

Biological Assessment of

Bayou Marcus Water Reclamation Facility

Escambia County

NPDES # FL0031801

Sampled October 10-13, 2011

April 2012

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

Quality Manual No. 870346G

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CONTENTS

Facility Overview

Methods

Results

Conclusion

Literature Cited

Tables

Table 1	Effluent limits, Class III Freshwater Criteria and chemical, microbiological and toxicological data.
Table 2	Effluent limits, Class III Freshwater Criteria and metals data.
Table 3	Measured and predicted algal growth potential (AGP)
Table 4	Vegetation Wetland Condition Index Metrics
Table 5	Bray-Curtis Similarities

Appendices

Appendix A	Map of facility
Appendix B	Facility summary
Appendix C	Explanation of measurements
Appendix D	Chain of Custody
Appendix E	Physical/Chemical and Wetland Condition Index field sheets
Appendix F	Chemical analyses of effluent and receiving water
Appendix G	Toxicological results
Appendix H	Standard Reference Toxicant Data
Appendix I	Wetland Condition Index Plant Taxa List

EPA End Sheet

Facility Overview

The Bayou Marcus Water Reclamation Facility is a Municipal Domestic Wastewater Treatment Plant. The effluent is discharged into Bayou Marcus Wetland, a Class III Fresh Water and then flows into Perdido Bay, a Class III Marine Water (see map Appendix A). The design flow of the wastewater system is 8.2 million gallons per day (MGD) annual average daily flow (AADF). The annual average flow for September 2010 to October 2011 was 6.0 MGD. Wastewater treatment consists of screening, biological treatment with oxidation ditches and secondary clarifiers. Wastewater is then filtered and goes through ultraviolet irradiation disinfection channels. Residual solids are transported to the Emerald Coast Utilities Authority Central Water Reclamation Facility for treatment. The plant continuously discharges via PVC pipe with diffusers attached to a wooden boardwalk. The flow was 6.378 MGD during this survey.

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 administrative order (AO), consent order and discharge monitoring report (DMR) information. Administrative Order AO0048NW was issued 11/16/07 and amended 05/13/10. It originally listed an interim limit for flow to the Northern portion of the wetlands and listed the construction schedule for the Southern portion of the wetlands. The amendment does away with the interim flow limit and extends the schedule for construction of the Southern portion of the wetland to 04/20/11. This order was amended again on 06/02/11 further extending the construction schedule to 11/30/11. A Consent Order (OGC#09-0276) was issued 06/26/09 for sanitary sewer overflows along Gulf Beach Highway.

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 the Southern Wetland) and a Test Site (located in the Northern Wetland near the boardwalk). Effluent samples for all analyses were taken as grab samples from monitoring location D-002 after UV disinfection. The conductivity and salinity of the Control Site indicate that the water is predominantly marine therefore marine criteria will be applied. The freshwater criteria will be applied to the effluent and Test Site.

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Nathan Mulkey, Rick Abad, Frank Butera, Kim Allen (FDEP Northwest District Office, Pensacola), Ashley O' Neal, Nia Wellendorf (FDEP Standards and Assessment Section) and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Michelle Fish, Nancy Ross, and Ed Smith).

Results

Organic Constituents (See Table 1 and Appendix F)

- No organic constituents were detected in the effluent.
- No organic constituents were detected in the field blank.

Metals (See Table 2 and Appendix F)

- All metals detected in the effluent were present at levels that complied with effluent permit limits and Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).

- Control Site iron (930µg/L) exceeded the Class III Marine Water Quality Criterion (62-302.530(38) F.A.C.). All other metals detected at the Control Site were present at levels that complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.).
- All metals detected at the Test Site were present at levels that complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.).
- No metals were detected in the field blank.

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

- Tests were performed October 11 through October 18, 2011.
- The effluent sample NOEC for the fish, *Pimephales promelas*, and the NOEC for the water flea, *Ceriodaphnia dubia,* during the chronic definitive bioassays were 100%, and therefore, complied with effluent permit limits.

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

- Dissolved oxygen (mg/L), pH (Standard Units), and specific conductance (µmhos/cm) of the effluent and Test Site complied with Class III Fresh Water Quality Criteria (62-302.530 F.A.C.) and effluent permit limits.
- The Control Site dissolved oxygen (3.7mg/L) was below the Class III Marine Water Quality Criterion (62-302.530(30) F.A.C.). The pH (Standard Units) and specific conductance (µmhos/cm) of the Control Site complied with Class III Marine Water Quality Criteria (62-302.530 F.A.C.).
- Chlorophyll *a* (corrected) was undetected in the effluent sample and was detected at similar levels at both the Control and Test Sites.
- Effluent Carbonaceous Biological Oxygen Demand (15mg/L J) exceeded the effluent permit limit. The value is qualified as an estimated value (J qualifier).
- Effluent total suspended solids (mg/L) complied with the effluent permit limits.

Microbiology (See Table 1 and Appendix F)

- Fecal coliform analyses were performed by the University of West Florida, Pensacola, Florida.
- Fecal coliforms were detected in the effluent and Test Site at levels which complied with Class III Fresh Water Quality Criterion (62-302.530(6) F.A.C.) and facility permit limits.
- Fecal coliforms detected at the Control Site (1320 CFU/100mL B) exceeded Class III Marine Water Quality Criterion (62-302.530(6) F.A.C.). The value is qualified as a result based on colony counts outside the method acceptable range (B qualifier).

Nutrients (See Table 1 and Appendix F)

- Effluent nutrient levels complied with permit limits.
- Test Site ortho-phosphate was an order of magnitude higher than effluent ortho-phosphate and was undetected at the Control Site. While some nutrient measurements of the Test Site and effluent were similar to each other, Test Site total phosphorus, nitrate and nitrite, total Kjeldahl nitrogen, organic nitrogen, and total nitrogen values were higher than the effluent. The Control Site nutrient values are lower than the Test Site and the effluent. Although the effluent may be contributing to nutrient enrichment at the Test Site, it appears that other sources of nutrient enrichment may be influencing the Test Site or the effluent nutrient levels may be variable.
- No nutrients were detected in the field blank.

Algal Growth Potential (See Table 3 and Appendix F)

- 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. The AGP value in the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 9 times greater than the freshwater “problem” threshold value. Raschke and Shultz (1987) determined that AGP values above 10.0 mg dry weight/L represent a “problem” threshold for marine receiving waters, implying nutrient enrichment. The AGP value in the

salinity adjusted effluent sample using the saltwater species, *Dunaliella tertiolecta,* was approximately 3 times greater than the marine "problem" threshold value. The analytical chemistry suggests that the effluent is nitrogen limited.

- The AGP value in the Test Site sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 19 times greater than the freshwater "problem" threshold value. The AGP value for the Test Site salinity adjusted sample was approximately 7 times greater than the saltwater problem threshold. The analytical chemistry suggests that the Test Site sample is nitrogen limited.
- A saltwater AGP test using the saltwater species, *Dunaliella tertiolecta,* was performed because the Control Site was predominantly marine. As noted above, the Test Site and effluent samples were salinity adjusted to perform the saltwater test as well. An AGP value for the Control Site was undetected.
- The AGP value of the Test Site was approximately 2 times higher than that of the effluent in the freshwater AGP test and approximately 3 times higher than that of the effluent in the saltwater AGP test. Effluent nutrients may not be elevating Test Site nutrients above what is already present from other sources.

Bioassessment (See Table 4, Table 5, Appendix C, Appendix E and Appendix I)
Vegetation Wetland Condition Index

- The vegetation Wetland Condition Index (WCI) at Bayou Marcus was completed on November 2, 2011. This method was developed for isolated, forested wetlands and has not been verified for other types of wetlands. Bayou Marcus is a forested wetland, but is not hydrologically isolated. It would be inappropriate to apply a final WCI score because the method is unverified for this wetland type in the Panhandle region. In the absence of an appropriate wetland tool to determine impacts, if any, occurring in the wetland as a result of the effluent, individual metrics of the WCI were compared, as well as Bray-Curtis Similarities between the Control Site and Test Site. Certain individual metrics are useful outside of the total WCI score because they have been shown to be relevant across wetland types and regions. Bray-Curtis Similarities are used to compare the degree of similarity in biological communities.
- The metric corresponding to percentage of exotics increases as the number of exotics decreases. A higher metric value indicates a more native-dominated community. This metric for all transects at the Control Site was lower than at the Test Site. Exotic macrophytes also occurred at a higher frequency at the Control Site as demonstrated by the weighted percentage exotics metric. *Alternanthera philoxeroides, Centella asiatica* and *Panicum repens* were present at the Control Site. *Ludwidgia peruviana*, *Paspalum urvillei,* and *Phyllanthus urinaria* were present at the Test Site. *Commelina diffusa* and *Sapium sebiferum* were present at both sites.
- The average percentage of sensitive taxa metric was higher at the Test Site than the Control Site. *Pinus elliotii* and *Vaccinum corymbosum* were present at the Test Site. No sensitive taxa were present at the Control Site.
- The average Coefficient of Conservatism (CC) metric for all transects using presence/absence data was similar at both sites. The average CC of the Control Site was lower than that of the Test Site. Calculating the CC metric by weighting it by frequency resulted in a higher value at the Control Site than at the Test Site. "Species with low CC scores were considered tolerant of many disturbances whereas species with high CC scores were considered to occur within a narrow set of stable ecological conditions" (Reiss and Brown 28).
- The percentage wetland status metric increases as disturbance decreases. The Control Site scored higher on the percent wetland status metric than did the Test Site.
- The percent native perennial metric increases as disturbance decreases. "… [D]isturbance often favors annual species over perennial species…" (Reiss and Brown 35). The Control Site scored higher for this metric than did the Test Site.

