

Biological Assessment of

Mosaic Fertilizer, L.L.C. – South Fort Meade Mine

Polk County and Hardee County

NPDES # FL0037958

Sampled September 20, 2010

February 2011

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

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EPA End Sheet

Facility Overview

The Mosaic Fertilizer, L.L.C. – South Fort Meade Mine is an industrial phosphate mining facility located in Ft. Meade, Polk County and Hardee County, Florida. The effluent is discharged into the Peace River, a Class III Fresh Water (see map Appendix A). There is no design flow for the facility. The annual average flow for September 2009 to August 2010 was 13.39 million gallons per day (MGD), and the flow measured during this survey was 18.23 MGD (Bureau of Mining and Minerals Regulation sampling staff). Wastewater treatment consists of gravity settling sands, clays and suspended solids within earth-diked settling areas. Clarified water is decanted from the settling areas by gravity into the mine recirculation system. Discharge is intermittent, via an eight foot concrete weir with end contractions, and flows from outfall D-001 through an unnamed swale and then into the Peace River.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits and discharge monitoring report (DMR) information.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (located in Gilshey Branch at Mount Pisgah Road) and a Test Site (located in the discharge swale directly before the confluence with the Peace River). Effluent samples for whole effluent chronic toxicity tests were taken as 24-hour composite samples from monitoring location EFF-001, and all other chemical and biological analyses were taken as grab samples from EFF-001.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/bars/sas/sop/index.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/labs/bars/sas/qa/index.htm). The Stream Condition Index and Habitat Assessment were not performed due to high water levels. Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Jacki Champion and Melani Dickenson (FDEP Bureau of Mining and Minerals Regulation, Tampa), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Cari Butler, Ed Smith, and Nancy Ross).

Results and Discussion

Organic Constituents (See Table 1 and Appendix E)

- No organic constituents were detected in the effluent.

Metals (See Table 2 and Appendix E)

- Effluent metals were detected at levels that complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).
- Control Site iron (1380 µg/L) exceeded the Class III Fresh Water Quality Criterion (62-302.530(38)). All other Control Site metals were detected at levels that complied with Class III Fresh Water Quality Criteria.
- Test Site metals were detected at levels that complied with Class III Fresh Water Quality Criteria.

Toxicity Whole Effluent Test (See Table 1 and Appendices F and G)

- Tests were performed September 21 through September 28, 2010.
- The effluent sample NOEC for the water flea, *Ceriodaphnia dubia,* during the chronic definitive bioassays was > 100%, and complied with effluent permit limits.
- The *Pimephales promelas* chronic definitive test was invalidated on test day five due to excess control mortality. The control mortality was 22.5%, and the maximum allowable control mortality is 20%. There was 5% mortality in the 100% sample test concentration on day five. A non-conformance report (NCR 3539) was issued for this test.

Physical and Chemical Parameters (See Table 1 and Appendices D, E and H)

- Dissolved oxygen (mg/L) measurements for the effluent grab (10.4), Control (5.9), and Test (8.3) Sites taken on September 20, 2010 complied with Class III Fresh Water Quality Criteria (62-302.530(30)) and effluent permit limits. However, these values are qualified as estimated values (J qualifier).
- Specific conductance and pH of the effluent, Control, and Test Sites complied with Class III Criteria and effluent permit limits.
- Total suspended solids of the effluent complied with permit limits.
- Fluoride, Total Alpha, and Radium of the effluent complied with Class III Criteria and permit limits.
- Turbidity of the Control Site and Test Site complied with Class III Criteria.

Nutrients (See Table 1 and Appendix E)

- Effluent nutrient levels complied with permit limits and the Class III Fresh Water Quality Criteria.
- Levels of ortho-phosphate, total phosphorus, total kjeldahl nitrogen, organic nitrogen, and total nitrogen at the Control Site were higher than the levels for the effluent and Test Site, but the nitrate and nitrite levels at the Control Site were 7 times lower than the effluent and Test Site.

Algal Growth Potential (See Table 3 and Appendix E)

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller et al. 1978). Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L represent a “problem” threshold for fresh receiving waters, implying nutrient enrichment. The AGP value in the effluent sample (22.1 mg dry weight/L) using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 4 times greater than the “problem” threshold value. The analytical chemistry suggests that the effluent is nitrogen limited.
- The AGP value of the Control Site (7.5 mg dry weight/L) was higher than the “problem” threshold. The Test Site (22.9 mg dry weight/L) was 3 times greater than the Control Site and similar to the effluent value.

Bioassessment

Phytoplankton (See Table 4 and Appendices H-1 and H-2)

- Phytoplankton communities in the effluent and at both the Control and Test Sites consisted mostly of diatoms. The dominant taxon in the wet portion of the samples from the effluent and the Test Site was the diatom species *Skeletonema potamos*, a lightly silicified diatom that belongs to a genus that is primarily distributed in salinified and eutrophic inland lakes and rivers and has the potential to form massive blooms (Julius, 2003, p. 585). The effluent and Test Site had higher levels of sodium and higher AGP values than the Control Site. The dominant taxon found in the diatom portion of the sample for the effluent and Test Site was the species *Cyclotella meneghiniana*, which belongs to a genus recognized in a broad range of environments, from oligotrophic to hypereutrophic (Julius, 2003 p., 583). The Control and Test Sites were located in different water bodies, so true comparison of algal communities cannot be made between the two.

However, the algae community of the Test Site was similar to the effluent and reveals some influence in the discharge swale that could affect the receiving water.

Macroinvertebrates (See Table 5 and Appendices I-1 and I-2)

- Quantitative macroinvertebrate data were collected from Hester-Dendy samplers at the Control and Test Sites. The Shannon-Weaver diversity score for the Control Site (2.53) was calculated based on 242 individuals. Samples with less than 300 individuals have the potential for a negative bias by providing a lower diversity score compared to sites with more individuals (Lande 1996). The Shannon-Weaver diversity score for the Test Site was 3.29, and the sample had 3,086 individuals. The Hester-Dendy samplers at both sites were on floats, but the Control Site water level was lower and more stagnant than the Test Site; therefore, the samplers were closer to the bottom of the stream and had less flow (personal communication, Jacki Champion). The Test Site was dominated (88.6%) by the pollution and disturbance tolerant order diptera, and the dominant species was the midge, *Asheum beckae*. The Control Site was dominated by the amphipod, *Hyalella azteca* (43.0%), which is generally known to tolerate a wide range of ecological conditions. Gastropods from the family Ancylidae were also present at a high percentage (28.5%) at the Control Site.

Conclusion

Control Site iron (1380 µg/L) exceeded Class III Fresh Water Quality Criterion (62-302.530(38)). Dissolved oxygen in the effluent and at the Control and Test Sites complied with Class III Criteria and permit limits, but they are estimated values (J qualified). The AGP values for the effluent and Test Site were similar and were 4 times greater than the “problem” threshold. Nutrient measurements for the effluent and Test Site were also similar. However, a true comparison to background conditions cannot be made since the Control Site was located in a different water body than the Test Site. The phytoplankton community in the effluent and Test Site were similar and indicative of high nutrients. Too few individuals were collected on the Control Site Hester-Dendy samplers to provide an unbiased measure of diversity, and comparisons between the Control Site and Test Site are inconclusive because they are located in separate water bodies. Overall, influence from the effluent on the chemistry and biological communities in the Peace River is inconclusive.

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

Mosaic Fertilizer, LLC-South Fort Meade Mine	Class III Criteria	Effluent Limits	Effluent 9/20/10 Grab (** Composite)	Control Site	Test Site
Organic Constituents (µg/L)					
None Detected	-	-	None detected		
Nutrients (mg/L)					
Ortho-phosphate	-	-	0.65	1.2	0.68
Total Phosphorus	-	≤ 5	0.83	1.5	0.95
Total Ammonia	-	≤ 5	0.079	0.086	0.1
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate and Nitrite	-	-	0.28	0.035	0.26
Total Kjeldahl Nitrogen	-	-	0.84	1.4	0.9
Organic Nitrogen	-	-	0.761 c	1.314 c	0.8 c
Total Nitrogen	-	-	1.12 c	1.435 c	1.16 c
Organic Carbon (mg C/L)	-	-	9.3	8	9.3
General Physical and Chemical Parameters					
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	10.4 J	5.9 J	8.3 J
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.9	6.7	7.7
Conductivity (µmhos/cm)	≤ 1,275	≤ 1,275	620	221	620
Temperature (°C)	-	Report	28.8	25.0	29.0
Sample Depth (m)	-	-	-	0.1	0.3
Chlorophyll *a* (µg/L) - Corrected	-	Report	9.8	4.9	5.7
Phaeophytin (µg/L)	-	-	4.7	8.6	6.8
Total Suspended Solids (mg/L)	-	≤ 60	5 I	-	-
Fixed Suspended Solids (mg/L)	-	≤ 25	-	-	-
Total Dissolved Solids (mg/L)	-	-	410 A	-	-
Turbidity (NTU)	< 29 t	-	-	2.2	5.3
Color-True (PCU)	-	-	15	50 A	10
Alkalinity (mg CaCO3/L)	-	-	74	32	74
Oils and Greases (mg/L)	≤ 5.0	-	1.4 UY	-	-
Chloride (mg/L)	-	-	14	19	14
Fluoride (mg/L)	≤ 10.0	≤ 10.0	1.6	0.6	1.6
Sulfate (mg/L)	-	Report	190	36	190
Alpha, Total (pCi/L)	≤ 15	≤ 15	8.8	-	-
Alpha-Counting Error (pCi/L)	-	-	0.7	-	-
Radium 226 (pCi/L)	-	-	1.4	-	-
Radium 226-Counting Error (pCi/L)	-	-	0.2	-	-
Radium 228 (pCi/L)	-	-	0.7 U	-	-
Radium 228-Counting Error (pCi/L)	-	-	0.4	-	-
Radium 226 + 228 (pCi/L)	≤ 5	≤ 5	1.4 c	-	-
Flow (MGD)	-	Report	13.39 a	-	-
Hardness (mg $CaCO_3$)	-	-	200.10 c	83.36 c	199.03 c
Toxicity (96 hour chronic screen, NOEC, % effluent)					
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	100	100 L**	-	-
Bioassay - Fish *(Pimephales promelas)*	-	100	no result O	-	-

** - Composite sample
a - Annual average
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
L - Actual value is known to be greater than value given
O - Sampled, but analysis lost or not performed
U - Material analyzed for but not detected; value reported is the method detection limit
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit

Table 2. Effluent limits, Class III Freshwater Criteria and metals data. Class III Criteria based on hardness are presented individually for each site based on hardness at that site.

Mosaic Fertilizer, LLC-South Fort Meade Mine	Effluent Class III Criteria	Effluent Limits	Effluent	Control Site Class III Criteria	Control Site	Test Site Class III Criteria	Test Site
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	270	-	1110	-	690 A
Arsenic	≤ 50	-	1.92	≤ 50	0.64 I	≤ 50	1.85 A
Cadmium	≤ 0.45 b	-	0.03 U	≤ 0.24 b	0.11 I	≤ 0.45 b	0.036 I
Calcium (mg/L)	-	-	46	-	22.6	-	45.9 A
Chromium-III	≤ 152.10 b	-	0.49 I	≤ 74.25 b	2.5	≤ 151.43 b	1.3 A
Copper	≤ 16.88 b	-	0.5 U	≤ 7.99 b	1.75	≤ 16.80 b	0.5 U
Iron	≤ 1,000	-	52 I	≤ 1,000	1380	≤ 1,000	230 A
Lead	≤ 7.69 b	-	0.2 U	≤ 2.52 b	1.27	≤ 7.64 b	0.46 I
Magnesium (mg/L)	-	-	20.7	-	6.54	-	20.5 A
Nickel	≤ 93.81 b	-	0.71 I	≤ 44.72 b	0.93 I	≤ 93.38 b	0.92 I
Selenium	≤ 5.0	-	0.57 I	≤ 5.0	0.26 I	≤ 5.0	0.65 I
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Sodium (mg/L)	-	-	53.2	-	10.6	-	52.4 A
Zinc	≤ 215.66 b	-	5 U	≤ 102.70 b	5.2 I	≤ 214.68 b	5 U

See Table 1 for calculated hardness.

Value exceeds the Class III Water Quality Criteria or permit limits

b - Value is calculated based on hardness

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

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

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

Table 3. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN) and total nitrogen (TN) limitation of the freshwater species *Pseudokirchneriella subcapitata* and ratios of nitrogen to phosphorus.

Mosaic Fertilizer, LLC-South Fort Meade Mine					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	22.1	13.6 ± 2.7	42.6 ± 8.5	0.6	1.3
Control Site	7.5	4.6 ± 0.9	54.5 ± 10.9	0.1	1.0
Test Site	22.9	13.7 ± 2.7	44.1 ± 8.8	0.5	1.2

Table 4. Phytoplankton Composition - Quantitative.

Mosaic Fertilizer, LLC-South Fort Meade Mine	Effluent	Control Site	Test Site
Number of Taxa	24	14	21
Number of Wet Algal Units Identified	301	301	302
Algal Density (number/mL)	7,181	3,179	4,435
Percent Dominant Wet Taxon	58.8	79.7	50.3
Dominant Wet Taxon Name	*Skeletonema potamos* * (Diatoms)	Bacillariophyta (Diatoms)	*Skeletonema potamos** (Diatoms)
Number of Diatom Taxa	39	55	27
Number of Diatom Valves Identified	500	501	500
Percent Dominant Diatom Taxon	44.8	10.4	49.4
Dominant Diatom Taxon Name	*Cyclotella meneghiniana*	*Eunotia sp.*	*Cyclotella meneghiniana*
Percentage Composition of Wet Algae			
Blue-green algae	7.0	16.3	6.0
Green algae	21.6	3.0	18.9
Diatoms	66.7	79.7	70.6
Cryptophytes	0.3	0.0	0.7
Euglenophytes	1.3	1.0	0.7
Pyrrophytes	2.7	0.0	2.7

* - Weakly silicified diatom genus or species is identified in the wet portion because it does not survive the diatoms clearing process

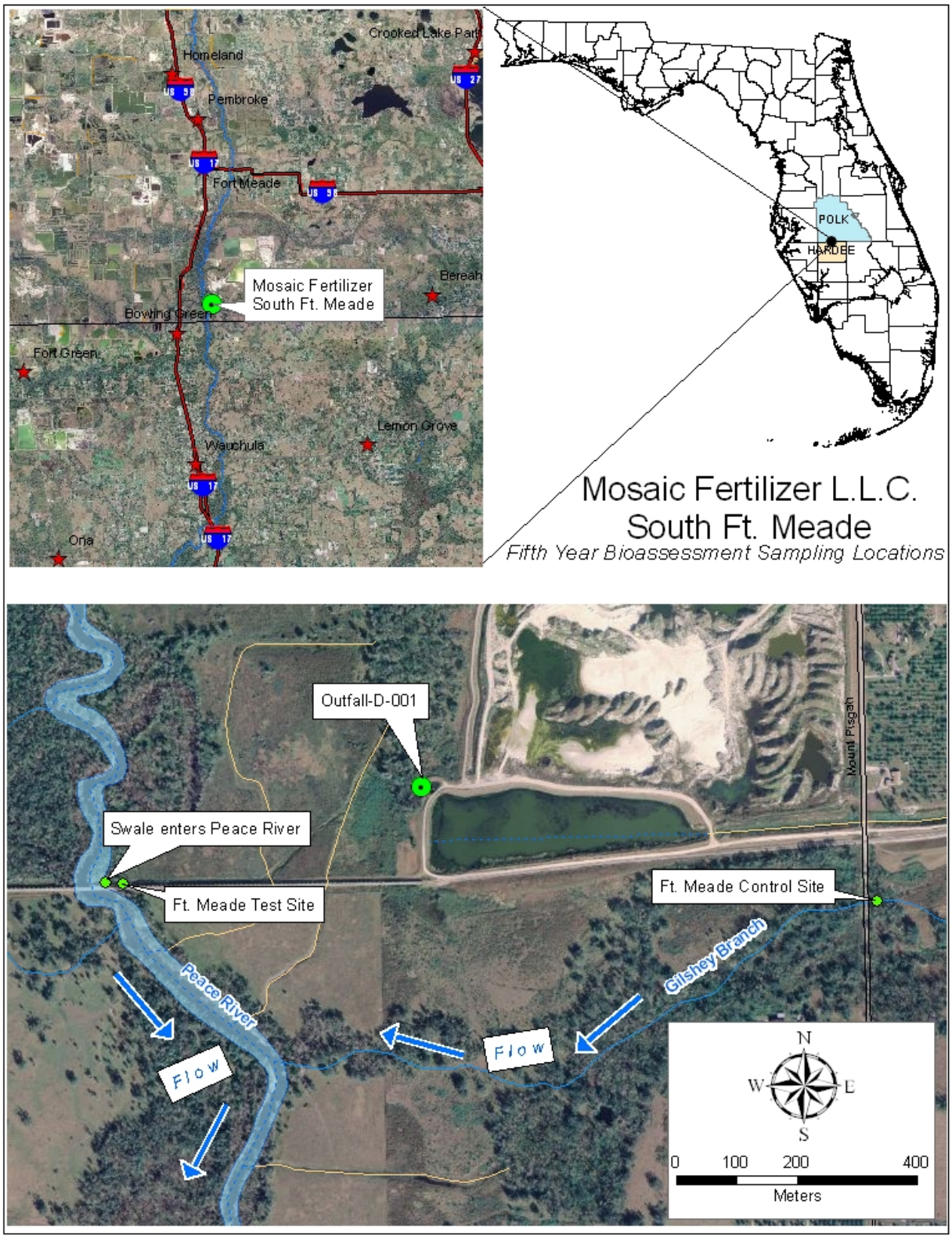
Table 5. Macroinvertebrate Hester-Dendy Samples - Quantitative.

