96 hr)
Control	A	C13	10	9[1D]	9	8.3		8.1	24.4		24.4	6.6		6.9	34.3		35.6
	B	C19	10	9[1D]	9		8.1			24.7			5.4			33.8	
	C										24						
	D																
31.25	A	C15	10	8[2D]	8	8.3		8.1	24.4		25.2	6.5		6.1	34.1		35.2
	B	C16	10	10	10		8.1			25.1			5.4			34.3	
	C																
	D																
62.5	A	C17	10	9[1D]	9	8.3		8.1	24.5		25.2	6.5		6.0	34.1		34.9
	B	C18	10	10	10		8.1			25.1			5.4			34.1	
	C																
	D																
125	A	C19	10	8[2D]	8	8.3		8.1	24.5		25.0	6.5		6.1	34.1		35.2
	B	C20	10	10	10		8.1			25.1			5.4			34.1	
	C																
	D																
250	A	C21	10	5[1D]	8[1D]	8.3		8.1	24.5		25.6	6.5		6.1	33.8		35.0
	B	C22	10	3[7D]	3		8.2			25.0			5.4			33.8	
	C																
	D																
500	A	C23	10	0[1D]	–	8.4		–	24.7		–	6.5		–	33.9		–
	B	C24	10	0[1D]	–		8.2			25.4			5.5			34.3	
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	JD	JD	BA	BA	BA	BA	BA	JD/SR	BA	BA	BA	BA	BA	BA
Recorded by:			JD	JD	JD	BA	BA	BA	BA	BA	JD/SR	BA	BA	BA	BA	BA	BA

Investigators' Signatures
Susan Pridgeon
Marshall Faircloth
Bruce Ogborn
James Daniel
Nicole Wellendorf
REVIEWER

Concentrations prepared by: JD
Loading verified by: BA
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.1 max. 25.6 mean 24.5
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 23.6 max. 24.2 mean 23.9

Remarks:

Statistical Results: Method: Spearman-Karber
(4) / 96 hour LC50: 264.59
95% Confidence Interval: lower 226.05 upper 309.69

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Appendix C. (continued)

FDEP Biology Section - Acute SRT Bench Sheet

Test Organism: *Americamysis bahia* (Method 2007.0) / *Menidia beryllina* (Method 2004.0) / *Hyalella azteca* (Method 100.1 EPA-600-R-99-064)
Ceriodaphnia dubia (Method 2002.0) / *Cyprinella leedsi* (Method 2000.0) / *Pimephales promelas* (Method 2000.0) / Other:

Method from EPA-821-R-02-012
Test Type: Definitive
Static / (Static Renewal)
Test Page 2 of 2

Diluent/ Batch#: ASW / 13-06
Toxicant/ Batch# CaCl2 / 8-06

Test Beginning: Date: 7-11-06 Time: 1330
Test Ending: Date: 7-15-06 Time: 1200

Water Quality Parameters:	Diluent	Method	Initials
Total Residual Cl_2 (mg/L):	<0.03	Hach	SP
Alkalinity (mg/L as $CaCO_3$):	184	Hach	BA
Hardness (mg/L as CaCO3):	—	Hach	—
Total Ammonia (mg/L as N):	<0.034	Denver	MF
Salinity (ppth):	27.1	Mettler	BA

Organism Batch #/ Age: 21-06 / 14 days
Feeding: (Prior to test) / Prior to renewal / Daily
Food: YCT P.*subcapitata* Artemia
Food Batch: — — GSL536-90
Chamber size: 1000 mL
Test volume: 500 mL per replicate