- The Bray-Curtis Similarity between transects at the Control Site using presence/absence data was 56% and at the Test Site was 50%. The overall similarity using presence/absence data between the Control and Test Site was 45%.
- When the data are weighted by frequency, the Bray-Curtis Similarity between transects within the Control Site is 62 % and within the Test Site is 58%. These values are higher than when using the presence/absence data. The overall Bray-Curtis Similarity is 34% between the Control and Test Sites, which is lower than when using the presence/absence data.
- The metrics of the WCI indicate that there are slight differences in the composition and structure of the macrophyte communities present at the study sites. The Bray-Curtis Similarities further demonstrate these differences when frequency is taken into account. However, neither of these comparisons indicates degradation of the macrophyte community at the Test Site as a result of the effluent.

Conclusion

Effluent Carbonaceous Biological Oxygen Demand exceeded the effluent permit limit. The value is qualified as an estimated value (J qualifier). The Control Site iron exceeded Class III Marine Water Quality Criterion (62-302.530(38) F.A.C.). The Control Site dissolved oxygen was below the minimum limit for Class III Marine Water Quality Criterion (62-302.530(30) F.A.C.). Fecal coliforms detected at the Control Site exceeded Class III Marine Water Quality Criterion (62-302.530(6) F.A.C.). Test Site nutrient values and AGP values are higher than effluent nutrient values and AGP values. The Control Site had the lowest nutrient and AGP values for this survey. It may not be appropriate to compare the Control Site to the Test Site because the Control Site is predominantly marine and the Test Site is predominantly freshwater.

The macrophyte communities at the Control Site, with the exception of the *Cladium jamaicense* (less than 1% of the Control Site total macrophyte occurrences) did not reflect the higher salinity of the Control Site. The Control Site macrophyte community was comparable to the Test Site in this respect. The WCI metrics and the Bray-Curtis Similarities do not demonstrate negative impacts on the macrophyte community at the Test Site as a result of effluent.

Literature Cited

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

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

Reiss, K.C. and M.T. Brown. 2005. The Florida Wetland Condition Index (FWCI): Developing Biological Indicators for Isolated Depressional Forested Wetlands. Howard T. Odum Center for Wetlands. University of Florida. 168 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

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

Bayou Marcus Water Reclamation Facility	Class III Fresh Water Criteria	Effluent Limits	Effluent	Test Site	Class III Marine Criteria	Control Site
Organic Constituents (µg/L)						
None Detected						
Nutrients (mg/L)						
Ortho-phosphate	-	-	0.091	0.21	-	0.004 U
Total Phosphorus	-	≤ 2.0 s	0.19	0.33	-	0.022
Total Ammonia	-	≤ 3.2 s	0.046	0.039	-	0.022
Un-ionized Ammonia	≤ 0.02 s	-	≤ 0.02 c	≤ 0.02 c	-	≤ 0.02 c
Nitrate and Nitrite	-	-	0.78	1.5	-	0.15
Total Kjeldahl Nitrogen	-	-	1.0	1.1	-	0.38 I
Organic Nitrogen	-	-	0.95 c	1.1 c	-	0.36 c
Total Nitrogen	-	≤ 6.0 s	1.8 c	2.6 c	-	0.53 c
General Physical and Chemical Parameters						
Dissolved Oxygen (mg/L)	≥ 5.0	≥ 5.0	7.9	7.4	≥ 4.0	3.7
pH (SU)	6.0 - 8.5	6.0 - 8.5	7.4	7.7	6.5 - 8.5	6.7
Conductivity (µmhos/cm)	≤ 1,275	-	460	464	-	11245
Temperature (°C)	-	-	26.4	26.6	-	22.0
Salinity	-	-	<1.0 c	<1.0 c	-	6.8 c
Sample Depth (m)	-	-	0.15	0.15	-	0.15
Alkalinity (mg CaCO3/L)	≥ 20.0	-	96	93	-	23
Chlorophyll *a* (µg/L) - Corrected	-	-	0.55 U	7.2	-	6.3
Phaeophytin (µg/L)	-	-	0.4 U	11	-	2.4
Total Suspended Solids (mg/L)	-	≤10.0 s	3 I	6 I	-	8 I
Turbidity (NTU)	< 29 t	-	1.2	2.7	< 29 t	3.7
CBOD, 5 day (mg/L), N - inhibited	-	≤10.0 s	15 J	0.91 I	-	1.8 I
Chloride (mg/L)	-	-	45	44	-	1500
Fluoride (mg/L)	≤ 10.0	-	0.27	0.3	≤ 5.0	0.11
Sulfate (mg/L)	-	-	51	48	-	220
Flow (MGD)	-	≤ 8.2†	6.0†	-	-	-
Hardness (mg $CaCO_3$)	-	-	110 c	110 c	-	594 c
Toxicity (7 day Chronic Screen, NOEC, % effluent)						
Bioassay - Water flea *(Ceriodaphnia dubia)* - survival and reproduction	-	≥100	100	-	-	-
Bioassay - Fish *(Pimephales promelas)* - survival and grow th	-	≥100	100	-	-	-
Microbiology (Number of colony forming units/100ml)						
Fecal Coliforms ¥	≤ 400s #	≤ 800s	1 U	42	≤ 400s #	1320 B

Value exceeds the Class III Water Quality Criteria or permit limits

c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit
¥ - Fecal coliform analysis performed by University of West Florida, Pensacola, FL
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
*- measurement taken in the FDEP laboratory
†-Annual average daily flow

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.

Bayou Marcus Water Reclamation Facility	Effluent Class III Fresh Water Criteria	Effluent Limits	Effluent	Test Site Class III Fresh Water Criteria	Test Site	Control Site Class III Marine	Control Site
Metals (µg/L unless otherwise noted)							
Aluminum	-	-	115	-	238	≤ 1500	124
Arsenic	≤ 50	-	0.33 I	≤ 50	0.48 I	≤ 50	0.76 I
Cadmium	≤ 0.290 b	-	0.05 U	≤ 0.290 b	0.05 U	≤ 8.8	0.15 U
Calcium (mg/L)	-	-	21.8	-	21.5	-	41.8
Chromium-III	≤ 93.5 b	-	0.3 U	≤ 93.0 b	0.31 I	-	0.9 U
Copper	≤ 10.2 b	≤ 10.2 b	1.94	≤ 10.1 b	2.75	≤ 3.7	1.50 U
Iron	≤ 1,000	-	30 U	≤ 1,000	53 I	≤ 300	930
Lead	≤ 3.61 b	-	0.29 I	≤ 3.58 b	0.40 I	≤ 8.5	0.60 U
Magnesium (mg/L)	-	-	13.6	-	13.6	-	119.0
Nickel	≤ 56.7 b	-	2.97	≤ 56.4 b	2.23	≤ 8.3	0.75 U
Selenium	≤ 5.0	-	0.2 U	≤ 5.0	0.2 U	≤ 71	0.6 U
Silver	≤ 0.07	-	0.025 U	≤ 0.07	0.025 U	≤ 2.3	0.075 U
Zinc	≤ 130 b	≤ 130 b	59	≤ 130 b	64	≤ 86	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

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

Bayou Marcus Water Reclamation Facility					
Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (TN) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent	46.6	31.4 ± 6.3	67.6 ± 13.5	9.1	9.4
Test Site	95.9	58.5 ± 11.7	98.8 ± 19.8	7.3	7.9

Table 3b. Measured and predicted algal growth potential (AGP; mg dry weight/L) of the saltwater species *Dunaliella tertiolecta* and ratios of nitrogen to phosphorus.