Mosaic Fertilizer, LLC-South Fort Meade Mine	Control Site	Test Site
Summary Statistics		
Shannon-Weaver Diversity	2.53 *	3.29
Number of Taxa	22	42
Number of EPT Taxa	1	10
Percent Dominant Taxon	43.0	39.7
Dominant Taxon Name	*Hyalella azteca* (Amphipoda)	*Asheum beckae* (Diptera)
Total Number of Individuals (counted)	242	3,086
Total Number of Individuals (#/m^2)	641	8,167
Community Composition: Percent of total		
Amphipoda	43.0	2.1
Bivalvia	0.8	0.1
Coleoptera	0.0	0.1
Diptera	19.5	88.6
Ephemeroptera	1.3	1.0
Gastropoda	30.2	0.9
Odonata	0.8	0.3
Trichoptera	0.0	6.6
Other	4.5	0.2
Functional Feeding Groups: Percent of total		
Parasites	2.5	0.0
Piercers	0.0	1.5
Predators	4.5	4.3
Scrapers	30.8	1.5
Shredders	21.5	11.2
Surface Deposit Feeders	39.4	65.6
Suspension Feeders	1.5	15.9

* - Shannon Weaver Diversity scores calculated on samples with < 300 individuals have the potential for negative bias (lower diversity scores compared to sites with more individuals) (Lande 1996).

Appendix A

Map of Facility



Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Jacquelyn Champion	Contact Number: 813-632-7600 X133
Facility Name (as it appears on permit): Mosaic Fertilizer, L.L.C.-South Fort Meade Mine	Former Names: Cargill Fertilizer-South Fort Meade Mine
NPDES Permit Number: FL0037958	Permit Expiration Date: 6/20/11
Physical Address: 5880 Manley Road Fort Meade, FL 33841-9257	
District: SW	County: Polk and Hardee
Function of Facility: Phosphate Mine	
Facility Type: Phosphate Mine	Permitted Capacity (MGD): None
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): September 2009-August 2010- 13.39 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): n/a	
Description of type of Discharge: ☐ Continuous ☒ Intermittent ☐ Seasonal ☒ Rainfall Dependent ☐ Other, please specify	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): EFF-001; Outfall D-001 at the weir	
Description of Permitted Outfall(s): 8 foot concrete weir with end contractions	
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): Wastewater treatment consists of gravity settling sands, clays and suspended solids within earth-diked settling areas. Clarified water is decanted from the settling areas by gravity into the mine recirculation system.	

PART I: Continued										
List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)										
			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes

PARAMETERS (UNITS)	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	Daily Minimum	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type	Sample Point
Flow (mgd)	N/A	Report	Report	Continuous	Recorder	EFF-001
Solids, Total Suspended (mg/l)	N/A	30.0	60.0	1/Week	Grab	EFF-001
Solids, Fixed Suspended (mg/l) *	N/A	12.0	25.0	1/Week	Grab	EFF-001
Phosphorus, Total (as P) (mg/l)	N/A	3.0 **	5.0	1/Week	Grab	EFF-001
Phosphorus, Total (as P) (lbs/day) †	N/A	Report	Report	1/Week	Calculated	EFF-001
pH (standard units) (See Condition I.A.3.)	6.0	Report	8.5	1/Week	Grab	EFF-001
Specific Conductance (µmho/cm) (See Condition I.A.4.)	N/A	N/A	1275	1/Month	Grab	EFF-001
Oxygen, Dissolved (DO) (mg/l) (See Condition I.A.7.)	5.0	N/A	N/A	1/Month	Grab	EFF-001
Temperature (°F)	N/A	N/A	Report	1/Month	Grab	EFF-001
Nitrogen, Total (as N) (mg/l)	N/A	N/A	5.0 ***A	1/Month	Grab	EFF-001
Nitrogen, Total (as N) (lbs/day) †	N/A	N/A	Report	1/Month	Calculated	EFF-001
Sulfate, Total (mg/l)	N/A	N/A	Report	1/Quarter	Grab	EFF-001
Fluoride, Total (as F) (mg/l)	N/A	N/A	10.0	1/Quarter	Grab	EFF-001
Chlorophyll - a (µg/l)	N/A	N/A	Report	1/Quarter	Grab	EFF-001
Radium ^{226} + Radium ^{228}, Combined (PCI/L)	N/A	N/A	5.0 ††	Semiannually	Grab	EFF-001
Alpha, Gross Particle Activity (PCI/L)	N/A	N/A	15.0 ††	Semiannually	Grab	EFF-001
Nitrogen, Total (as N) (lbs/yr)	N/A	N/A	Report †	1/Year	Calculated	EFF-001
Phosphorus, Total (as P) (lbs/yr)	N/A	N/A	Report *	1/Year	Calculated	EFF-001
Whole Effluent Toxicity - Chronic	See Permit Conditions I.A.5.					EFF-001

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Unnamed Swale to the Peace River	Class III Fresh waters

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
Chronic Definitive test once per year (see language below)

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): None

Facility Mixing Zone Details (if applicable): None

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

Date	Parameter and Units	Limit	Result
4/13/10	Chronic Toxicity	IC25>100%	C.dubia failure IC25=81.8%; P.promelas failure IC25=41.5%
5/11/10	Chronic Toxicity	IC25>100%	C.dubia failure IC25=75.1%; P.promelas passed

Describe previous FYI and WQBEL study:
The parameters sampled during the 2005 FYI at the D-001 outfall were all within permit limits and water quality standards. One interesting finding was that the effluent algal community was dominated by the toxin-producing bluegreen algae, *Anabaena*.

Describe previous or current Enforcement Actions (including WLs):
A toxicity plan of study was initiated in 2007 to determine the cause of the *C. dubia* reproduction failures. There was no discharge to complete the study and determine if the toxicity was persistent. Discharges in July 2009 had a passing test. In April and May 2010 two chronic definitive *C. dubia* tests failed and one passed.

Describe any violations or problems noted in previous inspection: An inspection in September 2009 noted a discrepancy in the flow measurement at the outfall that has since been resolved. No issues were noted in subsequent inspections.

Discuss whether DMR trends within previous five years are improving or declining:
Static

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):
Toxicity Language:

The permittee shall comply with the following requirements to evaluate **chronic whole effluent toxicity** of the discharge from **Outfall D-001**.

a. Effluent Limitation

(1) Whole effluent chronic toxicity shall not exceed a 25 percent inhibition concentration (IC25) of less than 100% effluent in any test. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]

(2) Whole effluent acute toxicity shall not exceed a 96 hour LC50 of less than 100% effluent in any test [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

b. Monitoring Frequency

(1) Routine toxicity tests shall be conducted **annually**, the first starting within 60 days of the effective date of this permit or upon the first discharge thereafter where a sufficient sample for testing can be obtained, and lasting for the duration of this permit.

c. Sampling Requirements

(1) For each routine test or additional follow-up test conducted, a total of **three 24-hour composite samples** of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.

(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

(3) Samples for routine and additional follow-up tests shall not be collected on the same day.

d. Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: **100%, 50%, 25%, 12.5%,** and **6.25%** final effluent.

(2) The permittee shall conduct a daphnid, **Ceriodaphnia dubia**, Survival and Reproduction Test and a fathead minnow, **Pimephales promelas**, Larval Survival and Growth Test, concurrently.

(3) All test species, procedures and quality assurance criteria used shall be in accordance with **Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms**, EPA-821-R-02-013 (latest edition). Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.

(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.

PART II: Sampling Event Information	
Date(s) sample collected: 9/20/10	Sampler(s): Jacki Champion, Melani Dickenson
Temperature (Deg C): 28.83	pH (SU): 7.87
Dissolved Oxygen (mg/L): 10.38J	Conductivity (umhos/cm): 620
Total Residual Chlorine (mg/L):n/a	Total Residual Chlorine - after Disinfection (mg/L):n/a
Method of Chlorination:n/a	Method of De-chlorination:n/a
Flow During Sample Collection for each outfall(MGD): 18.23 MGD	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): September 2009-August 2010- 13.39 MGD	
Describe Discharge during Sampling Event: ☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

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

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits. Exceedances of Water Quality Criteria may constitute violations of specific provisions of Chapter 62-302 (F.A.C.) and/ or facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedence of 62-302.500(1)a and/or a violation of facility permit limits. An inhibition concentration greater than 25% in a chronic test may constitute exceedences of 62-302.530(20), 62-302.530(61) and/or a violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedence of 62-302.530(6) and/or a violation of facility permit limits.

(5) Habitat Assessment

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

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedence of 62-302.530(61) F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass . High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

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

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

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(8) Benthic Macroinvertebrate Assemblages

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

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitute exceedences of 62-302.530(10) F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et. al. 2007). This Index was revised in 2007 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. As human disturbance increases, it is expected that taxa richness, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon, and percent contribution of very tolerant taxa will increase.

Scores are broken into three categories (1, 2, and 3). Sites in Category 1 are described as having higher diversity than Category 2 sites, particularly for Ephemeroptera and Trichoptera. A Category 1 site may have several more clinger and sensitive taxa, a higher proportion of Tanytarsini, and a lower percent of a dominant taxon than a site in Category 2. The site will also have a very small percentage of very tolerant individuals, if any.

Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative to sites in Category 1. Very tolerant taxa represent a small percentage of individuals but are noticeably increased as compared to sites in Category 1.

Sites in Category 3 are described as having a notable loss in taxonomic diversity, and Ephemeroptera, Trichoptera, long-lived, clinger and sensitive taxa are uncommon or rare. Filter feeders are reduced by at least 50%. The site is dominated by a tolerant taxon, and very tolerant individuals represent a large proportion of the individuals collected.

SCI 2007 categories are from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160 F.A.C.), December 3, 2008. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score in Category 3, if it is shown to be related to a facility's effluent, may constitute exceedences of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or a violation of 62-302.530(61).

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-09-20-11
Mosaic Fertilizer - South Fort Meade Mine

Requester: Cari Butler
Field Report Prepared By: Jackie Champion
Collected By: Jackie Champion, Melani Dickenson
Send Final Report To: Vishwas Sathe
Sampling Agency: FDEP

Customer: BMR-TAMPA
Project ID: FYI5
PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Discharge Swale		9/23/10	9/20/10 12:30	C
	Field ID: Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.32	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh Water HD	Temp (C): 29.01	pH: 7.72	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 620	NPDES Number
	Latitude dd / dms	Longitude dd / dms	Comments: Hester - Dendy		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Discharge Swale		9/23/10	9/20/10 12:30	C
	Field ID: Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.32	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh Water HD	Temp (C): 29.01	pH: 7.72	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 620	NPDES Number
	Latitude dd / dms	Longitude dd / dms	Comments: Hester - Dendy		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Discharge Swale		9/23/10	9/20/10 12:30	C
	Field ID: Test Site	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 8.32	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh Water HD	Temp (C): 29.01	pH: 7.72	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 620	NPDES Number
	Latitude dd / dms	Longitude dd / dms	Comments: Hester - Dendy		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	BLANK-SFM	X	9/20/10 10:30		D
	Field ID: BLANK-SFM	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh water	Temp (C)	pH	Sample Depth m / ft	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number
	Latitude dd / dms	Longitude dd / dms	Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	3:30 9/20/10	FedEx	Tahnoura Ebrahim	9:40 09-21-10				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Page 1 of 4

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2010-09-20-11
Mosaic Fertilizer - South Fort Meade Mine

Requester: Cari Butler

Field Report Prepared By: Jachi Champion

Customer: BMR-TAMPA
Project ID: FYI5
PMAS: 1143

Collected By: Jachi Champion, Melani Dickenson

Send Final Report To: Vishwas Sathe

Sampling Agency: FDEP

Lab ID *: Location: Gilshey Branch @ Mount Pisgah Rd | ☐ Comp ☐ Grab | Collection (begin) Date 9/20/10 Time | Eastern Central | Collection (end) Date 9/20/10 Time 1.00 | Eastern Central | Bottle Group(s)**: C

Field ID: Control Site - Gilshey | Tot Res Chlorine (mg/L): | Diss Oxygen (mg/L): 5.94 | Storet Station Number:

Matrix (include type e.g. Salt, Fresh, etc): Fresh Water HD | Temp (C): 25.03 | pH: 6.65 | Sample Depth ☐ m ☐ ft | 221 | ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm) | NPDES Number:

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments: Hester - Dendy

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Lab ID *: Location: Gilshey Branch @ Mount Pisgah Rd | ☐ Comp ☐ Grab | Collection (begin) Date 9/20/10 Time | Eastern Central | Collection (end) Date 9/20/10 Time 1.00 | Eastern Central | Bottle Group(s)**: C

Field ID: Control Site - Gilshey | Tot Res Chlorine (mg/L): | Diss Oxygen (mg/L): 5.94 | Storet Station Number:

Matrix (include type e.g. Salt, Fresh, etc): Fresh water HD | Temp (C): 25.03 | pH: 6.65 | Sample Depth ☐ m ☐ ft | 221 | ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm) | NPDES Number:

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments: Hestr - Dendy

---

Lab ID *: Location: Gilshey Brnch @ Mount Pisgah Rd | ☐ Comp ☐ Grab | Collection (begin) Date 9/20/10 Time | Eastern Central | Collection (end) Date 9/20/10 Time 1.00 | Eastern Central | Bottle Group(s)**: C

Field ID: Control Site - Gilshey | Tot Res Chlorine (mg/L): | Diss Oxygen (mg/L): 5.94 | Storet Station Number:

Matrix (include type e.g. Salt, Fresh, etc): Fresh water HD | Temp (C): 25.03 | pH: 6.65 | Sample Depth ☐ m ☐ ft | 221 | ☐ Salinity (PPTh) ☒ Sp Conductance (umho/cm) | NPDES Number:

Latitude ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments: Hester - Dendy

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Lab ID *: Location: | ☐ Comp ☐ Grab | Collection (begin) Date Time | Eastern Central | Collection (end) Date Time | Eastern Central | Bottle Group(s)**:

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 ☐ dd ☐ dms | Longitude ☐ dd ☐ dms | Comments:

Relinquished By:	Date/Time:	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	9/20/10 3:30	Fed Ex	Tahmasres Ebrahimi	09-21-10 9:40				

* 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

Event ID *

Request Number: RQ-2010-09-20-11
Mosaic Fertilizer - South Fort Meade Mine

Customer: BMR-TAMPA
Project ID: FYI5
PMAS: 1143

Requester: Cari Butler
Collected By: Jachi Champion, Melani Dickenson
Sampling Agency: FDEP
Field Report Prepared By: Jachi Champion
Send Final Report To: Vishwas Sathe

Lab ID *	Location	Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (begin) Date	Time	Eastern / Central	Collection (end) Date	Time	Eastern / Central	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth	Salinity (PPTh) / Sp Conductance (umho/cm)	NPDES Number	Comments	Bottle Group(s)**
	Mosaic South Fort Meade Mine Outfall D-001	Mosaic SFM D-001	Fresh Water	28.83	7.87	dd / dms	dd / dms	Grab	9/20/10	10:45	Eastern					10.38		620 m	Sp Conductance	FL0037958		A
	Mosaic South Fort Meade Mine Outfall D-001	Mosaic SFM D-001	Fresh Water	28.83	7.87	dd / dms	dd / dms	Grab	9/19/10	10:15	Eastern	9/20/10	10:15	Eastern		10.38		620 m	Sp Conductance	FL0037958	Bioassay Samples	A
	Gilshey Branch @ Mount Pisgah Rd	Control Site - Gilshey	Fresh Water	25.03	6.65	N27°39'24.9" dd / dms	W81°47'21.4" dd / dms	Grab	9/20/10	1:00	Eastern					5.94		0.1 m	Sp Conductance 221			B
	Discharge Swale	Test Site	Fresh Water	29.01	7.72	N27°39'25.0" dd / dms	W81°48'05.7" dd / dms	Grab	9/20/10	12:30	Eastern					8.32		0.3 m	Sp Conductance 620			B

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	9/20/10 3:30	FedEx	Tahmaures Ebrahimi	09-21-10	3 Bioassay 9.21.10		B. Alexander 11:52	

* 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

Event ID *

Request Number: RQ-2010-09-20-11
Mosaic Fertilizer - South Fort Meade Mine

Requester: Cari Butler

Field Report Prepared By: Jacki Champion

Customer: BMR-TAMPA
Project ID: FYI5
PMAS: 1143

Collected By: Jacki Champion/Melani Dickenson

Send Final Report To: Vishwas Sathe

Sampling Agency: FDEP

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Mosaic South Fort Meade	☒ Comp ☐ Grab	9/21/10 10:35	9/21/10 10:35	A
	Field ID: Outfall D-001	Tot Res Chlorine (mg/L): —	Diss Oxygen (mg/L): —	Storet Station Number: —	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh Water	Temp (C): —	pH: —	Sample Depth ☐ m ☐ ft: —	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm): —
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: Bioassay Samples	NPDES Number: —

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments	

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: 5 Bioassay, Relinq. To by JD. 9:45 9.23.10	

Relinquished By:	Date/Time	Shipping Method	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J Champion	9/23/10 12:30 pm	FedEx	[illegible]	9-23-10 9:45				

* 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

Event ID *

Request Number: RQ-2010-09-20-11
Mosaic Fertilizer - South Fort Meade Mine

Requester: Cari Butler

Field Report Prepared By: Jackie Champion

Customer: BMR-TAMPA
Project ID: FYI5
PMAS: 1143

Collected By: Jackie Champion/Melonie Dickenson

Send Final Report To: Vishwas Sathe

Sampling Agency: FDEP

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
	Mosaic South Fort Meade Mine	☒ Comp ☐ Grab	9/23/10 Time 10:15 Eastern Central	Date 9/24/10 Time 10:15 Eastern Central	A
	Field ID: Outfall 001	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc): Fresh Water	Temp (C)	pH	Sample Depth ☐ m ☐ ft; ☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments: Biossay Samples		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Comp / Grab	Collection (begin) Date Time Eastern Central	Collection (end) Date Time Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab			
	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 ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
J Champion	9/24/10 1230	FedEX	James Daniels (by M. Faircloth)	9-25-10 1000				

Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Picked up at FedEx Tallahassee by Tom Dorin

Three for bottle 2 coolers.

temp 6.1 °C

Appendix E
Chemical analysis of effluent and receiving water

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:45	Effluent	AGP/LN	Algal Growth Potential	22.1		mg DryWt/L	0.3	0.9
9/20/2010 10:45	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	9.8		ug/L	0.55	1.7
9/20/2010 10:45	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	4.7		ug/L	0.4	1.2
9/20/2010 10:45	Effluent	Metals	Chromium	0.49	I	ug/L	0.3	1.2
9/20/2010 10:45	Effluent	Metals	Arsenic	1.92		ug/L	0.25	1
9/20/2010 10:45	Effluent	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
9/20/2010 10:45	Effluent	Metals	Iron	52	I	ug/L	30	120
9/20/2010 10:45	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
9/20/2010 10:45	Effluent	Metals	Selenium	0.57	I	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Metals	Sodium	53.2		mg/L	0.5	2
9/20/2010 10:45	Effluent	Metals	Magnesium	20.7		mg/L	0.04	0.16
9/20/2010 10:45	Effluent	Metals	Nickel	0.71	I	ug/L	0.25	1
9/20/2010 10:45	Effluent	Metals	Zinc	5	U	ug/L	5	20
9/20/2010 10:45	Effluent	Metals	Lead	0.2	U	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Metals	Copper	0.5	U	ug/L	0.5	1
9/20/2010 10:45	Effluent	Metals	Calcium	46		mg/L	0.075	0.3
9/20/2010 10:45	Effluent	Metals	Aluminum	270		ug/L	60	240
9/20/2010 10:45	Effluent	Nutrients	Sulfate	190		mg SO4/L	1	2.5
9/20/2010 10:45	Effluent	Nutrients	Total-P	0.83		mg P/L	0.005	0.05
9/20/2010 10:45	Effluent	Nutrients	Chloride	14		mg Cl/L	1	2.5
9/20/2010 10:45	Effluent	Nutrients	Color (true)	15		PCU	5	5
9/20/2010 10:45	Effluent	Nutrients	TDS	410	A	mg/L	15	60
9/20/2010 10:45	Effluent	Nutrients	O-Phosphate-P	0.65		mg P/L	0.04	0.1
9/20/2010 10:45	Effluent	Nutrients	Ammonia-N	0.079		mg N/L	0.01	0.02
9/20/2010 10:45	Effluent	Nutrients	Alkalinity	74		mg CaCO3/L	0.65	2.5
9/20/2010 10:45	Effluent	Nutrients	NO2NO3-N	0.28		mg N/L	0.004	0.01
9/20/2010 10:45	Effluent	Nutrients	TSS	5	I	mg/L	4	16
9/20/2010 10:45	Effluent	Nutrients	Fluoride	1.6		mg F/L	0.035	0.1
9/20/2010 10:45	Effluent	Nutrients	Organic Carbon	9.3		mg C/L	1	5
9/20/2010 10:45	Effluent	Nutrients	Kjeldahl Nitrogen	0.84		mg N/L	0.08	0.2
9/20/2010 10:45	Effluent	Overflow	Radium 226	1.4		pCi/L		
9/20/2010 10:45	Effluent	Overflow	Radium 228	0.7	U	pCi/L		
9/20/2010 10:45	Effluent	Overflow	Oil and Grease	1.4	UY	mg/L	1.4	5
9/20/2010 10:45	Effluent	Overflow	Radium 228-Counting Error	0.4		pCi/L		
9/20/2010 10:45	Effluent	Overflow	Alpha-Counting Error	0.7		pCi/L		
9/20/2010 10:45	Effluent	Overflow	Alpha, Total	8.8		pCi/L		
9/20/2010 10:45	Effluent	Overflow	Radium 226-Counting Error	0.2		pCi/L		
9/20/2010 10:45	Effluent	Pesticides	Metalaxyl	0.25	UY	ug/L	0.25	1

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:45	Effluent	Pesticides	Metribuzin	0.1	UY	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Phorate	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Fonofos	0.1	UYJ	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Metolachlor	0.5	UY	ug/L	0.5	2
9/20/2010 10:45	Effluent	Pesticides	Atrazine	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	UY	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Mevinphos	0.2	UY	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Pesticides	Naled	0.8	UY	ug/L	0.8	3.2
9/20/2010 10:45	Effluent	Pesticides	Norflurazon	0.15	UY	ug/L	0.15	0.6
9/20/2010 10:45	Effluent	Pesticides	Fenamiphos	0.2	UY	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Pesticides	Alachlor	0.6	UY	ug/L	0.6	2.4
9/20/2010 10:45	Effluent	Pesticides	Azinphos Methyl	0.2	UYJ	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Pesticides	Malathion	0.15	UY	ug/L	0.15	0.6
9/20/2010 10:45	Effluent	Pesticides	Parathion Ethyl	0.15	UY	ug/L	0.15	0.6
9/20/2010 10:45	Effluent	Pesticides	Simazine	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Ametryn	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Butylate	0.2	UY	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Ethion	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Parathion Methyl	0.1	UY	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Bromacil	0.2	UY	ug/L	0.2	0.8
9/20/2010 10:45	Effluent	Pesticides	Diazinon	0.05	UY	ug/L	0.05	0.2
9/20/2010 10:45	Effluent	Pesticides	Ethoprop	0.1	UY	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Hexazinone	0.1	UY	ug/L	0.1	0.4
9/20/2010 10:45	Effluent	Pesticides	Prometryn	0.15	UY	ug/L	0.15	0.6
9/20/2010 10:45	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1	UYJ	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	10	UY	ug/L	10	41
9/20/2010 10:45	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1	UY	ug/L	2.1	8.2
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	UY	ug/L	15	62
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	15	UY	ug/L	15	62
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.2	UY	ug/L	5.2	21
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Diethyl phthalate	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1	UY	ug/L	2.1	8.2
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Anthracene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.2	UY	ug/L	5.2	21

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Hexachloroethane	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Phenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	4-Nitrophenol	15	UY	ug/L	15	62
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Acenaphthylene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Dimethyl phthalate	10	UY	ug/L	10	41
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2-Nitrophenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Acenaphthene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Chrysene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Fluoranthene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Fluorene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2-Chlorophenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Isophorone	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1	UY	ug/L	2.1	8.2
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzidine	100	UY	ug/L	100	410
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41	UYJ	ug/L	41	160
9/20/2010 10:45	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1	UY	ug/L	1	4.1
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.1	UY	ug/L	3.1	12
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Naphthalene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Nitrobenzene	2.1	UY	ug/L	2.1	8.2
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Phenanthrene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Pyrene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.21	UY	ug/L	0.21	0.82
9/20/2010 10:45	Effluent	Field Parameter	pH	7.87				
9/20/2010 10:45	Effluent	Field Parameter	Dissolved Oxygen	10.38		mg/L		
9/20/2010 10:45	Effluent	Field Parameter	Temperature	28.83		C		
9/20/2010 10:45	Effluent	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 10:15	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	no result	O	NOEC		
9/20/2010 10:15	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC20	no result	O	IC20		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:15	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	L	NOEC		
9/20/2010 10:15	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC20	100	L	IC20		
9/20/2010 10:15	Effluent	Field Parameter	Dissolved Oxygen	10.38		mg/L		
9/20/2010 10:15	Effluent	Field Parameter	Temperature	28.83		C		
9/20/2010 10:15	Effluent	Field Parameter	pH	7.87				
9/20/2010 10:15	Effluent	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 13:00	Control Site	AGP/LN	Algal Growth Potential	7.53		mg DryWt/L	0.3	0.9
9/20/2010 13:00	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	8.6		ug/L	0.4	1.2
9/20/2010 13:00	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	4.9		ug/L	0.55	1.7
9/20/2010 13:00	Control Site	Metals	Chromium	2.5		ug/L	0.3	1.2
9/20/2010 13:00	Control Site	Metals	Arsenic	0.64	I	ug/L	0.25	1
9/20/2010 13:00	Control Site	Metals	Sodium	10.6		mg/L	0.5	2
9/20/2010 13:00	Control Site	Metals	Cadmium	0.11	I	ug/L	0.03	0.12
9/20/2010 13:00	Control Site	Metals	Magnesium	6.54		mg/L	0.04	0.16
9/20/2010 13:00	Control Site	Metals	Calcium	22.6		mg/L	0.075	0.3
9/20/2010 13:00	Control Site	Metals	Selenium	0.26	I	ug/L	0.2	0.8
9/20/2010 13:00	Control Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
9/20/2010 13:00	Control Site	Metals	Nickel	0.93	I	ug/L	0.25	1
9/20/2010 13:00	Control Site	Metals	Lead	1.27		ug/L	0.2	0.8
9/20/2010 13:00	Control Site	Metals	Aluminum	1110		ug/L	60	240
9/20/2010 13:00	Control Site	Metals	Iron	1380		ug/L	30	120
9/20/2010 13:00	Control Site	Metals	Zinc	5.2	I	ug/L	5	20
9/20/2010 13:00	Control Site	Metals	Copper	1.75		ug/L	0.5	1
9/20/2010 13:00	Control Site	Nutrients	Total-P	1.5		mg P/L	0.025	0.25
9/20/2010 13:00	Control Site	Nutrients	NO2NO3-N	0.035		mg N/L	0.004	0.01
9/20/2010 13:00	Control Site	Nutrients	Sulfate	36		mg SO4/L	0.2	0.5
9/20/2010 13:00	Control Site	Nutrients	Chloride	19		mg Cl/L	0.2	0.5
9/20/2010 13:00	Control Site	Nutrients	Turbidity	2.2		NTU	0.1	0.1
9/20/2010 13:00	Control Site	Nutrients	Organic Carbon	8		mg C/L	1	5
9/20/2010 13:00	Control Site	Nutrients	Fluoride	0.6		mg F/L	0.035	0.1
9/20/2010 13:00	Control Site	Nutrients	Alkalinity	32		mg CaCO3/L	0.65	2.5
9/20/2010 13:00	Control Site	Nutrients	O-Phosphate-P	1.2		mg P/L	0.08	0.2
9/20/2010 13:00	Control Site	Nutrients	Ammonia-N	0.086		mg N/L	0.01	0.02
9/20/2010 13:00	Control Site	Nutrients	Kjeldahl Nitrogen	1.4		mg N/L	0.08	0.2
9/20/2010 13:00	Control Site	Nutrients	Color (true)	50	A	PCU	5	5
9/20/2010 13:00	Control Site	Field Parameter	Sample Depth	0.1		m		
9/20/2010 13:00	Control Site	Field Parameter	pH	6.65				
9/20/2010 13:00	Control Site	Field Parameter	Dissolved Oxygen	5.94		mg/L		
9/20/2010 13:00	Control Site	Field Parameter	Specific Conductance	221		umhos/cm		
9/20/2010 13:00	Control Site	Field Parameter	pH	6.65				
9/20/2010 13:00	Control Site	Field Parameter	Temperature	25.03		C		
9/20/2010 13:00	Control Site	Field Parameter	Specific Conductance	221		umhos/cm		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 13:00	Control Site	Field Parameter	Dissolved Oxygen	5.94		mg/L		
9/20/2010 13:00	Control Site	Field Parameter	Temperature	25.03		C		
9/20/2010 13:00	Control Site	Field Parameter	Specific Conductance	221		umhos/cm		
9/20/2010 13:00	Control Site	Field Parameter	Temperature	25.03		C		
9/20/2010 13:00	Control Site	Field Parameter	pH	6.65				
9/20/2010 13:00	Control Site	Field Parameter	Dissolved Oxygen	5.94		mg/L		
9/20/2010 13:00	Control Site	Field Parameter	Dissolved Oxygen	5.94		mg/L		
9/20/2010 13:00	Control Site	Field Parameter	Temperature	25.03		C		
9/20/2010 13:00	Control Site	Field Parameter	pH	6.65				
9/20/2010 13:00	Control Site	Field Parameter	Specific Conductance	221		umhos/cm		
9/20/2010 12:30	Test Site	AGP/LN	Algal Growth Potential	22.9		mg DryWt/L	0.3	0.9
9/20/2010 12:30	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	6.8		ug/L	0.4	1.2
9/20/2010 12:30	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	5.7		ug/L	0.55	1.7
9/20/2010 12:30	Test Site	Metals	Magnesium	20.5	A	mg/L	0.04	0.16
9/20/2010 12:30	Test Site	Metals	Selenium	0.65	I	ug/L	0.2	0.8
9/20/2010 12:30	Test Site	Metals	Copper	0.5	U	ug/L	0.5	1
9/20/2010 12:30	Test Site	Metals	Cadmium	0.036	I	ug/L	0.03	0.12
9/20/2010 12:30	Test Site	Metals	Chromium	1.3	A	ug/L	0.3	1.2
9/20/2010 12:30	Test Site	Metals	Lead	0.46	I	ug/L	0.2	0.8
9/20/2010 12:30	Test Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
9/20/2010 12:30	Test Site	Metals	Zinc	5	U	ug/L	5	20
9/20/2010 12:30	Test Site	Metals	Arsenic	1.85	A	ug/L	0.25	1
9/20/2010 12:30	Test Site	Metals	Aluminum	690	A	ug/L	60	240
9/20/2010 12:30	Test Site	Metals	Nickel	0.92	I	ug/L	0.25	1
9/20/2010 12:30	Test Site	Metals	Iron	230	A	ug/L	30	120
9/20/2010 12:30	Test Site	Metals	Sodium	52.4	A	mg/L	0.5	2
9/20/2010 12:30	Test Site	Metals	Calcium	45.9	A	mg/L	0.075	0.3
9/20/2010 12:30	Test Site	Nutrients	Alkalinity	74		mg CaCO3/L	0.65	2.5
9/20/2010 12:30	Test Site	Nutrients	Ammonia-N	0.1		mg N/L	0.01	0.02
9/20/2010 12:30	Test Site	Nutrients	Sulfate	190		mg SO4/L	1	2.5
9/20/2010 12:30	Test Site	Nutrients	Chloride	14		mg Cl/L	1	2.5
9/20/2010 12:30	Test Site	Nutrients	Total-P	0.95		mg P/L	0.005	0.05
9/20/2010 12:30	Test Site	Nutrients	O-Phosphate-P	0.68		mg P/L	0.04	0.1
9/20/2010 12:30	Test Site	Nutrients	Organic Carbon	9.3		mg C/L	1	5
9/20/2010 12:30	Test Site	Nutrients	Fluoride	1.6		mg F/L	0.035	0.1
9/20/2010 12:30	Test Site	Nutrients	NO2NO3-N	0.26		mg N/L	0.004	0.01
9/20/2010 12:30	Test Site	Nutrients	Color (true)	10		PCU	5	5
9/20/2010 12:30	Test Site	Nutrients	Turbidity	5.3		NTU	0.1	0.1
9/20/2010 12:30	Test Site	Nutrients	Kjeldahl Nitrogen	0.9		mg N/L	0.08	0.2
9/20/2010 12:30	Test Site	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 12:30	Test Site	Field Parameter	Temperature	29.01		C		
9/20/2010 12:30	Test Site	Field Parameter	pH	7.72				