Conc. (PPT) g/L	Rep.	Chamber#	Number Live 0 hr / 24 hr / 48 hr			pH (SU) 0 hr / 24 hr / 48 hr			Temperature (° C) 0 hr / 24 hr / 48 hr			D.O. (mg/l) 0 hr / 24 hr / 48 hr			UNCORRECTED Cond. (mmhos/cm) Cond. (umhom/cm) 0 hr / 24 hr / 48 hr		
			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	72 hr	96 hr
Control	A	C13	9	9	9	8.2			24.5			6.7			34.4		
	B	C14	9	9	9		8.1	8.1			24.6		5.3	5.8			34.7
	C										24.6 SP			5.8 SP			34.7 SP
	D									(A) 24.7						(A) 34.5	
31.25	A	C15	8	8	8	8.3			24.3			6.6			34.6		
	B	C16	10	10	10		8.1	8.1			24.6		5.2	5.9			35.4
	C										24.6 SP			5.9 SP			35.4 SP
	D									(A) 24.6						(A) 34.6	
625	A	C17	9	9	9	8.3			24.3			6.6			34.6		
	B	C18	10	10	10		8.1	8.1			24.9		5.3	5.9			35.4
	C										24.9 SP			5.8 SP			35.4 SP
	D									(A) 24.6						(A) 34.8	
125	A	C19	8	8	710	8.3			24.3			6.6			34.7		
	B	C20	10	10	10		8.1	8.2			24.7		5.4	5.9			35.4
	C										24.7 SP						35.4 SP
	D									(A) 24.7						(A) 34.8	
250	A	C21	8	8	8	8.3			24.4			6.6			34.4		
	B	C22	3	3	3		8.1	8.2			24.5		5.5	6.1			35.2
	C										24.5 SP						35.2 SP
	D									(A) 24.6						(A) 34.6	
500	A	C23	—	—	—	—			—			—			—		
	B	C24	—	—	—		—	—		—	—		—	—		—	—
	C																
	D																
	A																
	B																
	C																
	D																
Loaded / measured by:			JD	SP	SP	BA	BA	SP	BA	BA	SP	BA	BA	SP	BA	BA	SP
Recorded by:			JD	SP	SP	BA	BA	SP	BA	BA	SP	BA	BA	SP	BA	BA	SP

Investigators' Signatures
Marshall Faircloth
Sarah Pritchard
Bruce Alexander
James Daniel
Nicole Wellenkamp
REVIEWER

Concentrations prepared by: BA/SP
Loading verified by: N/A
Light Intensity: 50-100 Ft. candles
Photoperiod: 16 hours Light / 8 hours dark
Temperature Range °C:
Incubator # 2 min. 23.4 max. 25.6 mean 24.5
Incubator # ___ min. ___ max. ___ mean ___
Room B246 min. 23.6 max. 24.2 mean 23.9

Remarks: (A) Parameters DO cond & temp @ 72h taken from rep "B" - BA -

Statistical Results: Method: Spearman-Karber
48 / (96) hour LC50: 259.77
95% Confidence Interval: lower 214.64 upper 302.55

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Appendix C. (continued)

Americamysis bahia Acute Standard Reference Toxicant Test

DATE: 7-11-06 DURATION: 96 h TOXICANT : $CdCl_2$
SPECIES: *A. bahia*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	2
20.00	20	1
30.00	20	5
45.00	20	10
60.00	20	20
100.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC_{50}: 41.04
95% LOWER CONFIDENCE: 36.95
95% UPPER CONFIDENCE: 45.58

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

Menidia beryllina Acute Standard Reference Toxicant Test

DATE: 7-11-06 DURATION: 96 h TOXICANT : $CuCl_2$
SPECIES: *M. beryllina*

RAW DATA: Concentration (ug/L)	Number Exposed	Mortalities
.00	20	2
31.25	20	2
62.50	20	1
125.00	20	3
250.00	20	9
500.00	20	20

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC_{50}: 254.77
95% LOWER CONFIDENCE: 214.54
95% UPPER CONFIDENCE: 302.55

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

Appendix D. Test Organism Receipts

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 7/10/06

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia	100+	4 Days	MS060706	25°C	19.0‰
Menidia beryllina	100+	13 Days	SS060617	25°C	19.0‰
Cyprinella leedsi	100+	11 Days	CL060629	25°C	
Pimephales promelas	100+	10 Days	FM060630-1050	25°C	

Packed by: Frank Gary

Shipped Via: FedEx

Notes: _____

Thank you for your order.