Bayou Marcus Water Reclamation Facility			
Location	AGP (measured)	Inorganic N:P ratio	Total N:P ratio
Effluent	25.5	9.1	9.4
Test Site	72.6	7.3	7.9
Control Site	3.0 U	43.0	24.1

Table 4. Vegetation Wetland Condition Index Metrics

Bayou Marcus WRF	Control Site					Test Site				
	Transect 1	Transect 2	Transect 3	Transect 4	Overall Score	Transect 1	Transect 2	Transect 3	Transect 4	Overall Score
% tolerant metric	10.0	8.1	6.7	10.0	7.9	6.3	6.4	6.0	5.8	7.2
% sensitive metric	0.0	0.0	0.0	0.0	0.0	3.5	2.0	0.0	1.7	1.9
% exotic metric	4.1	3.9	7.4	5.6	4.0	4.8	4.9	6.7	5.6	4.3
Weighted % exotics metric*					7.2					8.0
Average CC metric	1.7	2.8	3.2	2.9	3.3	1.9	1.2	0.9	1.6	3.6
Weighted average CC metric*					8.0					7.3
% native perennial metric	6.4	6.1	8.7	7.5	6.3	6.9	7.1	8.3	6.3	5.0
% wet status metric	9.8	9.5	8.1	7.7	8.5	3.0	4.8	7.3	4.6	5.3
Total Score					30.0					27.3

*** - not used in the total score**

Table 5a. Macrophyte Communties-Presence/Absence Data-Bray Curtis Similarity Percentages

Bayou Marcus WRF	Control Transect 1	Control Transect 2	Control Transect 3	Control Transect 4	Test Transect 1	Test Transect 2	Test Transect 3	Control Site (Overall)
Test Site (Overall)	-	-	-	-	-	-	-	45
Control Transect 2	54	-	-	-	-	-	-	-
Control Transect 3	60	72	-	-	-	-	-	-
Control Transect 4	43	53	54	-	-	-	-	-
Test Transect 1	22	32	42	22	-	-	-	-
Test Transect 2	32	44	50	30	59	-	-	-
Test Transect 3	34	38	49	23	53	56	-	-
Test Transect 4	24	29	38	36	44	48	42	-

Table 5b. Macrophyte Communities-Frequency Data-Bray-Curtis Similarity Percentages

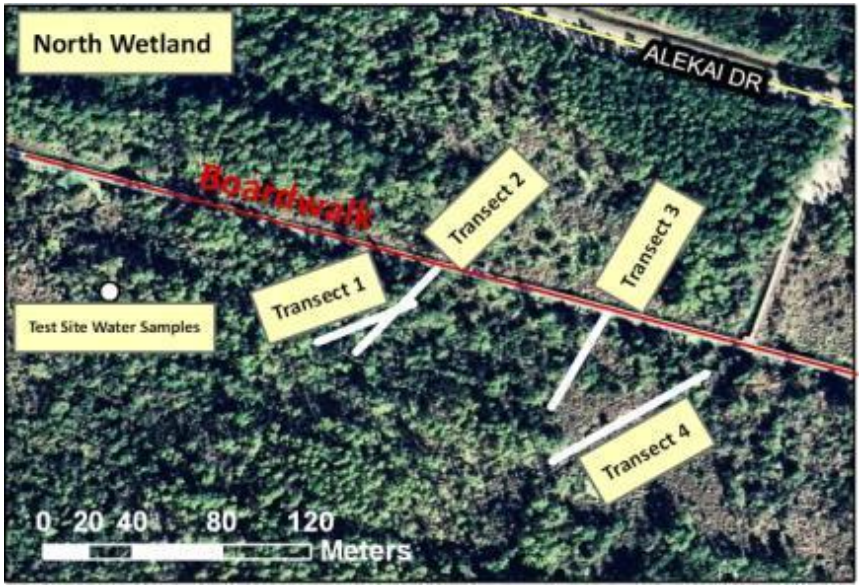
Bayou Marcus WRF	Control Transect 1 Occurrences	Control Transect 2 Occurrences	Control Transect 3 Occurrences	Control Transect 4 Occurrences	Test Transect 1 Occurrences	Test Transect 2 Occurrences	Test Transect 3 Occurrences	Control Site Total Occurrences
Test Site Total Occurrences	-	-	-	-	-	-	-	34
Control Transect 2 Occurrences	62	-	-	-	-	-	-	-
Control Transect 3 Occurrences	71	72	-	-	-	-	-	-
Control Transect 4 Occurrences	52	56	61	-	-	-	-	-
Test Transect 1 Occurrences	20	22	33	22	-	-	-	-
Test Transect 2 Occurrences	19	28	34	26	66	-	-	-
Test Transect 3 Occurrences	29	33	36	20	57	62	-	-
Test Transect 4 Occurrences	22	27	34	31	54	53	55	-

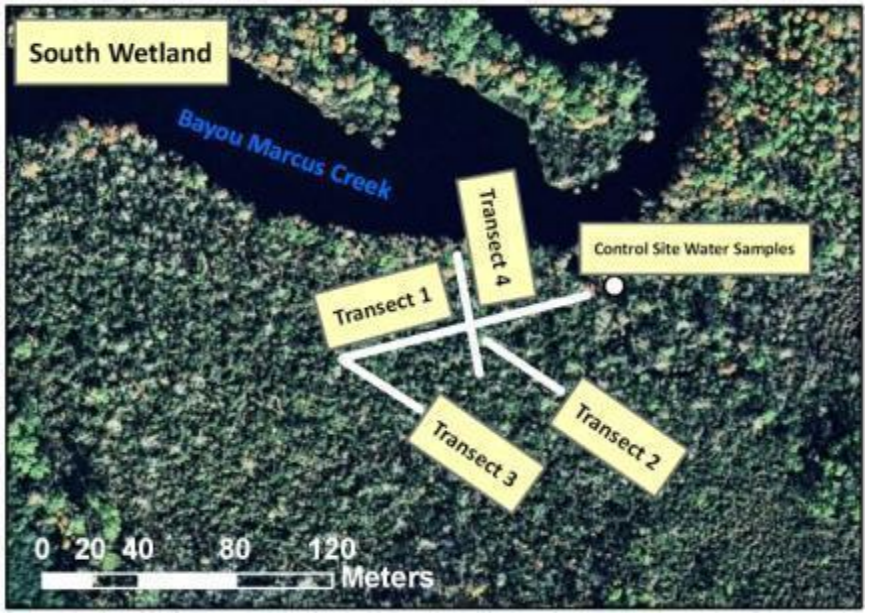
Appendix A

Bayou Marcus Water Reclamation Facility

Fifth Year Bioassessment Sampling Locations







Appendix B

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Kim Allen	**Contact Number:** 10553
Facility Name (as it appears on permit): Bayou Marcus Water Reclamation Facility	**Former Names:** Avalon WWTF
NPDES Permit Number: FL0031801	**Permit Expiration Date:** November 15, 2012
Physical Address: 3050 Fayal Drive Pensacola, FL 32526	
District: NWD	**County:** Escambia
Function of Facility: To treat wastewater for a portion of Escambia County.	
Facility Type: Domestic WWTF	**Permitted Capacity (MGD):** 8.2 mgd AADF
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):	
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):

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location Site Number	Description of Monitoring Location
EFF-01	Effluent monitoring point prior to discharge to the wetlands.
FLW-02	Flow to Northern Portion of Wetlands.
FLW-03	Flow to Southern Portion of Wetlands.
FLW-04	Total Flow to the Wetlands.
PPI-02	Internal Monitoring at UV Unit.

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I.B.1 and as described below:

Monitoring Location Site Number	Description of Monitoring Location
WEP-N4 ~~WIM-06~~ WIM-S2 ~~WIM-07~~	Northern System Quadrant N-4 Sampling Station. Point of discharge (exit) from the northern wetland. Southern System Quadrant S-2 Sampling Station. Southern wetland internal monitoring station.
WEP-S3 ~~WIM-08~~	Southern System Quadrant S-3 Sampling Station. Point of discharge (exit) from the southern wetland.
WIM-N1 ~~WIM-09~~	Northern System Quadrant N-1 Sampling Station. Northern wetland internal monitoring station.
~~WIM-10~~	~~Southern System Quadrant S-1 Sampling Station. Southern wetland internal monitoring station.~~

2. Surface water samples shall be taken at the monitoring site locations listed in Permit Condition I.C.1 and as described below:

Monitoring Location Site Number	Description of Monitoring Location
SWU-01	Bayou Marcus Creek Upstream Monitoring Station - BMC
SWD-02	Mouth of Bayou Marcus Creek (Southern System) - BMP
SWA-03	Percido Bay Monitoring Station (Northern System) - PB

The facility also has monitoring wells they are required to sample within the wetland.

Description of Permitted Outfall(s):

Disposal: Surface Water Discharge: Existing total flow to both wetlands of 8.2 MGD AADF is increased to 10.25 MGD AADF. The flow is proportioned to the northern wetlands - 7.35 MGD AADF and the southern wetlands – 2.9 MGD AADF.

The D-002 discharge structures are PVC pipe with diffusers, attached to wooden boardwalk with seven (7) zones in use in the Northern portion of the wetlands. The Southern portion of the wetland will have similar construction with four (4) zones. The Northern portion of the wetlands point of discharge is located approximately at latitude 30 o 26' 10" N, longitude 87 o20' 00" W.