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 12:30	Test Site	Field Parameter	Sample Depth	0.3		m		
9/20/2010 12:30	Test Site	Field Parameter	Dissolved Oxygen	8.32		mg/L		
9/20/2010 12:30	Test Site	Field Parameter	pH	7.72				
9/20/2010 12:30	Test Site	Field Parameter	Temperature	29.01		C		
9/20/2010 12:30	Test Site	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 12:30	Test Site	Field Parameter	Dissolved Oxygen	8.32		mg/L		
9/20/2010 12:30	Test Site	Field Parameter	Dissolved Oxygen	8.32		mg/L		
9/20/2010 12:30	Test Site	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 12:30	Test Site	Field Parameter	pH	7.72				
9/20/2010 12:30	Test Site	Field Parameter	Temperature	29.01		C		
9/20/2010 12:30	Test Site	Field Parameter	Dissolved Oxygen	8.32		mg/L		
9/20/2010 12:30	Test Site	Field Parameter	pH	7.72				
9/20/2010 12:30	Test Site	Field Parameter	Temperature	29.01		C		
9/20/2010 12:30	Test Site	Field Parameter	Specific Conductance	620		umhos/cm		
9/20/2010 10:25	Blank	Metals	Calcium	0.075	U	mg/L	0.075	0.3
9/20/2010 10:25	Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Metals	Magnesium	0.04	U	mg/L	0.04	0.16
9/20/2010 10:25	Blank	Metals	Iron	30	U	ug/L	30	120
9/20/2010 10:25	Blank	Metals	Copper	0.5	U	ug/L	0.5	1
9/20/2010 10:25	Blank	Metals	Cadmium	0.03	U	ug/L	0.03	0.12
9/20/2010 10:25	Blank	Metals	Aluminum	60	U	ug/L	60	240
9/20/2010 10:25	Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
9/20/2010 10:25	Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
9/20/2010 10:25	Blank	Metals	Zinc	5	U	ug/L	5	20
9/20/2010 10:25	Blank	Metals	Silver	0.025	U	ug/L	0.025	0.1
9/20/2010 10:25	Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
9/20/2010 10:25	Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
9/20/2010 10:25	Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5
9/20/2010 10:25	Blank	Nutrients	Total-P	0.004	U	mg P/L	0.004	0.01
9/20/2010 10:25	Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
9/20/2010 10:25	Blank	Nutrients	NO2NO3-N	0.004	U	mg N/L	0.004	0.01
9/20/2010 10:25	Blank	Nutrients	Ammonia-N	0.01	U	mg N/L	0.01	0.02
9/20/2010 10:25	Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
9/20/2010 10:25	Blank	Nutrients	Color (true)	5	U	PCU	5	5
9/20/2010 10:25	Blank	Nutrients	Kjeldahl Nitrogen	0.08	U	mg N/L	0.08	0.2
9/20/2010 10:25	Blank	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
9/20/2010 10:25	Blank	Nutrients	Organic Carbon	1	U	mg C/L	1	5
9/20/2010 10:25	Blank	Nutrients	Fluoride	0.035	U	mg F/L	0.035	0.1
9/20/2010 10:25	Blank	Overflow	Radium 228-Counting Error	0.4		pCi/L		
9/20/2010 10:25	Blank	Overflow	Radium 226	0.2	U	pCi/L		
9/20/2010 10:25	Blank	Overflow	Alpha-Counting Error	0.5		pCi/L		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:25	Blank	Overflow	Alpha, Total	0.7	U	pCi/L		
9/20/2010 10:25	Blank	Overflow	Oil and Grease	1.4	U	mg/L	1.4	5
9/20/2010 10:25	Blank	Overflow	Radium 226-Counting Error	0.1		pCi/L		
9/20/2010 10:25	Blank	Overflow	Radium 228	0.7	U	pCi/L		
9/20/2010 10:25	Blank	Pesticides	Chlorpyrifos Ethyl	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Fonofos	0.098	UJ	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Pesticides	Phorate	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Chlorpyrifos Methyl	0.098	U	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
9/20/2010 10:25	Blank	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
9/20/2010 10:25	Blank	Pesticides	Simazine	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Atrazine	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Diazinon	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Pesticides	Metolachlor	0.49	U	ug/L	0.49	2
9/20/2010 10:25	Blank	Pesticides	Naled	0.78	U	ug/L	0.78	3.1
9/20/2010 10:25	Blank	Pesticides	Ametryn	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Bromacil	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Pesticides	Ethoprop	0.098	U	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Pesticides	Hexazinone	0.098	U	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Pesticides	Metribuzin	0.098	U	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Pesticides	Alachlor	0.59	U	ug/L	0.59	2.4
9/20/2010 10:25	Blank	Pesticides	Butylate	0.2	U	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
9/20/2010 10:25	Blank	Pesticides	Ethion	0.049	U	ug/L	0.049	0.2
9/20/2010 10:25	Blank	Pesticides	Azinphos Methyl	0.2	UJ	ug/L	0.2	0.8
9/20/2010 10:25	Blank	Pesticides	Metalaxyl	0.25	U	ug/L	0.25	1
9/20/2010 10:25	Blank	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
9/20/2010 10:25	Blank	Pesticides	Parathion Methyl	0.098	U	ug/L	0.098	0.39
9/20/2010 10:25	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2	U	ug/L	2	7.9
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Pyrene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2	U	ug/L	2	7.9
9/20/2010 10:25	Blank	Priority Organic Pollutants	Diethyl phthalate	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Chrysene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	2-Chlorophenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	59
9/20/2010 10:25	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	5	U	ug/L	5	20
9/20/2010 10:25	Blank	Priority Organic Pollutants	Fluoranthene	0.2	U	ug/L	0.2	0.79

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
9/20/2010 10:25	Blank	Priority Organic Pollutants	Naphthalene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.99	UJ	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.9	U	ug/L	9.9	40
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	2-Nitrophenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40	UJ	ug/L	40	160
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	Isophorone	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2	U	ug/L	2	7.9
9/20/2010 10:25	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	5	U	ug/L	5	20
9/20/2010 10:25	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Phenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Acenaphthylene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Anthracene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzidine	99	U	ug/L	99	400
9/20/2010 10:25	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Hexachlorobutadiene	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Pentachlorophenol	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Acenaphthene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	Fluorene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Phenanthrene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	59
9/20/2010 10:25	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.99	U	ug/L	0.99	4
9/20/2010 10:25	Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	59
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.2	U	ug/L	0.2	0.79
9/20/2010 10:25	Blank	Priority Organic Pollutants	Nitrobenzene	2	U	ug/L	2	7.9
9/20/2010 10:25	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3	U	ug/L	3	12
9/20/2010 10:25	Blank	Priority Organic Pollutants	Dimethyl phthalate	9.9	U	ug/L	9.9	40
9/20/2010 10:25	Blank	Priority Organic Pollutants	Hexachloroethane	3	U	ug/L	3	12

Appendix F

Toxicological results

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Mosaic Fertilizer, LLC - South FT Meade mine
Address: 5880 Manley Road Fort Meade, fl 33841-9257
County: Polk and Hardee
NPDES Permit #: FL 0037958
Contact/District: Jackie Champion / BMR-Tampa

LIMS entry: MF 10-14-10 verified: BA 10.15.10

Diluent/ Batch: 20% DMW / 9.18.10 Test Days Used: 0-3
20% DMW / 9-21-10 Test Days Used: 4-7

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Start Date: 9.21.10 Time: 13:50
End Date: 9-28-10 Time: 1330

Organism: *Ceriodaphnia dubia*
Organism Batch #: 9.21.10
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: YCT *P. subcapitata*
Food Batch: 5.19.10 6.24.10
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2010-09-21.65	1299626	20 Sept 2010 1015	9-21-10 1152
Test Day 2	2	TLH-2010-09-23-44	1300265	22 Sept 2010 1035	9-23-10 0945
Test Day 4	3	TLH-2010-09-28-56 BA	1300848	24 Sept 2010 1215	9-25-10 10:00

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	Not measured			<0.03	<0.03	<0.03	89	86	90
Diluent/Control:				<0.03	<0.03	<0.03	79	82	82
Method:				Hach	Hach	Hach	Hach	Hach	Hach
Measured by:	—	—	—	SS/DP	SS/DP BA	MF/SS/DP	SS/DP	SS/DP	SS/DP
Verified by:	MF	MF	MF	MF	MF	BA	MF	MF	BA

	Conductivity (circle one) (µmhos-cm) (mmhos-cm)			Ammonia (mg/L)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3
Sample:	602	613	595	<0.017	<0.017	Not measured	184	184	183
Diluent/Control:	175	176	176	<0.017	<0.017	<0.017	81	81	81
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Hach	Hach	Hach
Measured by:	BA	BA	BA/SD	MF	MF	MF	SS/DP	SS/DP	SS/DP
Verified by:	MF	MF	MF	BA	BA	BA	MF	MF	BA

Temperature Shipped ≤6° C (all samples) (yes) no
Holding Time ≤36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min 24.7 max 26.0 mean 25.2
Room B246 min 24.9 max 25.6 mean 25.7

Test Replicate	Loaded from culture vial
1	A2
2	A23
3	B20
4	B10
5	B24
6	A19
7	A14
8	A18
9	A2
10	A25

Results	
Control % CV:	37.82%
Dunnetts PMSD:	—
Reproduction NOEC:	100 %
Reproduction LOEC:	>100 %
Survival NOEC:	100%
Survival LOEC:	>100 %
ICP_{20}:	>100%
ICP_{25}:	>100 %

Investigators' signatures

Brian Ash
Marshall Faircloth
Diane Power
Amelia Rivadeneira (Hayes)
REVIEWER

Comments:

Test Page 1 of 5

PAGE 000026

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Mosaic Fertilizer, LLC - South Ft Meade Mine

LIMS Sample #: 1299626 for lab sample #1

Start Date: 9.21.10 Time: 13:30

End Date: 9-28-10 Time: 1330

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10 (8)	0
	3	0	0	0	0	0	2	0	0	0	0	2	10(9)	0.25
	4	2	4	3	3	2	0	4	0	0	0	19	10(8)	2.38
	5	X0	8	8	0	0	8	0	8	0	0	32	9 (8)	4
	6	X0	0	0	9	9	11	7	0	0	6	34	9 (8)	4.5
	7	1	6	11	10	11	0	13	6	0	0	57	9 (8)	7.13
	8													
	Total	3	18	22	22	22	21	24	14	0 (A)	0 (A)	146	9 (8)	18.3

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving adults	Neonates per adult
6.25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	4	5	3	1	0	3	3	3	4	26	10	2.6
	5	1	9	0	0	0	6	0	7	8	0	31	10	3.1
	6	5	0	X2	10	7	0	7	0	0	10	41	9	4.1
	7	0	7	1	2	9	0	10	8	10	11	57	9	6.7
	8													
	Total	6	20	7	15	17	6	20	18	21	25	155	9 (10)	15.5

Organisms loaded by: BA

Day	Counted/ verified by:	Concentrations prepared by:
0	MF	BA
1	BA	MF
2	BA	BA
3	BA	BA
4	BA	~~JS JPM~~
5	MF	~~JS JPM~~
6	BA	BA
7	MF	—
8		

wrong book MF 9-24-10

Concentration	Mean neonates /adult	% survival
Control	18.3	90%
6.25%	15.5	90%
12.50%	20.1	100%
25%	14.2	90%
50%	15.0	90%
100%	16.8	90%

Test acceptability	
Mean control reproduction 15/female	(yes) no
3rd brood in 60% of surviving females	(yes) no
Control survival ≥80%:	(yes) no

Comments: (A) Rep 9 and 10 Control: identified as male, MF verified by M. Hg 9-28-10

*Day 0 is test initiation day

X = Dead (original organism)

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Facility: Mosaic Fertilizer, LLC - South Fort Meade mine

LIMS Sample # : 1299625 for lab sample #1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
12.50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	2	4	3	5	3	0	4	0	3	5	29	10	2.9
	5	0	9	8	0	0	9	0	3	0	0	29	10	2.9
	6	0	0	0	10	9	10	7	5	8	11	60	10	6.0
	7	3	8	11	13	13	1	12	0	9	13	83	10	8.3
	8													
	Total	5	21	22	28	25	20	23	8	20	29	201	10	20.1

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
25%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	3	2	3	0	3	3	0	2	X	16	9(10)	1.6
	5	0	6	7	0	0	5	10	0	0	X	28	9(10)	2.8
	6	0	0	0	4	6	8	0	5	5		31	9(10)	3.1
	7	2	8	9	13	6	0	16	0	13		67	9(10)	6.7
	8													
	Total	2	17	18	20	12	16	29	5	23	0	142	9(10)	14.2