Gary

Appendix D. (continued)

MBL Aquaculture
4569 Samuel Street
Sarasota, Florida 34233
TEL: (800) 889-0384
FAX: (941) 922-3874
EMAIL: sales@mblaquaculture.com
WEB: www.MBLAquaculture.com

NELAC Accredited

Organism Shipment Record

State of Florida Aquaculture Certificate Number AQ0668007

Date: 7/24/06

Shipped to: FDEP

P.O. No: _____

Species	Quantity	Age	Brood Number	Temperature	Salinity
Mysidopsis bahia	300+	4 Days	MS060720	25°C	~20‰
Menidia beryllina	300+	11 Days	SS060713	25°C	~20‰
Cyprinella leedsi					
Pimephales promelas					

Packed by: Frank Gangi

Shipped Via: FedEx

Notes: _____

Thank you for your order.

Appendix E. Chemical Analyses performed on the effluent from the Mandarin Water Reclamation Facility Outfall D-001, sampled on July 23 and 24, 2006.

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential	86.4	mg DryWt/L		0.3	0.9
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Bio-AGP/LimNut	Algal Growth Potential-Salinity Adjusted	35.5	mg DryWt/L		3	3
7/23/2006 18:10	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
7/23/2006 18:10	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
7/24/2006 0:01	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
7/24/2006 0:01	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
7/24/2006 12:00	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Fish, LC50	100	LC50	L		
7/24/2006 12:00	MANDARIN WWTP FINAL EFFLUENT	Bio-Toxicology	Bioassay-Acute-Screen-SW-Mysid, LC50	100	LC50	L		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	1,2-Dichlorobenzene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	1,3-Dichlorobenzene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	1,4-Dichlorobenzene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,4,6-Trichlorophenol	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,4-Dichlorophenol	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,4-Dimethylphenol	51	ug/L	U	51	200
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,4-Dinitrophenol	15	ug/L	U	15	61
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2,6-Dinitrotoluene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2-Chloronaphthalene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2-Chlorophenol	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	3	ug/L	U	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	2-Nitrophenol	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	40	ug/L	UJ	40	160
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDD	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDE	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4,4'-DDT	1.5	ug/L	UJ	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	2	ug/L	U	2	8.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	4-Nitrophenol	15	ug/L	U	15	61
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Acenaphthene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Acenaphthylene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Aldrin	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Anthracene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Benzidine	100	ug/L	U	100	400

Appendix E. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Benzo(a)pyrene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Benzo(b)fluoranthene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Benzo(g,h,i)perylene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Benzo(k)fluoranthene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	3	ug/L	U	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Bis(2-ethylhexyl)phthalate	15	ug/L	U	15	61
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Butyl benzyl phthalate	5.1	ug/L	U	5.1	20
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Chrysene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Di-n-butyl phthalate	5.1	ug/L	U	5.1	20
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Di-n-octyl phthalate	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Dibenzo(a,h)anthracene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Dieldrin	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Diethyl phthalate	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Dimethyl phthalate	51	ug/L	U	51	200
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Endosulfan I	4	ug/L	U	4	16
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Endosulfan II	4	ug/L	U	4	16
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Endosulfan sulfate	1.5	ug/L	UJ	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Endrin	1.5	ug/L	UJ	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Endrin aldehyde	4	ug/L	U	4	16
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Fluoranthene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Fluorene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Heptachlor	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Heptachlor epoxide	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Hexachlorobenzene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Hexachlorobutadiene	3	ug/L	UJ	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Hexachlorocyclopentadiene	3	ug/L	UJ	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Hexachloroethane	3	ug/L	U	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Indeno(1,2,3-cd)pyrene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Isophorone	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodi-n-propylamine	2	ug/L	U	2	8.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodimethylamine	2	ug/L	UJ	2	8.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	N-Nitrosodiphenylamine	3	ug/L	UJ	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Naphthalene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Nitrobenzene	2	ug/L	U	2	8.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Pentachlorophenol	3	ug/L	U	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Phenanthrene	1	ug/L	U	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	Phenol	1	ug/L	U	1	4