The WWTP discharge outfall line (D002) is approximately:

24" PVC F/M 11,295 linear feet

18 " PVC F/M 4,650 linear feet

12" PVC F/M 185 linear feet

8" PVC Diffuser Pipe 7,800 linear feet

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

An existing 10.25 mgd annual average daily flow (AADF) permitted capacity activated sludge system. The mode of treatment operation of the wastewater treatment plant (WWTP) is conventional plug flow. The treatment facility is an extended aeration advanced domestic WWTP. The WWTP consist of pretreatment processes that include influent pumping with four (4) submersible pumps and four (4) raw wastewater rotary fine mesh drum screens. The biological treatment process include bioreactors – oxidation ditches (two parallel four-stage EIMCO carrousel aeration basins with anoxic with caustic soda addition, oxic, anoxic with alum addition and re-aeration chambers), three (3) secondary clarifiers. Secondary effluent management includes two (2) traveling bridge cloth media filters, two (2) parallel ultraviolet irradiation disinfection channels, effluent lift station with four (4)submersible pumps which pumps the effluent to the Bayou Marcus wetlands and two (2) turbine pumps for reuse water. An 8.2 MG lined reject holding pond is provided with recirculation.

The biosolids management facilities include one (1) circular plant tankage (aerated sludge holding tank) for sludge processing with four (4) cells, secondary scum and return activated sludge (RAS) pumping, waste activated sludge (WAS) pumping, One (1) rotary drum thickener to thicken sludge and facilities to transfer the thickened sludge to a tanker truck. All residual solids generated at the Bayou Marcus plant are transported by ECUA-owned and operated trucks, to the Main Street plant for treatment in one of two sludge dryers, at that plant, resulting in a Class AA residuals or other residual management facility (RMF).



rcus Expansion)\Data\GIS\MXD\Aerial 8.5x11 Dist.mxd

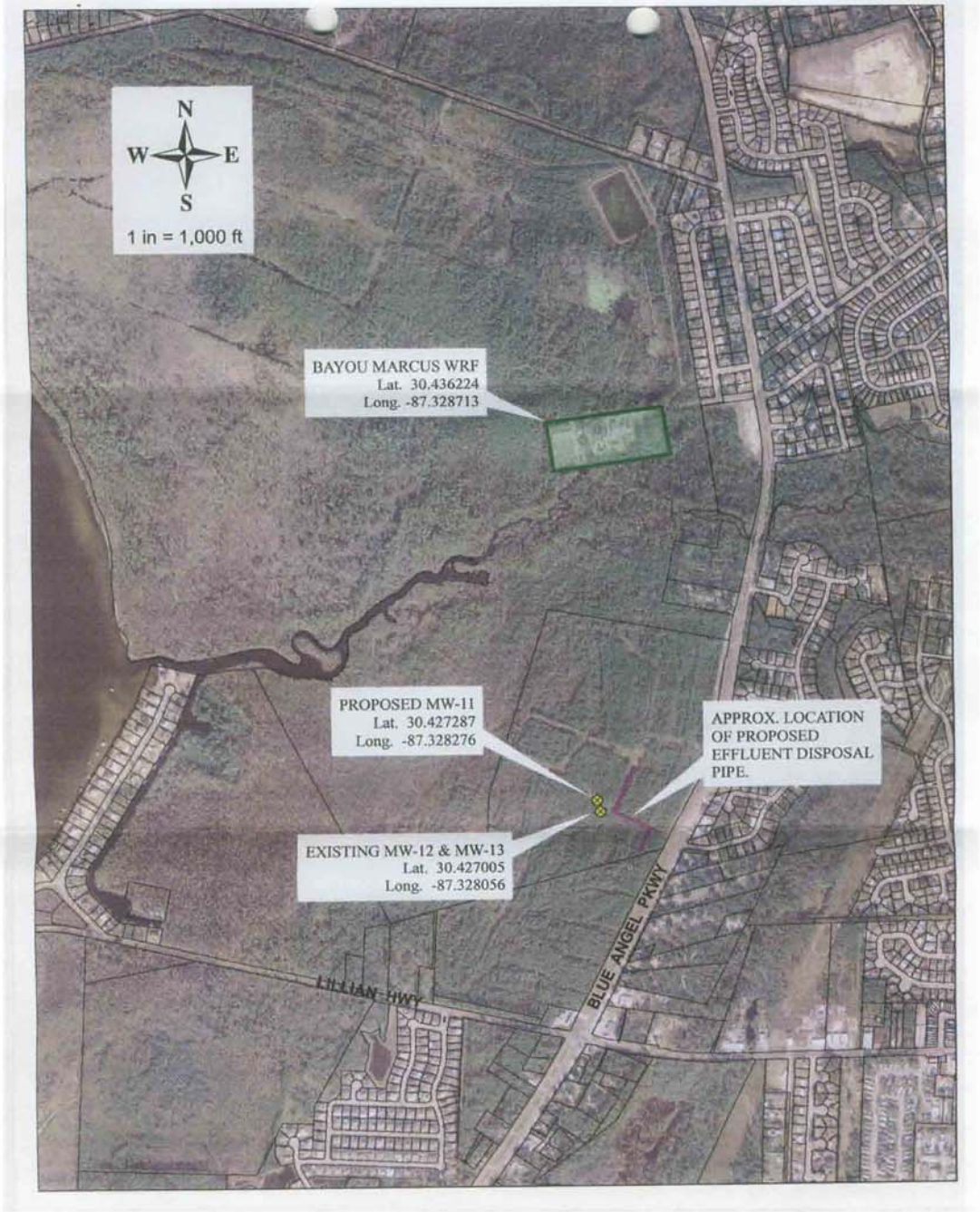
N:\36484 (Bay

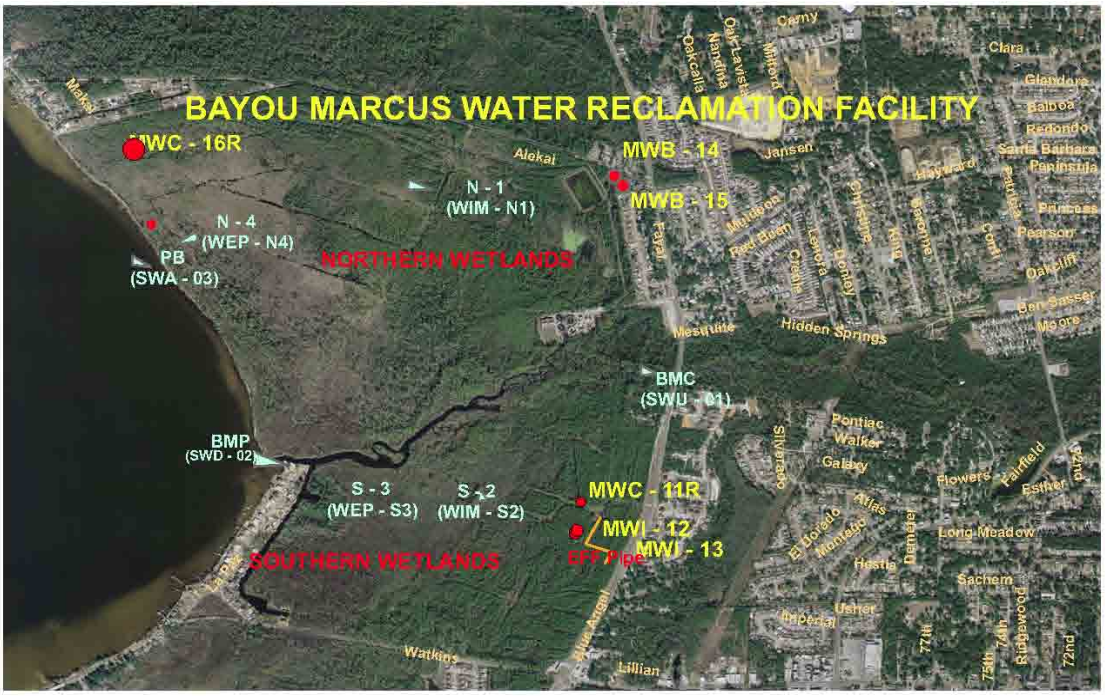
CDM

0 1,250 2,500 Feet

1 inch equals 1,250 feet

Figure 1
Study Area Location Map
Bayou Marcus Wetlands Application System


N
W
E
S
1 in = 1,000 ft
BAYOU MARCUS WRF
Lat. 30.436224
Long. -87.328713
PROPOSED MW-11
Lat. 30.427287
Long. -87.328276
APPROX. LOCATION OF PROPOSED EFFLUENT DISPOSAL PIPE.
EXISTING MW-12 & MW-13
Lat. 30.427005
Long. -87.328056
LILLIAN HWY
BLUE ANGEL PKWY