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
50%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	0	3	4	3	5	0	3	2	3	2	25	10	2.5
	5	~~X~~	7	7	0	0	1	4	X	0	9	29	9	2.9
	6	0	0	0	6	10	3	16	0	0	8	27	9(10)	2.7
	7	3	6	12	11	12	0	0	1	12	13	69	9(10)	6.9
	8								↓					
	Total	3	16	23	20	27	4	5	2	24	23	150	9(10)	15.0

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving Adults	Neonates per adult
100%	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	X0	2	3	1	3	0	6	2	4	1	22	9(10)	2.5
	5	1	7	7	0	7	7	5	3	6	6	45	9(10)	4.8
	6	1	1	1	8	0	9	0	7	10	0	24	9(10)	2.4
	7	1	0	9	10	7	11	11	0	9	14	71	9(10)	7.1
	8													
	Total	0	10	20	19	17	27	22	12	20	21	168	9(10)	16.8

Comments: (5) - split brood 9-26-00 MF Rep 3 100%

C000028

*Day 0 is test initiation day
X = Dead (original organism)

revised 08/24/00 MF/SP

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Mosaic Fertilizer, LLC - South FT Meade Mine

LIMS Sample #: 1299626 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample					Old Sample				
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample	Control	M	7.9	24.0	7.8	175					
	1	6.25%	M	8.0	24.0	7.9	204					
	1	12.5%	M	8.0	24.1	7.9	227					
	1	25%	M	8.1	24.2	7.8	285					
	1	50%	M	8.1	24.7	8.2	394					
	1	100%	M	8.1	25.0	8.3	602					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample:	Control	M	8.2	25.5	8.2	179.3	M	8.0	24.0	7.3	208
	1	6.25%	M	8.2	25.5	8.4	199.1	M	8.1	24.0	7.5	233
	1	12.5%	M	8.2	25.4	8.4	217	M	8.2	24.0	7.5	251
	1	25%	M	8.2	25.2	8.4	262	M	8.2	24.0	7.6	305
	1	50%	M	8.2	25.1	8.4	390	M	8.2	24.0	7.8	413
	1	100%	M	8.2	25.2	8.9	603	M	8.2	24.0	7.9	639
	Measured by:			DP	DP	DP	DP		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample:	Control	M	7.9	25.2	7.5	176	M	7.9	24.0	7.1	190
	2	6.25%	M	8.0	25.7	7.9	206	M	8.0	24.0	7.2	216
	2	12.5%	M	8.1	25.7	7.8	234	M	8.0	24.0	7.3	238
	2	25%	M	8.0	25.4	7.8	285	M	8.1	24.0	7.3	286
	2	50%	M	8.1	25.6	7.8	390	M	8.1	24.0	7.4	420
	2	100%	M	8.1	25.7	7.7	599	M	8.1	24.0	7.4	643
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 3	sample:	Control	M	8.0	24.0	7.4	172	M	8.0	24.0	7.6	184
	2	6.25%	M	8.1	24.0	7.8	204	M	8.1	24.0	7.5	212
	2	12.5%	M	8.1	24.0	7.7	234	M	8.1	24.0	7.8	241
	2	25%	M	8.0	24.0	7.8	2860 BA	M	8.1	24.0	7.9	300
	2	50%	M	8.1	24.0	7.6	387	M	8.1	24.0	8.0	406
	2	100%	M	8.0	24.0	7.7	597	M	8.0	24.0	7.9	607
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA

Comments: (1) Transcription error BA 9-24-10

Replicate M= "Metered" vial, a surrogate vial for parameters

revised 08/24/06 MF/SP

000029

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Mosaic Fertilizer, LLC- South FT Meade Mine

LIMS Sample #: 1259626 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample						Old Sample					
			Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)		Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	
Day 4	sample:	Control	M	8.1	24.1	7.6	170		M	8.0	24.0	7.8	193	
	3	6.25%	M	8.1	24.1	7.5	200		M	8.1	24.0	7.6	219	
	3	12.5%	M	8.1	24.2	7.9	221		M	8.1	24.0	7.7	253	
	3	25%	M	8.2	24.9	7.9	281		M	8.1	24.0	7.8	306	
	3	50%	M	8.2	24.4	8.0	363		M	8.1	24.0	7.6	408	
	3	100%	M	8.1	24.5	8.1	575		M	8.1	24.0	7.8	635	
	Measured by:			BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by:			BA	BA	BA	BA			BA	BA	BA	BA	
Day 5	sample:	Control	M	8.2	24.3	7.7	175		MA	8.1	25.4	7.6	209	
	3	6.25%	M	8.2	24.6	7.7	203		MA	8.2	25.0	7.5	214	
	3	12.5%	M	8.2	24.4	7.8	229		MA	8.2	24.2	7.7	235	
	3	25%	M	8.2	24.4	7.8	280		MA	8.2	24.5	7.5	293	
	3	50%	M	8.2	24.3	7.8	383		MA	8.2	24.6	7.5	386	
	3	100%	M	8.2	24.1	7.8	585		MB	8.2	24.5	7.5	596	
	Measured by:			MF	MF	MF	MF			MF	MF	MF	MF	
	Recorded by:			MF	MF	MF	MF			MF	MF	MF	MF	
Day 6	sample:	Control	M	8.0	24.0	7.9	175		M	7.9	24.0	7.5	190	
	3	6.25%	M	8.1	24.0	8.3	214		M	8.0	24.0	7.7	220	
	3	12.5%	M	8.1	24.0	8.3	235		M	8.0	24.0	7.8	240	
	3	25%	M	8.1	24.0	8.2	283		M	8.0	24.0	7.8	300	
	3	50%	M	8.1	24.0	8.4	381		M	8.0	24.0	7.8	391	
	3	100%	M	8.1	24.0	8.7	595		M	8.0	24.0	7.8	605	
	Measured by:			BA	BA	BA	BA			BA	BA	BA	BA	
	Recorded by:			BA	BA	BA	BA			BA	BA	BA	BA	
Day 7	sample:	Control	M						M	8.2	24.4	7.8	185	
	3	6.25%	M						M	8.2	24.3	8.0	234	
	3	12.5%	M						M	8.2	24.3	8.0	257	
	3	25%	M						M	8.2	24.2	8.1	322	
	3	50%	M						M	8.1	24.4	8.0	417	
	3	100%	M						M	8.1	24.0	7.9	614	
	Measured by:									MF	MF	MF	MF	
	Recorded by:									MF	MF	MF	MF	

Comments:

Replicate M= "Metered" vial, a surrogate vial for parameters

revised 08/24/06 MF/SP

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Mosaic Fertilizer, LLC - South Pt Riverview
Address: 5880 Manley Road Fort Meade FL 33841-9257
County: Polk and Hardee
NPDES Permit #: FL 0037958
Contact/District: Jackie Champion / BMR-Tampa

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 9-21-10 Time: 1330
End Date: 9.26-10 Time: 1300

Diluent/ Batch: MHW / 9-2010 Test Days Used: 0-5 MF
MHW / Test Days Used:
ASW / Test Days Used:
ASW / Test Days Used:

Organism Batch #: 7.21.10 Organism age: 24 days
Feeding Prior to Test and Daily
Artemia Lot #: 23617
Chamber size: 600 ml
Test volume: 400 ml

Artemia Batch #			
Day 0	1235-10	Day 4	1237-10
Day 1	1236-10	Day 5	1238-10
Day 2	1237-10	Day 6	

LIMS:	Date	Initials
Entry:	10-14-10	MF
Verification:	10.14.10	SM

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2010-09-2465	1299026	9-20-10 1015	9-21-10 1152
Test Day 2	2	TLH-2010-09-2344	1300265	9-22-10 1035	9-23-10 0945
Test Day 4	3	TLH-2010-09-25-37	1300848	9-24-10 1015	9-25-10 1000

Water Quality Parameters	Batch # 9-20-10 MHW ☑ ASW ☐	MHW ☐ ASW ☐	Sample 1 NA MF	Sample 2 NA MF	Sample 3 NA	Other:	Measured by:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	~~<0.03~~	~~<0.03~~			NT pw 24HR	MF
Lab Total Residual Cl_2 (mg/L):	<0.03		<0.03	<0.03	<0.03		SS/DP 09/30/10	
Alkalinity (mg/L as $CaCO_3$):	74		84	86	90		SS/DP	MF
Hardness (mg/L as $CaCO_3$):	95		184	184	183		SS/DP	MF
Total Ammonia (mg/L as N):	<0.017		<0.017	<0.017	NT 24HR		MF	
Conductivity (µmhos) mmhos:	329		599	613	328		BA/SD	MF
Salinity (ppth):	—		0.23	0.23	0.23		BA	MF

Temperature Shipped <0° C (all samples) (yes) no
Holding Time <36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark

Temperature Range °C: (if used)
Incubator # 2 min 24.4 max 27.9 mean
Water bath # ___ min ___ max ___ mean ___
Room B246 min 24.3 max 25.4 mean

Test Incubated in: ☑ Incubator #: 2
☐ Waterbath #:

Investigators' signatures
Manuell Faircloth
Marie Lowe
Jackie Champion
Linda Tisdale
Brian Rowe

REVIEWER

Statistics	
Control %cv:	
Dunnetts PMSD:	
Survival NOEC:	
Survival LOEC:	
Growth NOEC:	
Growth LOEC:	

Comments: FYI-5
Test terminated 9-26-10 noted failure MF 9-27-10
Test reported as NO result with an O qualifier.
NCR 3539 entered MF 10-12-10

PAGE 000001

revised 7/15/08 MF

Chronic Bioassay Survival Benchsheet

Facility: Mosaic Fertilizer, LLC - South Ft Meade Mine

LIMS Sample Number: 1297626
(for Lab Sample # 1)

Department of Environmental Protection
Biology Laboratory Chronic Screening Bioassay
***P. promelas* SOP TA07_09 *M. beryllina* SOP TA07_14**

Organism: (P. promelas) M.beryllina (circle one)

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10		
	B	10	10	10	10	10	9 10		
	C	10	10	10	10	10	~~9~~ 8 7D	BA	
	D	10	10	10	10	10	9 10		
Sample 6.25 %	A	10	10	10	10	10	10		
	B	10	10	10	10	10	10		
	C	10	10	10	10	10	8 2D		
	D	10	10	10	10	10	9 10		
Sample 12.5 %	A	10	10	10	10	10	10		
	B	10	10	10	10	10	9 10		
	C	10	10	10	9 10	9	9		
	D	10	10	10	10	10	8 2D		
Sample 25 %	A	10	10	10	10	10	10		
	B	10	10	10	10	10	10		
	C	10	10	10	10	9 10	9		
	D	10	10	10	10	10	10		
Sample 50 %	A	10	10	10	10	10	8 2D		
	B	10	10	10	10	10	10		
	C	10	10	10	10	10	10		
	D	10	10	10	10	10	10		
Sample 100 %	A	10	10	10	10	10	10		
	B	10	9 10	9	9	9	9		
	C	10	10	10	10	10	10		
	D	10	9 10	9	9	9	9		
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: JS	Checked by:		JS	JS	JS	JS	JS		
Verified by: MF									

Comments:

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg. 1

Sample Source: Mosaic Fertilizer, LLC- South Ft Meade Mine Start Date: 9.21.10 End Date: 1332

LIMS Sample #: 1299626 (for Lab sample #1) Start Time: 9:20:10 End Time: 1300

conc = concentration rep = replicate circle umhos or mmhos

Test Day ↓		Conc.	New Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth	Old Sample Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos mmhos	Salinity ppth
Day 0	sample:	Control	A	7.8	24.0	7.6	329							
	1	6.25%	A	8.0	24.1	7.7	343							
	1	12.5%	A	8.0	24.2	7.9	366							
	1	25%	A	8.0	24.5	8.0	409							
	1	50%	A	8.0	24.7	8.3	479							
	1	100%	A	8.1	25.9	8.9	614							
	1		A											
	Measured by:			JD	JD	JD	JD							
	Recorded by:			JD	JD	JD	JD							
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 1	sample:	Control	B	7.6	24.0	7.5	334		B	8.1	24.2	7.8	348	
	1	6.25	B	7.7	24.0	7.3	354		B	8.0	24.0	7.6	365	
	1	12.5	B	7.8	24.0	7.5	367		B	8.0	24.0	7.5	379	
	1	25	B	7.9	24.0	7.5	402		B	8.0	24.0	7.7	419	
	1	50	B	7.9	24.0	7.5	450		B	7.9	24.0	7.6	496	
	1	100	B	7.9	24.1	8.3	616		B	7.9	24.0	7.5	619	
	1		B						B					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 2	sample:	Control	C	7.7	24.0	7.2	350		C	7.6	25.7	6.5	378	
	2	6.25	C	7.8	24.0	7.3	347		C	7.7	25.8	6.1	368	
	2	12.5	C	7.8	24.0	7.2	363		C	7.7	25.7	5.9	381	
	2	25	C	7.8	24.0	7.1	409		C	7.6	25.3	5.7	413	
	2	50	C	7.8	24.0	7.1	470		C	7.6	25.1	5.6	460	
	2	100	C	7.7	24.2	7.3	616		C	7.6	25.4	5.9	633	
	2		C						C					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 3	sample:	Control	D	7.5	24.0	6.9	352		D	7.3	25.6	5.8	339	
	2	6.25	D	7.7	24.0	6.7	345		D	7.4	25.8	5.4	357	
	2	12.5	D	7.7	24.0	6.8	362		D	7.4	25.3	5.2	368	
	2	25	D	7.7	24.0	7.1	406		D	7.4	24.9	5.3	408	
	2	50	D	7.8	24.0	7.2	471		D	7.4	25.1	5.2	474	
	2	100	D	7.7	24.0	7.2	609		D	7.4	25.1	5.0	615	
	2		D						D					
	Measured by:			JD	JD	JD	JD			JD	JD	JD	JD	
	Recorded by:			JD	JD	JD	JD			JD	JD	JD	JD	

Comments:

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

Page 3

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15

parameter pg. 2

Sample Source: Mosaic Fertilizer, LLC - South Ft. Meade Mine Start Date: 9/2/15 End Date: 13 Sep

LIMS Sample #: 129626 (for Lab sample #1) Start Time: 9:36-10 End Time: 12:10

conc = concentration rep = replicate

Test Day ↓			New Sample						Old Sample					
		Conc.	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth	Test Rep.	pH (su)	Temp (°C)	DO (mg/L)	Conductivity umhos/mmhos	Salinity ppth
Day 4	sample:	Control	A	7.7	25.8	7.7	328		A		25.8	6.1	339	
	3	6.25	A	7.8	25.5	7.5	345		A		25.5	5.8	348	
	3	~~12.5~~ 12.5 SD	A	7.8	25.5	7.4	364		A		24.5	5.4	367	
	3	25	A	7.6	25.3	7.3	409		A		24.5	5.0	410	
	3	50	A	7.8	25.3	7.4	471		A		24.3	5.1	483	
	3	100	A	7.8	25.5	8.8	544		A		24.4	5.1	624	
	3		A						A					
	Measured by:			JS	JS	JS	JS			JS	JS	JS	JS	
	Recorded by:			JS	JS	JS	JS			JS	JS	JS	JS	
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 5	sample:	Control	B						B	~~7.6~~	25.5	6.6	~~406~~ (A)	344 um
	3		B						B	7.6	25.1	5.6	373	
	3		B						B	7.6	25.4	6.1	382	
	3		B						B	7.6	24.6	5.7	421	
	3		B						B	7.5	24.4	5.2	493	
	3		B						B	7.5	24.2	5.7	619	
	3		B						B					
	Measured by:									BA		BA	BA	BA
	Recorded by:									BA		BA	BA	BA
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 6	sample:	Control	C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	3		C						C					
	Measured by:													
	Recorded by:													
			Rep	pH	Temp	DO	Conductivity	Salinity	Rep	pH	Temp	DO	Conductivity	Salinity
Day 7	sample:	Control							D					
	3								D					
	3								D					
	3								D					
	3								D					
	3								D					
	3								D					
	Measured by:													
	Recorded by:													