Appendix E. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	beta-BHC	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	delta-BHC	1.5	ug/L	U	1.5	6.1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	BNA-Water	gamma-BHC	1.5	ug/L	U	1.5	6.1
24-Jul-06	EQUIPMENT BLANK	GC-Water	Alachlor	0.65	ug/L	U	0.65	2.6
24-Jul-06	EQUIPMENT BLANK	GC-Water	Ametryn	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Atrazine	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Azinphos Methyl	0.22	ug/L	U	0.22	0.88
24-Jul-06	EQUIPMENT BLANK	GC-Water	Bromacil	0.22	ug/L	U	0.22	0.88
24-Jul-06	EQUIPMENT BLANK	GC-Water	Butylate	0.22	ug/L	U	0.22	0.88
24-Jul-06	EQUIPMENT BLANK	GC-Water	Chlorpyrifos Ethyl	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Chlorpyrifos Methyl	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Diazinon	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Ethion	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Ethoprop	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Fenamiphos	0.22	ug/L	U	0.22	0.88
24-Jul-06	EQUIPMENT BLANK	GC-Water	Fonofos	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Hexazinone	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Malathion	0.16	ug/L	U	0.16	0.64
24-Jul-06	EQUIPMENT BLANK	GC-Water	Metalaxyl	0.27	ug/L	U	0.27	1.1
24-Jul-06	EQUIPMENT BLANK	GC-Water	Metolachlor	0.54	ug/L	U	0.54	2.2
24-Jul-06	EQUIPMENT BLANK	GC-Water	Metribuzin	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Mevinphos	0.22	ug/L	U	0.22	0.88
24-Jul-06	EQUIPMENT BLANK	GC-Water	Naled	0.87	ug/L	U	0.87	3.5
24-Jul-06	EQUIPMENT BLANK	GC-Water	Norflurazon	0.16	ug/L	U	0.16	0.64
24-Jul-06	EQUIPMENT BLANK	GC-Water	Parathion Ethyl	0.16	ug/L	U	0.16	0.64
24-Jul-06	EQUIPMENT BLANK	GC-Water	Parathion Methyl	0.11	ug/L	U	0.11	0.44
24-Jul-06	EQUIPMENT BLANK	GC-Water	Phorate	0.054	ug/L	U	0.054	0.22
24-Jul-06	EQUIPMENT BLANK	GC-Water	Prometryn	0.16	ug/L	U	0.16	0.64
24-Jul-06	EQUIPMENT BLANK	GC-Water	Simazine	0.054	ug/L	U	0.054	0.22
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Alachlor	0.6	ug/L	U	0.6	2.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Ametryn	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Atrazine	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Azinphos Methyl	0.2	ug/L	U	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Bromacil	0.2	ug/L	U	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Butylate	0.2	ug/L	U	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Chlorpyrifos Ethyl	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Chlorpyrifos Methyl	0.1	ug/L	U	0.1	0.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Diazinon	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Ethion	0.05	ug/L	U	0.05	0.2