BAYOU MARCUS WATER RECLAMATION FACILITY
MWC - 16R
MWB - 14
MWB - 15
N - 1
(WIM - N1)
N - 4
(WEP - N4)
PB
(SWA - 03)
NORTHERN WETLANDS
BMC
(SWU - 01)
BMP
(SWD - 02)
S - 3
(WEP - S3)
S - 2
(WIM - S2)
MWC - 11R
MWI - 12
MWI - 13
EFF Pipe
SOUTHERN WETLANDS
Alekai
Jansen
Mesquite
Hidden Springs
Pontiac
Walker
Galaxy
Silverado
Flowers
Fairfield
Esther
Atlas
El Dorado
Montego
Long Meadow
Hestia
Demeter
Sachem
Usher
Imperial
Watkins
Blue Angel
Lillian
Clara
Glendora
Balboa
Redondo
Santa Barbara
Peninsula
Princess
Pearson
Oakcliff
Ben Sasser
Moore
Meldrum
Red Bluff
Fayar
Cresta
Lenora
Conley
Kirby
Sabrina
Christine
Hayward
Oakcalla
Nandina
Oak Lawn
Mitford
Cerny
Maker
77th
75th
74th
Ridgewood
72nd

PART I: Continued

List current 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

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-002 to WWTP discharge to receiving wetlands. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.B.8:

			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**
Flow to Northern portion of the Wetland.	MGD	Maximum	5.3	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-02	See Cond.I.B.4
Flow to Southern portion of the Wetland.	MGD	Maximum	2.9	Report	-	-	Continuous	Recording flow meters and totalizers	FLW-03	See Cond.I.B.4
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	5.0	6.3	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFF-01	
Solids, Total Suspended	MG/L	Maximum	5.0	6.3	7.5	10.0	5 Days/Week	24-hour flow proportioned composite	EFF-01	
Nitrogen, Ammonia, Total as NH4	MG/L	Maximum	1.6	2.0	2.4	3.2	5 Days/Week	24-hour flow proportioned composite	EFF-01	
Phosphorus, Total (as P)	MG/L	Maximum	1.0	1.3	1.5	2.0	5 Days/Week	24-hour flow proportioned composite	EFF-01	
Nitrogen, Total	MG/L	Maximum	3.0	3.8	4.5	6.0	5 Days/Week	24-hour flow proportioned composite	EFF-01	
pH	SU	Range	-	-	-	6.0 to 8.5	Continuous	Grab	EFF-01	See Cond.I.A.3
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.5				5 Days/Week	Grab	EFF-01	
Oxygen, Dissolved (DO)	MG/L	Minimum	-	-	-	5.0	Daily	Grab	EFF-01	
Ultraviolet Light Intensity	MW/CM2	Minimum	-	-	-	Report	Continuous	Meter	PPI-02	
Ultraviolet Light Dosage	MW-S/CM2	Minimum	-	-	-	25	Continuous	Calculated	PPI-02	
Whole Effluent Toxicity (Chronic)	See Permit Condition I.A.6								EFF-01	

			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
Zinc, Total Recoverable	UG/L	Maximum	See Permit Condition I.A.7 & 10				Monthly	24-hour flow proportioned composite	EFF-01	
Copper, Total Recoverable	UG/L	Maximum	See Permit Condition I.A.9 & 10				Monthly	24-hour flow proportioned composite	EFF-01	
Hardness, Total (as $CaCO_3$)	MG/L	Maximum	See Permit Condition I.A.8				Monthly	24-hour flow proportioned composite	EFF-01	

			Effluent Limitation				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Sulfide (Sediment Sampling)	MG/KG	Maximum	-	-	-	Report	Annually	Grab	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Sulfate, Total as SO4	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Chlorophyll-A,Phytoplankton,Fluorometric Method	UG/L	Maximum	-	-	-	Report	Quarterly	Grab	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Staff Gauge Reading	Feet	Maximum	-	-	-	Report	Continuous	Stage Recorder	WEP-N4 ~~WIM-06~~, WEP-S3 ~~WIM-08~~	
Water Level Reading	NGVD	Maximum	-	-	-	Report	Continuous	Meter	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Woody Vegetation Sampling	Yes/No	Maximum	-	-	-	Report	Annually	Field	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Herbaceous Vegetation Sampling	Yes/No	Maximum	-	-	-	Report	Quarterly	Line Intercept Method	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	
Fish Sampling	Yes/No	Maximum	-	-	-	Report	Annually	Field	WEP-N4 ~~WIM-06~~, WEP-S3 ~~WIM-08~~	
Threatened And Endangered Plant and Animal Species List	Yes/No	Maximum	-	-	-	Report	Annually	Field	WEP-N4 ~~WIM-06~~, WIM-S2 ~~WIM-07~~, WEP-S3 ~~WIM-08~~, WIM-N1 ~~WIM-09~~, ~~WIM-10~~	

C. Surface Water

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee shall monitor water quality from the surface water(s). Surface water monitoring shall be performed in accordance with the following:

			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
Nitrogen, Nitrate, Total (as N)	MG/L	Maximum	-			Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Total Nitrogen	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
pH	SU	Range	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Dissolved Oxygen (DO)	MG/L	Minimum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Temperature, Water	DEG C	Maximum	-	-	-	Report	Quarterly	Field Thermometer	SWU-01, SWD-02, SWA-03	
Coliform, Fecal	#/100ML	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Nitrogen, Ammonia, Total as NH4	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Specific conductance, Field	UMHOS/CM	Maximum	-	-	-	Report	Quarterly	Field Probe	SWU-01, SWD-02, SWA-03	
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Solids, Total Suspended	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Phosphorus, Total (as P)	MG/L	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Chlorophyll-A, Phytoplankton, Fluorometric Method	MG/CU. METER	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Water Depth	Feet	Maximum	-	-	-	Report	Quarterly	Field Instrument	SWU-01, SWD-02, SWA-03	
Wind Direction	Degrees from North	Maximum	-	-	-	Report	Quarterly	Field Instrument	SWU-01, SWD-02, SWA-03	
Wind Force	MPH	Maximum	-	-	-	Report	Quarterly	Field Instrument	SWU-01, SWD-02, SWA-03	

			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
Color	PT-CO	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Turbidity	NTU	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
D.O. % Saturation	%	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Salinity	PPT	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	
Secchi Depth	Inches	Maximum	-	-	-	Report	Quarterly	Grab	SWU-01, SWD-02, SWA-03	

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Receiving wetlands; upper Perdido Bay (WBID 797); Bayou Marcus Creek (WBID 697)	Receiving wetlands - Class III Perdido Bay – Class III

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

Permit mod 4/9/10:

6. 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) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. [Rules 62-302.530(20) and 62-4.241(1)(b), F.A.C.]
      (2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

   c. Sampling Requirements

      (1) For each routine test or additional follow-up test conducted, a total of three 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**, 4th Edition, EPA-821-R-02-013. 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 7.2.3.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

AO0048NW issued 11/16/07 and amended on 5/13/10. Originally gave interim limit for flow to Northern portion of the wetlands and gives construction schedule for the construction of the southern portion of the wetlands. Amendment does away with interim flow limit and extends schedule for construction of the southern portion of the wetlands to 4/30/11. This order was again amended on 6/2/11, further extending the construction schedule to 11/30/11.

Consent Order (OGC #09-0276) discussed in Enforcement Action section below.

Facility Mixing Zone Details (if applicable):

N/A

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

Date	Parameter and Units	Limit	Result

Describe previous FYI and WQBEL study:
The WQBEL Level I Study was conducted pursuant to Rules 62-600.430 and 62-650, Florida Administrative Code (F.A.C.). The WQBEL Level I Study confirmed the previous final effluent limits for this receiving wetland permit of:

Flow 8.2 MGD (Annual Average)
$CBOD_5$ 5 mg/L (Annual Average)
TSS 5 mg/L (Annual Average)
TN 3 mg/L (Annual Average)
Ammonia Nitrogen 1.6 mg/L (Annual Average)
TP 1 mg/L (Annual Average)
DO 5 mg/L (minimum)

Describe previous or current Enforcement Actions (including WLs):

OGC # 09-0276 issued 6/26/09 for sanitary sewer overflows along Gulf Beach Highway.

Describe any violations or problems noted in previous inspection:

1/11: TN monthly maximum reported as 6.3 mg/L max (limit = 6 mg/L)
*5/11: TN monthly maximum reported as 15.4 mg/L max (limit = 6 mg/L)
6/11: fecal coliform maximum reported as 2800/ml (limit 800); 90% reported as 296 (limit 400)

*The facility attributed these violations to high organic loading to the plant.

The facility experienced 2 inputs into the collection system in 9/11 that disrupted treatment at the plant. The facility is investigating who/what was the cause.

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

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

PART II: Sampling Event Information

Date(s) sample collected: 10/10/11, 10/12/11	Sampler(s): Nathan Mulkey, Rick Abad, Frank Butera
Temperature (Deg C): 26.38	pH (SU): 7.39
Dissolved Oxygen (mg/L): 7.91	Conductivity (umhos/cm): 460
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination:	Method of De-chlorination:

Flow During Sample Collection for each outfall(MGD):
6.378

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):

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:

Effluent samples collected on 10/10/11. Test and control samples taken on 10/12/11.