Comments: (A) Transcription error BA

For salinity <1 ppth insert <1. For salinity > 1 ppth, conductivity measurement is not required if salinity probe is functional

000004

Test ID: Mosaic Fertilizer LLC-South Ft. Meade Dates: Sept. 21-26, 2010

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	#2
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	NA ✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	NA ✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

V 1.1 9/21/10 MF/jd

000007

Appendix G

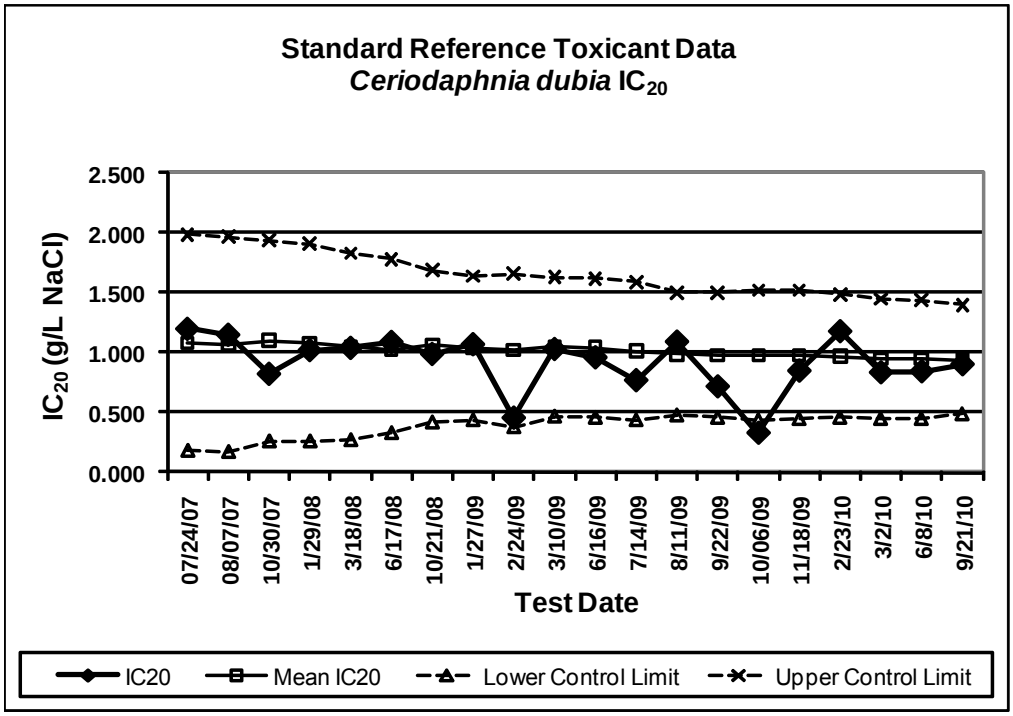
Standard Reference Toxicant Data

Florida Department of Environmental Protection
Bureau of Laboratories

Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Ceriodaphnia dubia (water flea) - Sodium Chloride (NaCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit
07/24/07	1.200	1.08	0.45	0.18	1.99
08/07/07	1.150	1.07	0.45	0.17	1.97
10/30/07	0.821	1.10	0.42	0.26	1.94
1/29/08	1.020	1.08	0.41	0.26	1.91
3/18/08	1.040	1.05	0.39	0.27	1.83
6/17/08	1.090	1.02	0.36	0.33	1.78
10/21/08	0.989	1.06	0.32	0.42	1.69
1/27/09	1.070	1.04	0.30	0.44	1.64
2/24/09	0.452	1.02	0.32	0.38	1.66
3/10/09	1.030	1.05	0.29	0.47	1.63
6/16/09	0.960	1.04	0.29	0.46	1.62
7/14/09	0.768	1.01	0.29	0.44	1.59
8/11/09	1.093	0.99	0.26	0.48	1.50
9/22/09	0.716	0.98	0.26	0.46	1.50
10/06/09	0.325	0.98	0.27	0.44	1.52
11/18/09	0.848	0.98	0.27	0.45	1.52
2/23/10	1.180	0.97	0.26	0.46	1.49
3/2/10	0.834	0.95	0.25	0.45	1.45
6/8/10	0.843	0.95	0.25	0.45	1.44
9/21/10	0.903	0.94	0.23	0.49	1.40

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



FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia

Diluent/ Batch: 20% DMW / 9-18-10 Test Days Used: 0-3
20% DMW / 9-21-10 Test Days Used: 4-7

Toxicant/ Batch: NaCl / 9-20

SOP # : TA 07_05
EPA-821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #/ Age: 9-21 / <24 hr.
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 5-1940 6-24-10
Chamber size: 30 mL
Test Volume: 20 mL

Start Date: 9-21-10 Time: 1045
End Date: 9-28-10 Time: 1230

Batch:	9-18-10	9-21-10			
Water Quality Parameters	20% DMW	20% DMW	Other	Measured by:	Verified by:
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03		JS/DP	mf
Alkalinity (mg/L as $CaCO_3$):	79	82		JS/DP	mf
Hardness (mg/L as $CaCO_3$):	81	81		JS/DP	mf
Total Ammonia (mg/L as N):	<0.017	<0.017		mf	BH
Conductivity (µmhos-cm, mmhos-cm):	178	175		JS/DP	mf

Loaded by:

Day	Concentrations prepared by	Counted by
0	JS/DP/mf	DP by mf
1	JS/DP	JS/DP
2	JS/DP	JS/DP
3	JS/DP	JS/DP
4	JS/DP	BH
5	JS/DP	mf
6	JS/DP	mf
7	—	mf
8		

Test Replicate	Loaded from culture vial
1	A2
2	A23
3	B20
4	B10
5	B24
6	A19
7	A14
8	A18
9	A3
10	A25

Results	
Control % CV:	36.2%
Dunnetts PMSD:	31.8%
Reproduction NOEC:	0.89 mg/L BA
Reproduction LOEC:	1.3 mg/L BA
Survival NOEC:	2.0 mg/L
Survival LOEC:	3.0 mg/L
IC_{20}:	0.903
IC_{25}:	1.002

Comments: Loaded via Random SOT #4, MF 9-21-10

Investigators' signatures

Marshall Faircloth
Diana Poag
Beth Stein
Bruce Ainslie
Amelia Parker (Temp)
Jim Mabry
REVIEWER

Test Incubated in: Incubator: # 5
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C: 24.5
Incubator # 2 min ~~24.2~~ max 27.0 mean 26.3
Room B246 ___ min 25.1 max 25.6 mean 25.3
Test min 24.0 max 26.0 mean ___

Ceriodaphnia dubia Survival and Reproduction

Start Date: 9/21/10 Time: 10:45 Loaded by: JS by MF
End Date: 9-28-10 Time: 1230 Verified by: DM

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
Control	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0 MF	10	0 MF
	4	D	1	4	4	4	5	3	3	6	1	31 3 MF	10	3.13
	5	0	7	8	0	0	(S) 2	4X	7	10	9	45	9	4.5
	6	3	8	0	6	9	11	|	8	0	0	45	9	4.5
	7	3	0	8	12	10	0	|	0	8	12	53	9	5.3
	8				2nd MF			|						
	Total	6	16	20	~~24~~	23	18	7	18	24	22	17 ~~8~~6 MF	9(10)	17.8 6 MF
0.59	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	3	0	0	0	0	3	10	0.3
	4	X	1	3	4	2	0	4	3	4	4	25	9	2.5 (2.8)
	5	|	7	7	0	0	5	X (A)	5	6	6	36	8	3.6 (4.5)
	6	|	0	0	10	9	8	|	0 MF	0	9	36	8	3.6 (4.5)
	7	|	7	11	12	11	0	|	~~9~~ MF	8	0	58	8	7.25 (5.8)
	8	|						|						
	Total	0	15	21	26	22	16	4	17	18	19	158	8 ~~6~~ 0 MF	15.8
0.89	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	1	5	2	0	5	0	3	2	2	X1	21	9	2.1
	5	0	0	7	0	0	2	0	7	8	|	24	9	2.4 (2.7)
	6	4	0	(S) 10	7	5	0	7	0	0	|	23	9	2.3 (2.6)
	7	10	7	10	9	10	10	6	6	6	|	74	9	7.4 (8.2)
	8													
	Total	15	12	19	16	20	12	16	15	16	1	142	9(10)	14.2

Comments: (A) Counted adult during Transfer MF 9-26-10 (10) = Total adults used in STATS. MF 10-2-10
(S) 9-26-10 Rep 6 counted Day 5 split brood MF 9-26-10
(C) recorded D in C replicate (4 in 3) MF 9-27-10

~~AAAAA~~8

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

Concentration	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Live adults	Neonates per adult
1.3	0												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	2	3	3	3	3	1	4	3	3	X1	26	9	2.6
	5	0	4	4	0	0	3	0	3	0	1	14	9	1.4 (1.6)
	6 (9/17)	~~NR 0~~	4	~~X~~ 0	4	4	6	5	0	5	1	28	8	2.8 (3.5)
	7	6	8	~~NR~~ 6	6	7	0	6	3	4		40	8	4.0 (5)
	8													
	Total	8	19	~~NR~~ 17	13	14	10	15	9	12	1	108	8 (10)	10.8 (13.5)
2.0	0												10	
	1	~~X~~ (A)											10	
	2	X	0	0	0	0	0	0	0	0	0	0	~~9~~ (B)	0
	3	|	0	0	0	0	0	0	0	0	0	0	9	0
	4	|	0	0	0	0	0	0	0	0	0	0	9	0
	5	|	0	1	0	0	0	3	1	1	1	7	9	0.7 (0.8)
	6	|	0	0	0	0	0	0	0	0	0	0	9	0
	7	|	0	0	0	2	0	0	0	0	0	2	9	0.2 (0.2)
	8	↓												
	Total	X	0	1	0	2	0	3	1	1	1	9	9 (10)	0.9 (1)
3.0	0												10	
	1	X	X	0	X	X	X	X	X	X	0		~~3~~ (B)	
	2	|	|	X	|	|	|	|	|	|	X	0	~~0~~ (B)	0
	3	|	|	|	|	|	|	|	|	|	|	0	0	0
	4	|	|	|	|	|	|	|	|	|	|	0	0	0
	5	|	|	|	|	|	|	|	|	|	|	0	0	0
	6	|	|	|	|	|	|	|	|	|	|	0	0	0
	7	|	|	|	|	|	|	|	|	|	|	0	0	0
	8	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	0	0	0
	Total	X	X	X	X	X	X	X	X	X	X	0	0	0

Comments:

(A) Transcription error. 9/23/10 DP

(B) Transcription error. 9/24/10 DP

(10) = Total adults used in STATS. MF 12-2-10

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day	Conc.	New Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	Control	M	8.2	24.3	7.9	178.0					
	0.59	M	8.1	25.0	8.1	1315					
	0.89	M	8.2	24.9	8.3	1859					
	1.3	M	8.1	25.1	8.1	2670					
	2.0	M	8.1	25.2	8.2	3840					
	3.0	M	8.1	25.4	8.1	5600					
	Measured by:		DP	DP	DP	DP					
	Recorded by:		9%	9%	9%	9%					
Day 1	Control	M	8.1	25.5	7.5	177.3	A	8.2	22.7	7.6	216
	0.59	M	8.1	25.4	7.6	1312	A	8.2	22.6	7.9	1552
	0.89	M	8.1	25.5	7.7	1874	A	8.2	22.7	8.0	2090
	1.3	M	8.1	25.7	7.8	2700	A	8.2	22.8	8.1	2910
	2.0	M	8.1	25.9	7.9	3910	A	8.2	23.1	8.3	4170
	3.0	M	8.1	26.0	8.0	5660	A	8.2	23.0	8.3	5720
	Measured by:		DP	DP	DP	DP		9%	9%	9%	9%
	Recorded by:		9%	BA	9%	9%		DP	DP	DP	DP
Day 2	Control	M	8.0	24.8	7.8	176.2	A	8.1	24.8	7.5	184.2
	0.59	M	8.1	25.7 (B)	8.0	1297	A	8.1	24.4	7.7	1383
	0.89	M	8.1	25.2	7.9	1856	A	8.2	24.8	7.7	1931
	1.3	M	8.1	25.4	7.8	2650	A	8.2	25.0	7.8	2790
	2.0	M	8.1	25.6	7.9	3820	A	8.2	25.4	7.8	3970
	3.0	M	8.1	26.0	7.9	5570	C	8.1	25.0	7.8	5785 ©
	Measured by:		9%	DP	9%	9%		DP	DP	DP	DP
	Recorded by:		DP	DP	DP	DP		9%	DP	9%	9%
Day 3	Control	M	8.1	25.5	7.8	174.5	A	A (3-1)	25.0	7.7	189.5
	0.59	M	8.1	25.8	7.8	1301	A	A (3-1)	25.1	7.8	1342
	0.89	M	8.1	25.7	7.8	1858	A	(3-1) AD	25.1	7.9	1910
	1.3	M	8.1	25.9	7.8	2650	A	(3-1) A (D)	25.3	7.9	2750
	2.0	M	8.1	25.8	7.8	3330	B	(3-1) B (D)	25.2	8.0	3960
	3.0	M		(C)							
	Measured by:		9%	9%	9%	9%		9%	DP	9%	9%
	Recorded by:		DP	9%	DP	DP		DP	DP	DP	DP

Comments:

(A) Transcription error. 9/23/10 DP

(B) Transcription error 9/23/10 9%

(C) Transcription error 9/24/10 9%

(D) Transcription error 9/24/10 DP

M= "Metered" vial, a surrogate vial for parameters

FDEP Biology Laboratory - Chronic SRT Bench Sheet

Ceriodaphnia dubia Parameters

Test Day	Conc.	New Sample Replicate	New Sample pH (su)	New Sample Temp (°C)	New Sample DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample Replicate	Old Sample pH (su)	Old Sample Temp (°C)	Old Sample DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 4	Control	M	8.1	24.4	7.9	172	A	8.0	24.0	7.5	180
	.59	M	8.2	25.3	8.4	1303	A	8.0	24.0	7.6	1364
	.89	M	8.2	25.1	8.0	1823	A	8.1	24.0	7.7	1929
	1.3	M	8.2	25.1	8.4	2650	A	8.1	24.0	7.9	2770
	2.0	M	8.2	25.8	8.4	3820	A	8.1	24.0	7.9	3920
		M									
	Measured by:		BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:		BA	BA	BA	BA		BA	BA	BA	BA
Day 5	Control	M	8.1	24.3	7.7	173	A	8.1	24.6	8.0	189
	0.59	M	8.1	24.8	7.8	1286	B	8.2	24.1	8.0	1400
	0.89	M	8.1	25.3	7.9	1830	A	8.2	24.5	8.1	2020
	1.3	M	8.2	25.3	7.9	2620	A	8.2	25.0	8.0	2740
	2.0	M	8.2	25.5	7.8	3800	B	8.2	24.8	8.0	3890
		M									
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
Day 6	Control	M	8.0	24.2	8.1	174	A	8.1	24.4	7.7	190
	0.59	M	8.0	25.4	7.8	Ⓐ 1327 1312	B	8.1	24.1	7.8	1380
	0.89	M	8.1	26.0	7.8	1864	A	8.0	24.3	7.8	1930
	1.3	M	8.1	26.0	7.9	2700	A	8.0	24.0	7.7	2660
	2.0	M	8.1	26.0	7.7	3870	B	8.0	23.9	7.9	3830
		M									
	Measured by:		BA	BA	BA	BA		MF	MF	MF	MF
	Recorded by:		BA	BA	BA	BA		MF	MF	MF	MF
Day 7	Control	M					A	8.0	25.0	7.8	180
	0.59	M				9-28-10	B	8.0	24.7	7.8	1317
	0.89	M					A	8.0	25.0	7.9	1875
	1.3	M		NOT RENEWED	MF		A	8.0	25.2	8.0	2750
	2.0	M					B	8.0	25.2	7.8	3860
		M									
	Measured by:							MF	MF	MF	MF
	Recorded by:							MF	MF	MF	MF
Day 8	Control	M									
		M									
		M									
		M									
		M									
		M									
	Measured by:										
	Recorded by:										