Appendix E. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Fonofos	0.1	ug/L	U	0.1	0.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Hexazinone	0.1	ug/L	U	0.1	0.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Malathion	0.15	ug/L	U	0.15	0.6
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Metalaxyl	0.25	ug/L	U	0.25	1
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Metolachlor	0.5	ug/L	U	0.5	2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Metribuzin	0.1	ug/L	U	0.1	0.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Mevinphos	0.2	ug/L	U	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Naled	0.8	ug/L	U	0.8	3.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Norflurazon	0.15	ug/L	U	0.15	0.6
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Parathion Ethyl	0.15	ug/L	U	0.15	0.6
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Parathion Methyl	0.1	ug/L	U	0.1	0.4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Phorate	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Prometryn	0.15	ug/L	U	0.15	0.6
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	GC-Water	Simazine	0.05	ug/L	U	0.05	0.2
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Aluminum	4	ug/L	U	4	16
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Calcium	0.02	mg/L	U	0.02	0.08
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Chromium	0.3	ug/L	U	0.3	1.2
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Copper	0.2	ug/L	U	0.2	0.8
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Iron	5	ug/L	U	5	20
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Lead	0.2	ug/L	U	0.2	0.8
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Magnesium	0.005	mg/L	U	0.005	0.02
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Nickel	1	ug/L	U	1	4
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
24-Jul-06	EQUIPMENT BLANK	Metals-Water	Zinc	3	ug/L	U	3	12
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Aluminum	15	ug/L	I	4	16
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Calcium	71.2	mg/L		0.02	0.08
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Chromium	0.3	ug/L	U	0.3	1.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Copper	0.7	ug/L	I	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Iron	33	ug/L		5	20
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Lead	0.27	ug/L	I	0.2	0.8
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Magnesium	34.3	mg/L		0.005	0.02
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Nickel	1.6	ug/L	I	1	4
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1

Appendix E. Chemical Analyses (continued)

Date Sampled	Field ID	Analysis Group	Component	Result	Units	Remark	MDL	PQL
24-Jul-06	EQUIPMENT BLANK	Nutrients-Liquid	Fluoride	0.05	mg F/L	U	0.05	0.1
24-Jul-06	EQUIPMENT BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.08	mg N/L	U	0.08	0.2
24-Jul-06	EQUIPMENT BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
24-Jul-06	EQUIPMENT BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
24-Jul-06	EQUIPMENT BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	Ammonia-N	0.037	mg N/L		0.01	0.02
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	Kjeldahl Nitrogen	0.84	mg N/L		0.08	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	NO2NO3-N	2	mg N/L		0.08	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	O-Phosphate-P	2	mg P/L		0.08	0.2
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	TSS	4	mg/L	U	4	16
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Nutrients-Liquid	Total-P	2.2	mg P/L		0.1	0.3
24-Jul-06	EQUIPMENT BLANK	Overflow	Alpha, Total	0.7	pCi/L	U		
24-Jul-06	EQUIPMENT BLANK	Overflow	Alpha-Counting Error	0.4	pCi/L			
24-Jul-06	EQUIPMENT BLANK	Overflow	Radium 226	0.1	pCi/L			
24-Jul-06	EQUIPMENT BLANK	Overflow	Radium 226-Counting Error	0.1	pCi/L			
24-Jul-06	EQUIPMENT BLANK	Overflow	Radium 228	0.9	pCi/L	U		
24-Jul-06	EQUIPMENT BLANK	Overflow	Radium 228-Counting Error	0.6	pCi/L			
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Alpha, Total	2.4	pCi/L	U		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Alpha-Counting Error	1.3	pCi/L			
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Radium 226	0.2	pCi/L	U		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Radium 226-Counting Error	0.1	pCi/L			
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Radium 228	0.9	pCi/L	U		
7/24/2006 6:10	MANDARIN WWTP FINAL EFFLUENT	Overflow	Radium 228-Counting Error	0.5	pCi/L			

The Bioassay of Mandarin Water Reclamation Facility effluent sampled on July 23 and 24, 2006. NPDES #FL0023493.

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 2 3 4 9 3	11	12 0 6 0 7 2 4		18 **B**	19 **S**	20 1

Remarks

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The Priority Pollutants Analysis of Mandarin Water Reclamation Facility effluent sampled on July 24, 2006. NPDES #FL0023493.

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 2 3 4 9 3	11	12 0 6 0 7 2 4		18 **X**	19 **S**	20 1

Remarks

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Biological Analyses of Mandarin Water Reclamation Facility effluent sampled on July 24, 2006. NPDES #FL0023493.

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 2 3 4 9 3	11	12 0 6 0 7 2 4		18 **S**	19 **S**	20 1

Remarks

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