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 exceedance 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 exceedances 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 exceedance of 62-302.530(6) and/or a violation of facility permit limits.

(5) 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 exceedances 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 exceedance of 62-302.530(61) F.A.C.

(6) Vegetation Wetland Condition Index

The vegetation Wetland Condition Index (WCI) for isolated, forested wetlands is a biological assessment of wetland health conducted by sampling vascular plants along transects, identifying them to the species level, and calculating metric values based on attributes of the plant community that change predictably along an independent gradient of human disturbance. The index is calculated based on 6 metrics: percent tolerant indicator species, percent sensitive indicator species, percent exotic macrophyte species, average Coefficient of Conservatism (CC) score, percent native perennial species, and percent wetland status species. These metrics are calibrated for 4 ecoregions within the state including the Panhandle, North, Central, and South regions. The score is based on a 0-60 scale, with 60 representing high biological integrity. This current index is based on the Florida Wetland Condition Index (FWCI) developed by Reiss and Brown (2005) to provide a quantitative measure of the biological integrity of a wetland system.

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Event ID *

Request Number: RQ-2011-10-10-39

FYI5 Bayou Marcus WRF Sampling Inspection

Central Laboratory Sample Submittal Form

Requester: Michelle Fish

Field Report Prepared By: N. Mallory

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Collected By: Nathan Mallory / Rick Abel

Sampling Agency: FDEP

Send Final Report To: Toni Edwards

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Bayou Marcus WRF	☐ Comp ☑ Grab Date 10/10/11 Time 0915 Eastern Central	Date Time Eastern Central	A
	Field ID: Effluent	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L): 7.91	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	Temp (C): 26.38	pH: 7.39	Sample Depth: .15 ☑ m ☐ ft
		Salinity (PPTh) ☑ Sp Conductance (umho/cm): 460	NPDES Number	
	Latitude: 30.43594 ☑ dd ☐ dms	Longitude: 87.32788 ☑ dd ☐ dms	Comments: Flow: 6.378 MGD	

Lab ID *	Location	Collection (begin)	Collection (end)	Bottle Group(s)**
	Bayou Marcus WRF	☐ Comp ☐ Grab Date 10/10/11 Time 0930 Eastern Central	Date Time Eastern Central	D
	Field ID: Field Blank	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	Collection (begin)	Collection (end)	Bottle Group(s)**
	Bayou Marcus WRF	☑ Comp ☐ Grab Date 10/10/11 Time 0700 Eastern Central	Date 10/10/11 Time 0700 Eastern Central	A
	Field ID: TOX	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc): Fresh	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	Collection (begin)	Collection (end)	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time Eastern Central	Date Time Eastern Central	
	Field ID	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft
		Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Comments: 2 Dissolved Oxygen Recorders by J.D. 10:16 10.11.11	

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	10/10/11	Fed Ex	ABP	10-11-11 @ 9:35				

* 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-2011-10-10-39
FYI5 Bayou Marcus WRF Sampling Inspection

Requester: Michelle Fish
Field Report Prepared By: N. Malloy
Collected By: Nathan Malloy
Send Final Report To: Toni Edwards
Sampling Agency: FDEP

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Bayou Marcus WRF Wetland Field ID: South Wetland Control S3	Grab	Date 10/12/11 Time 1045 Central	Date Time Central	B
	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 3.70	Storet Station Number:		
	Matrix: Salt / Fresh / etc: Fresh	Temp (C): 22.04	pH: 6.65	Sample Depth: .15 m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 1245
	NPDES Number:				
	Latitude: 30.43004 dd / dms	Longitude: 087.33559 dd / dms	Comments:		

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Bayou Marcus WRF Wetland Field ID: North Wetland Test N1	Grab	Date 10/12/11 Time 1200 Central	Date Time Central	B
	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L): 7.43	Storet Station Number:		
	Matrix: Salt / Fresh / etc: Fresh	Temp (C): 26.64	pH: 7.67	Sample Depth: .15 m / ft	Salinity (PPTh) / Sp Conductance (umho/cm): 464
	NPDES Number:				
	Latitude: 30.44363 dd / dms	Longitude: 087.33559 dd / dms	Comments:		

Lab ID *	Location	Comp / Grab	Collection (begin) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Bayou Marcus WRF Field ID: TOX 2	Comp	Date 10/11/11 Time 0700 Central	Date 10/12/11 Time 0700 Central	A
	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:		
	Matrix: Salt / Fresh / etc: Fresh	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) Eastern Central	Collection (end) Eastern Central	Bottle Group(s)**
	Field ID		Date Time Central	Date Time Central	
	Tot Res Chlorine (mg/L):	Diss Oxygen (mg/L):	Storet Station Number:		
	Matrix: 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: 2 Diagstix Read in Tox by JD 0959 10/13/11		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	10/12/11	Fed Ex	ABS	10/13/11				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Request Number: RQ-2011-10-10-39 ~~-0015~~ ~~ORDPNJ~~

Event ID *

Requester: ~~Cheryl Bunch~~ Field Report Prepared By: N. Mulkey

Customer: NW-DIST
Project ID: ~~DISCRETIONARY~~ FY15
PMAS: ~~1396~~ 1143

Collected By: Nathan Mulkey Send Final Report To: ~~Cheryl Bunch~~

Sampling Agency: FDEP

Lab ID *	Location			☒ Comp ☐ Grab	Collection (begin) Date	Time	Eastern Central	Collection (end) Date	Time	Eastern Central	Bottle Group(s)**
	Bayou Marcus WRF				10/8/11	1700	Central	10/14/11	0700	Central	A
	Field ID			Tot Res Chlorine (mg/L)		Diss Oxygen (mg/L)		Storet Station Number			
	TOX3										
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft		☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)		NPDES Number			
	Salt, Fresh										
	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)**
	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)**
	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)**
	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
	10/14/11	FedEx					CZC	10/15/11

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Appendix E
Physical/Chemical and Wetland Condition Index field sheets

Department of Environmental Protection
Water Quality Report Form

NELAC Lab ID: E31887	Water Collection Depth: ☑0.15m(0.5') ☐Other:		General Bottles Triple Rinsed ☐
Agency 21FLPNS	**Station**	**Date** 10/10/11	Time of Grab Sample 0915 ☑ CST ☐ EST

Water (check as appropriate)		**Soils/Sediment**		**Tissue**		**Collection Mode**	
Surface Water ☐	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☑	☐ by Boat
Ground Water ☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☐	☐ Canoe
Waste Water ☑	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☐ Gas Motor
Other:	Duplicate ■	Sludge	☐				

Parameter Suite	**Parameter(s)/Method**	**Preservation**	**Acid Lot/Exp**	**Check pH**	**# Bottles**
Preserved Nutrients	☑TKN ☑TP ☑NO2NO3 ☑NH3 ☐TOC ☐Other:	☑Ice ☑H2SO4 2ml	094515	☑ <2 pH	1
Metals	☑W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☑HNO3 1ml	110909	☑ <2 pH	1
Filtered Nutrients	☑PO4 ☑Field Filtered .45 um filter	☑Ice			
All Other Samples unless otherwise noted	☐Other:	☑Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: ~~113382~~ 132237	**Equipmt Used:** Sample Container ☑ Pole ☐ Syringe ☑ Van Dorn ☐ Other ☐	**Equipmt ID Num:**	☐ Field Cleaned

Remarks: Module number: 1306
Comp 7AM 7AM Effluent Sampling YSI Readings
Flow 6.378 MGD

LOCATION
Bayou Marcus
Lat: N 30.43594 Long: W 87.32788

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29	Effluent	Conductivity Lab	UMHO	95	
Temp. Water	°C	10	26.38	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903		N-TKN	mg/L	625	
Secchi	Meters	78		N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98	0.203	Phos-Total	mg/L	665	
Conductivity Field	UMHO	94	460	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	0.22	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	7.91	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	98.3	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	7.39	Chlorophyll A	Corrected	32211	

Sample Taken By: VM	Report Verified By:
Report Prepared By: VM	( ) CHANGE Date Submitted

DEP NWD form, 10-25-2006 version

Department of Environmental Protection

Water Quality Report Form

NELAC Lab ID: E31887	Water Collection Depth: ☑0.15m(0.5') ☐Other:		General Bottles Triple Rinsed ☐
Agency 21FLPNS	Station ~~33[illegible]26~~	Date 10/12/11	Time of Grab Sample 1045 ☑ CST ☐ EST

Water (check as appropriate)		Soils/Sediment		Tissue		Collection Mode	
Surface Water ☑	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☑	☑ by Boat
Ground Water ☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☑	☐ Canoe
Waste Water ☐	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☑ Gas Motor
Other:	Duplicate ☐	Sludge	☐				