Ⓐ Transcription error BA 9.27.10

Replicate M= "Metered" vial, a surrogate vial for parameters

AAAA11

Test Page 5 of 6

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07/15/08 MF

Bioassay Instrument ID

Test ID: C. dubia SRT Dates: 9-21-9-28-10

METER / DEVICE	ID	SOP	Parameter	Method	√used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity	SM 2510 B	✓
			Salinity	SM 2520 B	
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Thermometer (DO probe)	YSI 5750 SN 05J1720	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT–Chronic SRT)

~~000012~~

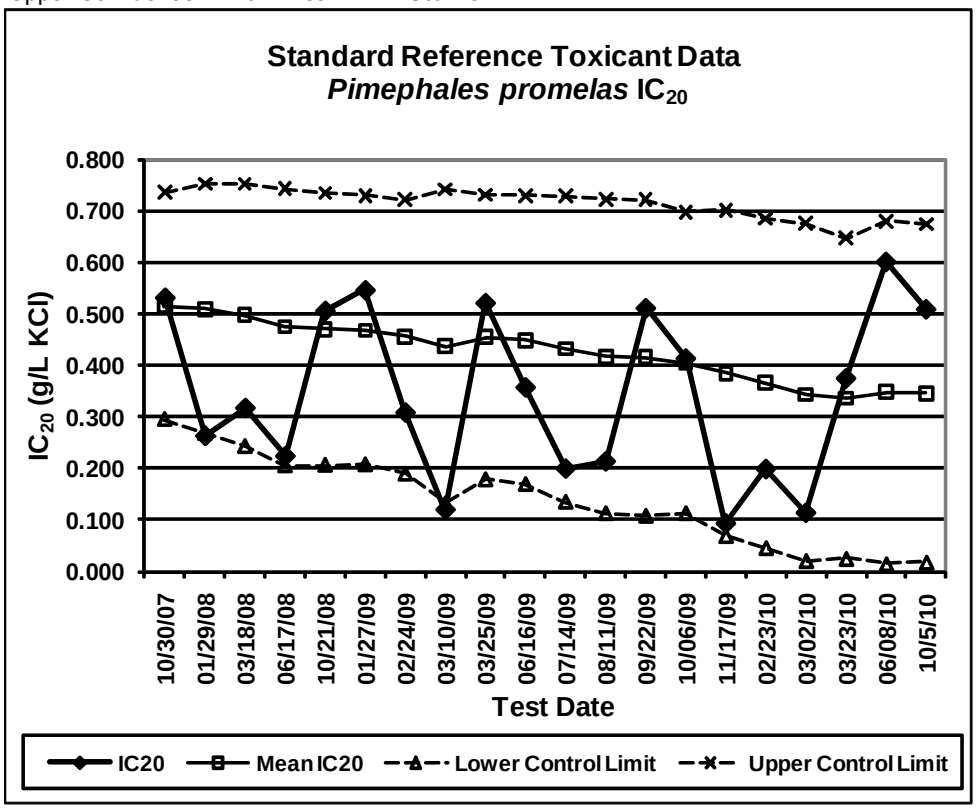
V 1.1 6/12/08 MF BA 10-6-10

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Florida Department of Environmental Protection
Bureau of Laboratories
Standard Reference Toxicant (SRT) Test Data - 7-Day Chronic Toxicity
Pimephales promelas (fathead minnow) - Potassium Chloride (KCl)

Date	IC20	Mean IC20	Std Dev	Lower Control Limit	Upper Control Limit	Date
10/30/07	0.531	0.515	0.11	0.294	0.736	10/30/07
01/29/08	0.263	0.509	0.12	0.267	0.752	01/29/08
03/18/08	0.317	0.497	0.13	0.242	0.752	03/18/08
06/17/08	0.223	0.474	0.13	0.205	0.743	06/17/08
10/21/08	0.506	0.470	0.13	0.206	0.734	10/21/08
01/27/09	0.546	0.468	0.13	0.207	0.729	01/27/09
02/24/09	0.308	0.455	0.13	0.189	0.721	02/24/09
03/10/09	0.119	0.437	0.15	0.132	0.741	03/10/09
03/25/09	0.521	0.455	0.14	0.178	0.731	03/25/09
06/16/09	0.357	0.449	0.14	0.169	0.729	06/16/09
07/14/09	0.199	0.432	0.15	0.135	0.728	07/14/09
08/11/09	0.213	0.417	0.15	0.113	0.722	08/11/09
09/22/09	0.511	0.415	0.15	0.108	0.721	09/22/09
10/06/09	0.413	0.405	0.15	0.113	0.698	10/06/09
11/17/09	0.092	0.385	0.16	0.069	0.701	11/17/09
02/23/10	0.198	0.365	0.16	0.046	0.685	02/23/10
03/02/10	0.113	0.343	0.16	0.021	0.675	03/02/10
03/23/10	0.375	0.336	0.16	0.025	0.646	03/23/10
06/08/10	0.601	0.348	0.17	0.015	0.680	06/08/10
10/05/10	0.509	0.346	0.16	0.018	0.674	10/5/10

Means are from all SRT tests, up to 20 tests..
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina*

Test Species (circle one)

(*P. promelas*)	SOP#: TA07_09	EPA-821-R-02-013	Method 1000.0
M. beryllina	SOP#: TA07_14	EPA-821-R-02-014	Method 1006.0

Diluent/ Batch: MHV 9.30.10 Test Days Used: 0-2 Start Date: 10.5.10 Time: 1400

Diluent/ Batch: MHV 10.1.10 Test Days Used: 3-7 End Date: 10.12.10 Time: 1100

Toxicant/ Batch # : KCl Organism Batch #/ Age: 10.5.10 / <24hrs

Artemia Lot # : 23613

Artemia Batch #		Day 2	10.3.10	Day 5	10.6.10
Day 0	10.1.10	Day 3	10.4.10	Day 6	10.7.10
Day1	10.2.10	Day 4	10.5.10		

Chamber size : 1000 ml

Test volume : 500 ml

Feeding: *P. promelas* 0.15 g wet wt. 2X day 6 hour interval

M. beryllina 0.10 g wet wt days 0-2 0.15g wet wt. days 3-7

Water Quality Parameters	Diluent MHV 9.30.10	Diluent MHV 10.1.10 (or other)	Method	Measured by	Verified by
Total Residual Cl_2 (mg/L):	<0.03	<0.03	HACH	ASB	JD
Alkalinity (mg/L as $CaCO_3$):	85	77	HACH	DP	JD
Hardness (mg/L as $CaCO_3$):	113	96	HACH	DP	JD
Total Ammonia (mg/L as N):	<0.017	<0.017	DENVER	MF	JD
Conductivity (umhos-cm) mmhos-cm:	350	335	METTLER	DP	JD

Statistics	
Growth NOEC:	0.5
Growth LOEC:	1
Growth IC_{20}:	0.589
Growth IC_{25}:	0.589
Ctrl % CV:	16.23
Dunnetts PMSD:	22.2 | 12.1 log transform
Survival NOEC:	0.5
Survival LOEC:	1

Test incubated in : [X] Incubator # 5

[ ] Waterbath #____

Light Intensity : 50 - 100 ft. candles

Photoperiod : 16 light 8 dark

Temperature Range °C:

Incubator # 5 min. 23.0 max. 25.3 mean____

Water bath # ____ min.____ max.____ mean____

Room B246 min. 24.8 max. 25.9 mean____

P. promelas PMSD Bounds for Growth: Lower 12 Upper 30

M. beryllina PMSD Bounds for Growth: Lower 11 Upper 28

Investigators' signatures

James Daniel

Amelia Rankin

Diane Povey

Marshall Faircloth

Bree Abele

REVIEWER

Comments: All NOEC PMSP = 28.1 IC20 = 0.428 IC25 = 0.509 MF 10-19-10 — see renewal NOEC comment sheet for applied criteria Pg 9 MF 10-19-10

MF 12-2-10

revised 7/16/08 MF

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or Menidia beryllina Survival

Organism: (*P. promelas*) *M.beryllina* (circle one) D = dead M = missing

Concentration: µg/L g/L (circle one)

			TEST DAY							
Concentration	Replicate	Chamber	0	1	2	3	4	5	6	7
Control	A	E1	10	10	9 10	9	9	9	9	9
	B	E2	10	10	10	10	10	10	10	10
	C	E3	10	10	10	10	10	10	10	10
	D	E4	10	10	10	10	10	10	10	10
0.125	A	E5	10	10	10	9 10	9	9	9	9
	B	E6	10	10	10	10	10	10	10	10
	C	E7	10	10	10	10	10	10	10	10
	D	E8	10	10	10	10	10	10	10	10
0.25	A	E9	10	10	10	10	10	10	10	10
	B	E10	10	10	10	10	10	10	10	10
	C	E11	10	9 10	9	9	9	9	9	9
	D	E12	10	9 10	9	9	9	9	9	9
0.5	A	E13	10	9 10	7 20	7	6 7 *	5	5	5
	B	E14	10	10	10	10	10	10	10	9 10
	C	E15	10	9 10	9	9	9	9	9	9
	D	E16	10	10	9 10	9	9	9	9	9
1.0	A	E17	10	1 90	1	0 10	—	—	—	—
	B	E18	10	1 90	0 10	—	—	—	—	—
	C	E19	10	0 100	—	—	—	—	—	—
	D	E20	10	0 100	—	—	—	—	—	—
2.0	A	E21	10	0 100	—	—	—	—	—	—
	B	E22	10	0 100	—	—	—	—	—	—
	C	E23	10	0 100	—	—	—	—	—	—
	D	E24	10	0 100	—	—	—	—	—	—
	A		10							
	B		10							
	C		10							
	D		10							
Loaded by (0 hr): JS		Checked by:		JS	JS	JS	MF	JS	JS	JS
Verified by (0 hr): BA										
		Concentrations prepared by:		JS	JS	JS	JS	JS	JS	JS

Comments: * Spill/2d Rep A 0.5g/L on renewal lost 2 organisms MF 10-9-10

** Rep removed from analysis MF 10-19-10

PAGE 000003

revised 7/16/08 MF

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

Start Date: 10.5.10 Time: 1400
End Date: 10.12.10 Time: 1100

Organism: (P. promelas) M.beryllina (circle one)
Concentration: µg/L (mg/L) (circle one)

circle µmhos or mmhos

Test Day		Before Renewal					Test Start and After Renewal				
	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos
Day 0	Control						A	8.1	24.0	8.3	350
	0.125						A	8.1	24.0	8.6	591
	0.25						A	8.2	24.0	8.7	831
	0.5						A	8.2	24.0	8.7	1289
	1.0						A	8.2	24.0	8.8	2216
	2.0						A	8.1	24.0	8.7	4140
							A				
	Measured by:							DP	DP	DP	DP
	Recorded by:							AMR	AMR	AMR	AMR
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 1	Control	B	8.0	24.5	7.3	351	B	7.8	24.3	7.9	353
	0.125	B	8.0	24.3	7.3	584	B	8.0	24.2	7.8	589
	0.25	B	8.0	24.2	7.2	818	B	8.0	24.2	7.8	843
	0.5	B	8.0	24.2	7.3	1265	B	8.0	24.1	7.8	1298
	1.0	B	8.0	24.2	7.2	2180	B	8.0	24.5	8.0	2250
	2.0	B	8.0	24.1	7.2	3930	B				
		B					B				
	Measured by:		DP	DP	DP	DP		AMR	AMR	AMR	AMR
	Recorded by:		AMR	AMR	AMR	AMR		AMR	AMR	AMR	AMR
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 2	Control	C	7.9	25.2	7.3	348	C	8.0	24.7	7.9	340
	0.125	C	7.8	24.9	6.8	595	C	8.1	24.5	8.0	591
	0.25	C	7.9	24.8	7.3	856	C	8.1	24.4	8.0	853
	0.5	C	8.0	24.7	7.5	1312	C	8.1	24.6	8.1	1315
	1.0	~~B~~	8.0	24.5	7.6	2250	~~C~~ A	8.1	24.7	8.3	2270
		C					C				
		C					C				
	Measured by:		DP	DP	DP	DP		DP	DP	DP	DP
	Recorded by:		AMR	AMR	AMR	AMR		AMR	AMR	AMR	AMR
	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 3	Control	D	7.9	24.4	7.3	335	D	7.9	24.9	7.8	331
	0.125	D	7.8	24.2	7.2	590	D	7.9	24.7	7.7	582
	0.25	D	7.8	24.1	7.2	851	D	8.0	24.7	7.9	838
	0.5	D	7.8	24.1	7.2	1313	D	8.0	24.7	7.8	1292
	1.0	~~A~~ B	7.9	24.1	7.7	2280	D				
		D					D				
		D					D				
	Measured by:		DP	DP	DP	DP		AMR	AMR	AMR	AMR
	Recorded by:		DP	DP	DP	DP		AMR	AMR	AMR	AMR

Comments: Cautioned employee about Overwriting data. Referred to SOP: BI-01 • Tox Testing MF 11-32-10

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Parameters

Organism: (*P. promelas*) / *M. beryllina* (circle one)

Concentration: µg/L / (g/L) (circle one)

circle µmhos or mmhos

Test Day		Before Renewal					After Renewal				
↓	Concentration	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos	Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos) mmhos
Day 4	Control	A	7.9	24.9	7.1	341	A	8.0	25.2	~~7.8~~	336
	0.125	A	7.9	24.5	7.3	590	A	8.0	24.8	~~7.7~~	584
	0.25	A	8.0	24.4	7.5	858	A	8.1	24.8	~~7.5~~	841
	0.5	A	8.0	24.9	7.5	1310	A	8.1	24.9	7.8	1295
		A	~~8.0~~				A				
		A					A				
		A					A				
	Measured by:		DF	DF	DF	DF		DF	MF/DF	DF	DF
	Recorded by:		DF	DF	DF	DF		DF	DF	DF	DF
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 5	Control	B	7.6	24.8	6.7	340	B	7.9	25.1	7.7	332
	0.125	B	7.5	24.6	5.9	591	B	7.9	24.8	7.5	583
	0.25	B	7.5	25.0	5.9	852	B	7.9	24.7	7.8	842
	0.5	B	7.6	24.9	6.8	1300	B	7.9	24.8	7.8	1298
		B					B				
		B					B				
		B					B				
	Measured by:		MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:		MF	MF	MF	MF		MF	MF	MF	MF
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 6	Control	C	7.4	24.4	6.1	360	C	7.8	24.3	7.5	328
	0.125	C	7.5	24.0	6.2	568	C	7.9	23.9	7.4	575
	0.25	C	7.5	24.0	6.0	824	C	7.9	23.9	7.3	832
	0.5	C	7.5	24.0	5.8	1277	C	7.9	24.1	7.4	1288
		C					C				
		C					C				
		C					C				
	Measured by:		JD	JD	JD	JD		DF	DF	DF	DF
	Recorded by:		JD	JD	JD	JD		DF	DF	DF	DF
↓	Concentration	Replicate	pH	Temp	DO	Conductivity	Replicate	pH	Temp	DO	Conductivity
Day 7	Control	D	7.7	25.6	7.4	0338	D				
	0.125	D	7.7	25.0	7.0	595	D				
	0.25	D	7.7	24.8	6.9	854	D				
	0.5	D	7.6	24.9	6.5	1317	D				
		D					D				
		D					D				
		D					D				
	Measured by:		MF	MF	MF	MF					
	Recorded by:		MF	MF	MF	MF					

Comments:
(A) Transcription error. 10/11/10 DF

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* Weights

SOP TA06_21

Organism: *P. promelas* *M.beryllina* (circle one)