Parameter Suite	Parameter(s)/Method	Preservation	Acid Lot/Exp	Check pH	# Bottles
Preserved Nutrients	☑TKN ☑TP ☑NO2NO3 ☑NH3 ☐TOC ☐Other:	☑Ice ☑H2SO4 2ml	094595	☑ <2 pH	1
Metals	☑W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☑HNO3 1ml	110909	☑ <2 pH	1
Filtered Nutrients	☑PO4 ☑Field Filtered .45 um filter	☑Ice			
All Other Samples unless otherwise noted	☐Other:	☐Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: ~~113032~~ 132037	**Equipmt Used:** Sample Container ☑ Pole ☐ Syringe ☑ Van Dorn ☐ Other ☐	**Equipmt ID Num:** ☐ Field Cleaned

Remarks: Module number: 1306

N 30.43004
W 087.33559

LOCATION

~~SANTA ROSA SOUND~~
~~NAVARRE BEACH~~
Bayou Marcus South Wetland Control

Lat: ~~N30 26 S~~ Long: ~~W 86 51 19~~

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29	S#3	Conductivity Lab	UMHO	95	
Temp. Water	°C	10	22.04	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903		N-TKN	mg/L	625	
Secchi	Meters	78		N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98	0.363	Phos-Total	mg/L	665	
Conductivity Field	UMHO	94	11245	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	6.40	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	3.70	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	43.9	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	6.65	Chlorophyll A	Corrected	32211	

Sample Taken By: NM	Report Verified By:
Report Prepared By:	( ) CHANGE Date Submitted

DEP NWD form, 10-25-2006 version

Department of Environmental Protection
Water Quality Report Form

NELAC Lab ID: E31887	Water Collection Depth: ☑0.15m(0.5') ☐Other:	General Bottles Triple Rinsed ☐
Agency 21FLPNS / **Station**	**Date** 10/12/11	Time of Grab Sample 1200 ☑ CST ☐ EST

Water (check as appropriate)		**Soils/Sediment**		**Tissue**		**Collection Mode**	
Surface Water ☑	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☑	☐ by Boat
Ground Water ☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☑	☐ Canoe
Waste Water ☐	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☐ Gas Motor
Other:	Duplicate ☐	Sludge	☐				

Parameter Suite	**Parameter(s)/Method**	**Preservation**	**Acid Lot/Exp**	**Check pH**	**# Bottles**
Preserved Nutrients	☑TKN ☑TP ☐NO2NO3 ☑NH3 ☐TOC ☐Other:	☑Ice ☑H2SO4 2ml	094515	☑ <2 pH	1
Metals	☑W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☑HNO3 1ml	110909	☑ <2 pH	1
Filtered Nutrients	☑PO4 ☑Field Filtered .45 um filter	☑Ice			
All Other Samples unless otherwise noted	☐Other:	☐Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: ~~FT3502~~ 13237	**Equipmt Used:** Sample Container ☑ Pole ☐ Syringe ☐ Van Dorn ☐ Other ☐	**Equipmt ID Num:** ☐ Field Cleaned

Remarks: Module number: 1306
N 30.44383
W087.33559
DUP Field

LOCATION Bayou Marcus North wetland Test
Lat: N Long: W

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29	N1	Conductivity Lab	UMHO	95	
Temp. Water	°C	10	26.64	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903		N-TKN	mg/L	625	
Secchi	Meters	78		N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98	0.32	Phos-Total	mg/L	665	
Conductivity Field	UMHO	94	464	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	0.22	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	7.43	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	92.8	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	7.67	Chlorophyll A	Corrected	32211	
Sample Taken By:			NM	Report Verified By:			
Report Prepared By:			NM	( ) CHANGE		Date Submitted	

DEP NWD form, 10-25-2006 version

S-3 T-1

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: MARCUS BAYOU MARCUS WRF · Transect: ~~S-3~~ County: ESCAMBIA Date: 10-31-2011

Analyst: FRANK BUTERA, RICK ABAD

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature: Frank J. Butera

Except where noted on sheet, species level identification required.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00	1	1	1	1	1	1	1			1	
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04							1				
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56						1					V-T
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle ~~umbellata~~ SP	~~1.92~~					1	1	1	1	1	1	
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
~~ANDROPOGON SP~~							+					KB
Canadinum coelestinum			1	1							1	
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
~~Ipomoea aquatica(1)~~ ~~SAGITTATA~~	~~0.00~~	1					1	1	1	1	1	V-T FB
Ipomoea sagittata	6.42	1					1	1	1	1	1	V-T
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79											
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95		1	1	1	1			1	1		
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44											
Osmunda regalis	8.04			1		1	1	1	1	1	1	
Panicum hemitomon	5.82											
Panicum repens(1)	0.00	D	D	D	D		1	1		1		V-T
Rumex * VERTICILLATA			*	1	1	1	1	1	1	1	1	* V-T
PANICUM VIRGATUM		1	1	1		D	1				1	Coll V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"							X					

* R. VERTICILLATA

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRP S3 Transect: T-1 County: ESCAMBIA Date: 10-31-11

Analyst: F BUTERA, R ABAD Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02						1					
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35					1	1				1	
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96	1		1	1	1	1	1	1	1	1	
Sagittaria latifolia	6.50											
SMILAX		1										
SOLIDAGO LEAVENWORTHII		1	1	1	1	1	1	1		1	1	Coll V-T
RUBUS TRIVIALIS				1								

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~ SP	~~1.60~~	1		1	1	1	1	1	1	1	1	
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
PANICUM SCABRIUSCULUM								1				
Cyperus odoratus									1			V-T
ANDROPOGON GLOMERATUS							1				1	Coll V-T

Except where noted on sheet, species level identification required.

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12	1	1	1	1	1	1	D	D	D	1	
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
ILEX VOMITORIA				1			1	1				

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44								1			
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	1	1	1	1	1	1		1	1	1	
Nyssa sylvatica var. biflora	9.04	1										
Pinus elliottii	4.21											
Salix carolina	2.95											
Sapium sebiferum(1)	0.00											
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											
Myrica Heterophylla								1		1		Coll V-T

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. S-3 Transect: T-2 County: ESCAMBIA Date: 10-31-2011

Analyst: F BUTERA, R. ABAD

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature: [signature]

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49				1	1	1	1			1	V-T
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04	1										
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle ~~umbellata~~ SP	~~1.02~~	1	1	1	1	1	1	1	1	1	1	
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
ANDROPOGON					1	1	1	1				
GLOMERATUS												
CYPERUS ODORATUS					1	1	1					V-T
If no Dominant or Co-Dominant												
were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42										1	
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79											
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1	1	1						1	1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44											
Osmunda regalis	8.04	1	1	1	1	1		1	1	1	1	
Panicum hemitomon	5.82											
Panicum repens(1)	0.00	1										
PANICUM 2		1										COH
VIRGATUM												ST-V
CENTELLA												
ASIATICA										1		V-T
If no Dominant or Co-Dominant												
were selected, indicate with an "X"												

V-T = VERIFIED TALLAHASSEE

V-ST/ST-V = VERIFIED S. TOBE

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: Transect: County: Date:

Analyst: Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02						1					
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35		1				1	1	1		1	
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96		1		1		1		1	1		
Sagittaria latifolia	6.50											
RUBUS TRIVIALIS		1	1	1						1		
SOLIDAGO LEAVEN - WORTHII		1	1		1			1	1	1	1	CULL V-IT

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~	~~1.60~~				1	D	1	1	1		1	
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65	1	1									
Baccharis glomeruliflora	6.12	1				1	1	D	D	1	1	
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
CHAMAECYPARIS * THYOIDES		1								1		
ILEX VOMITORIA			1			1		1		1	1	

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44						1			1		
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	D	D	1	D	1	1	1	1	1	D	
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21											
Salix carolina	2.95											
Sapium sebiferum(1)	0.00	1									1	
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											

Except where noted on sheet, species level identification required.