Concentration: µg/L g/L (circle one)

mean wt = fish wt divided by 10

convert g to mg: move decimal 3 places to right

Concentration	Replicate	Pan #	Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)
Control	A	1	0.02346	0.02857	0.00511	10	.511
	B	2	0.02229	0.02878	0.00649	10	.649
	C	3	0.02313	0.02929	0.00616	10	.616
	D	4	0.02201	0.02962	0.00761	10	.761
0.125	A	5	0.02206	0.02729	0.00523	10	.523
	B	6	0.02195	0.02665	0.00470	10	.470
	C	7	0.02230	0.02985	0.00755	10	.755
	D	8	0.02098	0.02762	0.00664	10	.664
0.25	A	9	0.02311	0.02951	0.00640	10	.640
	B	10	0.02037	0.02477	0.00440	10	.440
	C	11	0.02388	0.02998	0.00610	10	.610
	D	12	0.02440	0.03002	0.00562	10	.562
0.5	A	13	0.02216	0.02606	0.00390	10	.390
	B	14	0.02369	0.03011	0.00642	10	.642
	C	15	0.02298	0.02715	0.00417	10	.417
	D	16	0.02277	0.02767	0.00490	10	.490
	A					10	
	B					10	
	C					10	
	D					10	
	A					10	
	B					10	
	C					10	
	D					10	
	A					10	
	B					10	
	C					10	
	D					10	
		Weighed by:	DP	JD			

$\bar{x}$ 0.634

Comments:

Note: Pan number (#) refers to actual Pan number.

revised 8/24/06 MF/SP

FDEP Biology Laboratory - Chronic SRT Benchsheet

Pimephales promelas or *Menidia beryllina* QC

SOPs TA07_09, TA07_14 and TA06_21

all weights in grams

Empty Pan Weights Date: 10,11,10 Weighed by: DP

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02345	@ 0.02346
after Pan 10	0.02346	@ 0.02346
after Pan 15	0.02346	@ 0.02346
after Pan 20	0.02345	@ 0.02346
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.0100l	@ 0.01
	0.04999	@ 0.05

Balance: Ohaus 250D Ser# 1125481084

S-Weights: BIO-S-Weights-01

Fish + Pan Weights Date: 10,18,10 Weighed by: JD

	Pan 1 wt.	Pan 1 initial wt.
after Pan 5	0.02857	@ 0.02857
after Pan 10	0.02958	@ 0.02857
after Pan 15	0.02859	@ 0.02857
after Pan 20	0.02859	@ 0.02857
after Pan 25		@
after Pan 30		@
after Pan 35		@
after Pan 40		@
after Pan 45		@
after Pan 48		@

	Measured Value	S-weight Value
S-weights	0.01007	@ 0.01
	0.05012	@ 0.05

Drying Oven ID: VWR #2

Temperature °C: 50

Drying Hours: 8

Note: Pan number (5, 10, etc.) refers to sequence of weighing as actual Pan #s may differ.

Comments:

PAGE 000013

revised 7/16/08 MF

Test ID: SRT P. Promelas Dates: 10-5 — 10-12-2010

METER / DEVICE	ID	SOP	Parameter	Method	v used
YSI Model 58 Dissolved Oxygen Meter	90H018262	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
YSI DO Probe	5905	TA06_04	Dissolved Oxygen	SM 4500 O G	✓
Accumet AR-10 pH Meter	93312105	TA06_23	pH	SM 4500 H+	✓
Mettler-Toledo SevenMulti Conductivity Meter	SN 1225117049 Probe H04257	TA06_25	Conductivity Salinity	SM 2510 B SM 2520 B	✓
Denver Model 225 ISE with ammonia probe	SN K01377	TA06_17	Ammonia	SM 4500 NH3 F	✓
Traceable Thermometer	#1-SN101686412 #2-SN221295527 #3-SN240116020 #4-SN80361795 #5-SN61990624	TA06_05	Temperature	SM-2530B modified DEP SOP-001/01 FT1400	✓ #2
Hach Pocket Colorimeter II	05050C026378	TA06_22	Total Residual Chlorine	EPA 330.5 SM 4500 CL G	✓
Alkalinity (Hach Kit)	No SN	TA06_08	Alkalinity	SM 2320 B	✓
Hardness (Hach Kit)	No SN	TA06_09	Hardness	SM 2340 C	✓
OHAUS Balance 250D	1125481084	TA06_21 TA06_27	Weight	-	✓
S-Weights	BIO-S-WEIGHTS-01	NA	Balance check	-	✓
Drying Oven	VWR #2	—	—	—	✓

SM-2530B modified to allow use of electronic and non-mercury filled thermometers.

Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

Entered by JD 10-18-10 by MF for FD

V 1.1 9/21/10 MF/jd

000014

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax:970/484-2514

ORGANISM HISTORY

DATE: 9/20/2010

SPECIES: *Pimephales promelas*

AGE: N/A

LIFE STAGE: Embryo

HATCH DATE: 9/20/2010

BEGAN FEEDING: N/A

FOOD: N/A

Water Chemistry Record:	Current	Range
TEMPERATURE:	23°C	--
SALINITY/CONDUCTIVITY:	--	--
TOTAL HARDNESS (as $CaCO_3$):	140 mg/l	--
TOTAL ALKALINITY (as $CaCO_3$):	90 mg/l	--
pH:	7.60	--

Comments:

Facility Supervisor

Appendix H-1

Wet ID taxa list and density (number/mL) for quantitative phytoplankton collected from the Mosaic Fertilizer, L.L.C. – South Fort Meade Mine on 9/20/10.

	Control Site	Test Site
Bacillariophyta		
Bacillariophyta	2,534	896
Skeletonema potamos	-	2,233
Chlorophycota		
Actinastrum gracilimum	-	29
Actinotaenium minutissimum minutissimum	63	-
Chlamydomonas sp.	-	103
Chlorella sp.	32	323
Chlorococcum humicola	-	73
Coelastrum microporum	-	29
Gloeocystis gigas	-	15
Oocystis sp.	-	29
Scenedesmus bijuga	-	15
Scenedesmus quadricauda	-	88
Schroederia judayi	-	44
Selenastrum sp.	-	88
Chrysophyta		
Mallomonas sp.	-	29
Cryptophycophyta		
Cryptomonas sp.	-	29
Cyanophycota		
Aphanocapsa elachista	21	15
Cyanobium parvum	21	-
Gloeothece sp.	21	-
Jaaginema sp.	169	88
Komvophoron schmidlei	11	-
Merismopedia warmingiana	137	-
Myxosarcina amethystina	-	15
Planktolyngbya sp.	74	-
Planktothrix agardhii	11	-
Pseudanabaena sp.	32	-
Rhabdogloea sp.	-	29
Schizothrix calcicola	21	-
Synechocystis sp.	-	118
Euglenophycota		
Euglena acus	21	-
Euglena sp.	11	29
Pyrrophycophyta		
Glenodinium sp.	-	118

Appendix H-2

Diatom taxa list and number of valves counted to a target of 500 valves for quantitative phytoplankton collected from Mosaic Fertilizer, L.L.C. – South Fort Meade Mine on 9/20/10.

	Control Site	Test Site
Bacillariophyceae		
Achnanthes fluviatilis	2	1
Achnanthidium exiguum	45	19
Achnanthidium minutissimum	1	-
Cocconeis placentula	4	8
Lemnicola hungarica	13	2
Planothidium apiculatum	3	-
Planothidium delicatulum	2	-
Planothidium frequentissimum	11	-
Planothidium rostratum	40	-
Nitzschia sp.	25	61
Nitzschia amphibia	-	10
Nitzschia clausii	2	-
Nitzschia liebethruthii	-	27
Nitzschia nana	7	-
Nitzschia palea	4	15
Nitzschia subacicularis	-	4
Encyonema neomesianum	1	-
Gomphonema sp.	3	-
Gomphonema augur	4	-
Gomphonema parvulum	9	3
Placoneis sp.	1	-
Placoneis clementis	1	-
Placoneis elginensis	12	-
Eunotia sp.	52	-
Eunotia bilunaris	2	-
Eunotia flexuosa	2	-
Eunotia incisa	3	-
Eunotia rhomboidea	4	-
Eunotia veneris	3	-
Caloneis sp.	3	-
Cavinula jaernefeltii	3	-
Chamaepinnularia sp.	4	-
Diadesmis confervacea	11	1
Diploneis elliptica	1	-
Fallacia tenera	-	4
Frustulia sp.	1	-
Geissleria acceptata	8	10
Hippodonta capitata	1	-
Hippodonta hungarica	16	-
Luticola mutica	2	-
Mayamaea atomus	4	1
Navicula sp.	6	6
Navicula bouillantensis	6	-
Navicula cryptotenella	1	-

Appendix H-2 (continued)

	Control Site	Test Site
Navicula longicephala	3	-
Navicula minima	2	-
Navicula rostellata	-	1
Navicula subrhynchocephala	-	1
Navicula symmetrica	-	2
Navicula viridulacalcis	2	-
Naviculaceae	15	-
Nupela sp.	18	-
Nupela vitiosa	44	-
Pinnularia sp.	22	-
Sellaphora laevissima	8	-
Sellaphora pupula	16	1
Sellaphora seminulum	21	-
Stauroneis sp.	1	-
Stauroneis phoenicenteron	1	-
Stauroneis smithii	2	-
Coscinodiscophyceae		
Aulacoseira sp.	21	2
Cyclostephanos invisitatus	-	11
Cyclotella atomus	-	41
Cyclotella meneghiniana	2	247
Discostella pseudostelligera	-	6
Thalassiosira weissflogii	-	4
Fragilariophyceae		
Fragilariaceae	-	8
Staurosira elliptica	-	4

Appendix I-1

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m^2 rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the Mosaic Fertilizer, L.L.C. – South Fort Meade Mine on 9/20/10. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
Annelida		
Hirudinea		
Helobdella triserialis	16	-
Arthropoda		
Crustacea		
Amphipoda		
Hyalella azteca	275	172
Insecta		
Coleoptera		
Dineutus sp.	-	5
Peltodytes sp.	-	3
Stenelmis sp.	-	3
Collembola		
Collembola	3	-
Diptera		
Ablabesmyia mallochi	3	-
Ablabesmyia rhamphe grp.	6	153
Asheum beckae	61	3,238
Chironomus sp.	28	-
Dicrotendipes sp.	6	-
Dicrotendipes simpsoni	-	1,064
Glyptotendipes sp.	-	1,008
Goeldichironomus sp.	3	-
Goeldichironomus carus	-	366
Hemerodromia sp.	-	5
Kiefferulus sp.	8	-
Labrundinia becki	8	-
Odontomyia sp.	-	3
Palpomyia/bezzia grp.	-	11
Parachironomus carinatus	-	118
Parachironomus directus	-	20
Pentaneura inconspicua	-	133
Polypedilum flavum	-	260
Polypedilum illinoense grp.	-	209
Polypedilum scalaenum grp.	-	68
Rheotanytarsus exiguus grp.	-	342
Stenochironomus sp.	-	100
Tanytarsus sp. L Epler	3	-
Tanytarsus sp. T Epler	-	18
Thienemanniella sp. C Epler	-	26
Thienemannimyia grp.	-	26
Tribelos fuscicornis	-	68

Appendix I-1 (continued)

	Control Site	Test Site
Ephemeroptera		
Caenis sp.	8	53
Pseudocloeon ephippiatum	-	11
Tricorythodes albilineatus	-	21
Heteroptera		
Belostomatidae	-	3
Lepidoptera		
Undetermined	-	3
Megaloptera		
Corydalus cornutus	5	8
Odonata		
Argia sp.	5	8
Enallagma coecum	-	16
Trichoptera		
Cheumatopsyche sp.	-	292
Cyrnellus fraternus	-	14
Hydropsyche sp.	-	92
Lype diversa	-	8
Neotrichia sp.	-	3
Neureclipsis crepuscularis	-	8
Orthotrichia sp.	-	123
Cnidaria		
Hydrozoa		
Hydra sp.	3	-
Mollusca		
Bivalvia		
Corbicula fluminea	-	11
Eupera cubensis	5	-
Gastropoda		
Ancylidae	183	66
Physa sp.	3	-
Planorbella sp.	5	-
Pyrgophorus platyrachis	3	8
Nemertea		
Enopla		
Prostoma sp.	3	-

Appendix I-2

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the Mosaic Fertilizer, L.L.C. – South Fort Meade Mine for 28 days and collected on 9/20/10.

	Control Site	Test Site
Annelida		
Hirudinea		
Helobdella triserialis	6	-
Arthropoda		
Crustacea		
Amphipoda		
Amphipoda	1	-
Hyalella azteca	103	65
Insecta		
Coleoptera		
Dineutus sp.	-	2
Peltodytes sp.	-	1
Stenelmis sp.	-	1
Collembola		
Collembola	1	-
Diptera		
Ablabesmyia mallochi	1	-
Ablabesmyia rhamphe grp.	2	52
Asheum beckae	22	1099
Ceratopogonidae	-	1
Chironomidae	2	279
Chironomus sp.	10	-
Dicrotendipes sp.	2	-
Dicrotendipes simpsoni	-	361
Glyptotendipes sp.	-	342
Goeldichironomus sp.	1	-
Goeldichironomus carus	-	124
Hemerodromia sp.	-	2
Kiefferulus sp.	3	-
Labrundinia becki	3	-
Odontomyia sp.	-	1
Palpomyia/bezzia grp.	-	3
Parachironomus sp.	-	6
Parachironomus carinatus	-	35
Parachironomus directus	-	6
Pentaneura inconspicua	-	45
Polypedilum flavum	-	88
Polypedilum illinoense grp.	-	71
Polypedilum scalaenum grp.	-	23
Rheotanytarsus exiguus grp.	-	116
Stenochironomus sp.	-	34
Tanytarsus sp. L Epler	1	-
Tanytarsus sp. T Epler	-	6
Thienemanniella sp. C Epler	-	9

Appendix I-2 (continued)

	Control Site	Test Site
Thienemannimyia grp.	-	9
Tribelos fuscicornis	-	23
Ephemeroptera		
Caenis sp.	3	20
Pseudocloeon sp.	-	1
Pseudocloeon ephippiatum	-	3
Tricorythodes albilineatus	-	8
Heteroptera		
Belostomatidae	-	1
Lepidoptera		
Lepidoptera	-	1
Megaloptera		
Corydalus cornutus	2	3
Odonata		
Argia sp.	2	1
Coenagrionidae	-	6
Enallagma sp.	-	1
Enallagma coecum	-	1
Trichoptera		
Cheumatopsyche sp.	-	76
Cyrnellus fraternus	-	5
Hydropsyche sp.	-	24
Hydropsychidae	-	40
Hydroptilidae	-	3
Lype diversa	-	3
Neotrichia sp.	-	1
Neureclipsis crepuscularis	-	3
Orthotrichia sp.	-	42
Trichoptera	-	7
Cnidaria		
Hydrozoa		
Hydra sp.	1	-
Mollusca		
Bivalvia		
Bivalvia	1	3
Corbicula fluminea	-	1
Eupera cubensis	1	-
Gastropoda		
Ancylidae	69	25
Physa sp.	1	-
Planorbella sp.	2	-
Hydrobiidae	-	2
Pyrgophorus platyrachis	1	1
Nemertea		
Enopla		
Prostoma sp.	1	-

EPA Endsheet

The Bioassay of the Mosaic Fertilizer, L.L.C. - South Fort Meade Mine effluent sampled on September 20, 2010, NPDES #FL0037958

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 FL0037958 11	12 110620	# B	# S	# 2

Remarks

#

The Priority Pollutants Analysis for Bioassay of the Mosaic Fertilizer, L.L.C. - South Fort Meade Mine effluent sampled on September 20 2010, NPDES #FL0037958

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 FL0037958 11	12 110620	# X	# S	# 2

Remarks

#

Biological Analyses of the Mosaic Fertilizer, L.L.C. - South Fort Meade Mine effluent sampled on September 20, 2010, NPDES #FL0037958

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 FL0037958 11	12 110620	# S	# S	# 2

Remarks

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