* ATLANTIC WHITE CEDAR

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: MARCUS BAYOU WRF. S-3 | Transect: T-3 | County: ESCAMBIA | Date: 10-31-2011

Analyst: F BUTERA, R. ABAD

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive. | Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle ~~umbellata~~ SP	~~1.92~~	1		1	1	1	1	1	1	1	1	
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
BOEHMERIA CYLINDRICA			1			1	1					
ANDROPOGON GLOMERATUS				1					1			
CYPERUS ODORATUS									1	1		
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42	1	1						1	1		
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79											
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1		1	1	1		1		1	1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44		1									
Osmunda regalis	8.04	1	1	1	1	1	1		1	1	1	
Panicum hemitomon	5.82											
Panicum repens(1)	0.00											
PANICUM VIRGATUM			1	1		1			1	1		V-T
SMILAX									1			
RUBUS VERTICILLATA				1		1	1					V-T
RUBUS TRIVIALIS				1								
~~RAN~~												
If no Dominant or Co-Dominant were selected, indicate with an "X"												

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: MARCUS BAKER WRP S-3 | Transect: T-3 | County: ESCAMBIA | Date: 10-31-2011

Analyst: RB, RA | Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02						1	1				
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35	1										
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96		1				1	1				
Sagittaria latifolia	6.50											
SOLIDAGO ~~LEAVEN~~ LEAVENWORTHII		1	1		1	1	1	1	1	1	1	WII V-JT
PANICUM SCAB-RIUSCULUM											1	

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~	~~1.60~~						1		1	1	1	
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12	1	1		1	1	D	D	D	1	1	
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
ILEX VOMITORIA				1	1				1		1	

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44	1	1	1	1	1				1		
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	1	D	D	1	D	1	1	1	D	D	
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21											
Salix carolina	2.95											
Sapium sebiferum(1)	0.00		1			1						
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											
MYRICA HETEROPHYLLA ?						1	1					

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. S-3 | Transect: T-4 | County: ESCAMBIA | Date: NOV. 2, 2011

Analyst: RICK ABAD, NATHAN MULKEY

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive. | Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00	D		1	1							V-T
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49										1	V-T
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle ~~umbellata~~ SP.	1.92		1	1		1	1	1		1	1	
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
ANDROPOGON GLOMERATUS										1		V-T
CYPERUS ODORATUS		1				1	1					V-T
POACEAE *						1						V-JT
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42		1						1			V-T
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79											
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1	1	1	1	1	1				1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44											
Osmunda regalis	8.04	1			1	1	1	1	1	1	1	V-T
Panicum hemitomon	5.82	1	1	1			1		1	1	1	V-T
Panicum repens(1)	0.00											
COMMELINA & DIFFUSA							1					COM V-T
EUDATORIUM SP.											1	V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"												

V-T = Verified TALLAHASSEE . V-P = PENSACOLA
V-JT = VERIFIED J. TUBE

* POACEAE WAS ID AMPHICARPUM muhlenbergi

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. S-3 Transect: T-4 County: ESCAMBIA Date: 11-02-2011

Analyst: RICK ABAD Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02											
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35											
Sagittaria kurziana	9.75											
Sagittaria lancifolia (V-T)	4.96	1				1	1				1	V-T
Sagittaria latifolia	6.50											
Polygonum sp						1						
~~Rumex verticillatus~~		1	1	1	1							V-JT
Rubus trivialis	FB				+							
Solidago leavenworthii		1	1	1	1	1	1	1			1	V-JT
Rumex verticillatus			1	1	1	1		1		1		V-JT
Rubus argutus					1							V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65								1			
Baccharis glomeruliflora	6.12											
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66		1		1	1		1				V-T
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
BACCHARIS HALIMIFOLIA				1	1	1	1	1	1	1	1	V-T
ILEX VOMITORIA			1			1		1				

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha latifolia	1.60											
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
TOXICODENDRON RADICANS											1	

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44				1			1	1	1	1	
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	t	1	1	1	1	1	1	1	1	1	V-T
Nyssa sylvatica var. biflora	9.04										1	V-JT
Pinus elliottii	4.21											
Salix carolina	2.95											
Sapium sebiferum(1)	0.00			1	1	1		1	1			
Schinus terebinthifolius(1)	0.00											
Taxodium ~~ascendens~~ sp	7.21								1			
Taxodium distichum	7.21											
JUNIPERUS VIRGINIANA 2										1		coll
												V-T

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRP. N-1 | Transect: T-1 | County: ESCAMBIA | Date: 10-12-2011

Analyst: FBUTERA, JR ABAD

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex alboluteseens (C. longii) SP	3.47					1				1	1	V-T
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle umbellata	1.92											
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
CYPERACEE									1			V-T
CONOCLINUM								1	1			COLL
2 COELESTINUM												V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42											
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79	D	D	D	D	D		D	1		1	V-T
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1	1	1	1	1	1	1	1			
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44	D	D	1	1	1	1	1	D	1	1	V-T
Osmunda regalis	8.04											
Panicum hemitomon	5.82											
Panicum repens(1)	0.00											
BOEHMERIA		1	1	1	1	1	1	1	1	1	1	
2 CYLINDRICA												
TOXICODENDRON		1	1	1	1	1	1	1	1	1	1	
2 RADICANS												
If no Dominant or Co-Dominant were selected, indicate with an "X"												

V-T VERIFIED TLH V-D VERIFIED P-COCA

V-JT VERIFIED JOHN TORE

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: N-1 Transect: T-1 County: ESCAMBIA Date: 10-12-2011

Analyst: FBUTERA RABAD Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02	1	1	1	1	1	D	1	1		1	FB
Polygonum punctatum	4.02	1	1	1	1	1	D	1	1		1	V-T
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35											
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96											
Sagittaria latifolia	6.50											
SOLIDAGO ALTISSIMA		1						1				
SOLIDAGO FISTULOSA									1	1		V-T
PHYLANTHUS URINARIA		1										
Rubus trivialis			1						1			V-T

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33										1	V-T
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~ SP	~~1.60~~				1	1	1					V-P
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
VITIS RUTUNDIFOLIA		1					1	1	1	1	1	Full V-T
SPHAGNUM											1	V-T
ANDROPOGON		1	1	1			1					V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12											
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
VACCINIUM CORYMBOSUM										1		COLL V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44			1			1	1	1	1	1	
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82			1	1	1	1	1		1	1	V-T
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21									1		
Salix carolina	2.95											
Sapium sebiferum(1)	0.00	1										
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											
PERSEA PALUSTRIS					1							V-T

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. N-1 | Transect: T-2 | County: ESCAMBIA | Date: 10-27-2011

Analyst: F BUTERA, R. ABAD

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature:

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex ~~albolutescens (Cy longii)~~ SP	~~9.47~~					1	1		1			V-T
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle umbellata	1.92											
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
CYPERUS VIRENS									1	1	1	V-T
BOEHMERIA CYLINDRICA		D	1	1	1	1	C	D	1	1	1	V-T
~~BACCHARIS GLOMERATUS~~	FB											V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42											
Juncus effusus	3.25											
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79							1	D	D	C	
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47								1			
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62	1	1	1	1		1		~~1~~ 1	1		V-T
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95			1	1	1	1	1	1		1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44	1	D	D	D		1			1	1	
Osmunda regalis	8.04											
Panicum hemitomon	5.82											
Panicum repens(1)	0.00											
ANDROPOGON GLOMERATUS					1	1	1	1		1		V-T
EUPATORIUM CAPILLAFOLIUM							1					
CYPERUS ODORATUS									1			V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"												

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: N-1 Transect: T-2 County: BSCAMBIA Date: 10-27-2004

Analyst: FBURRELL Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02	1		1			1	1	1	1	C	V-T
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35											
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96											
Sagittaria latifolia	6.50											
RUBUS TRIVIALIS					1	1	1	1		1	1	V-T

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha latifolia	1.60											
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
UTRIS ROTUNDIFOLIA					1	1	1		1		1	
TOXICODENDRON RADICANS					1	1	1	1		1		
SPHAGNUM											1	V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12				1					1		V-T
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63					1	1					
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
ILEX COCIACEA						1						V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44	1	1	1	1	2	1			1		V-T
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	1				1	1		1	1	1	V-T
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21			1		1		1				
Salix carolina	2.95											
Sapium sebiferum(1)	0.00	1		1		1						
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. N-1 Transect: T-3 County: ESCAMBIA Date: 10-27-2011

Analyst: F BUTLER Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02	D	D	C	I		D	I	D	D	D	
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynochospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35											
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96											
Sagittaria latifolia	6.50											
RUBUS TRIVIALIS					I	I	I				I	
SMILAX SP						I	I					
SPHAGNUM										I		

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~ SP	1.60	I	I	I		I	I	I		I	X	V-P
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Valliseneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
SCIRPUS CYPERINUS		I										
VITIS SP		I	I			I						

Except where noted on sheet, species level identification required.

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12			I				I	I	I	I	V-T
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20											
Gordonia lasianthus	9.03											
Ilex cassine	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											

Except where noted on sheet, species level identification required.

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44	I			I		I					
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82				I	D	I		I		I	V-T
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21											
Salix carolina	2.95											
Sapium sebiferum(1)	0.00											
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium distichum	7.21											

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. N-1 Transect: T-3 County: ESCAMBIA Date: 10-27-2011

Analyst: FRANK BUTERA

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature: Frank Butera

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
adium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
perus haspan	5.68							1				
yperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyp rus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle ~~umbellata~~ SP	1.92									1		
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
BOEHMERIA CYLINDRICA		1	1	C	D	1	1	1	1	1	1	
ANDROPOGON		1	1	1	1			1	1		1	
*EUPATORIUM CAPILLIFOLIUM .004			1	1	1		+	1			1	
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42											
Juncus effusus	3.25							1				V-T
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79						1					
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62	1		1		1	1	1	1	1	1	V-T
Ludwigia repens	5.20											
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1		1	1		1	1	1	1	1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44	1	1	1		1	1	1				V-T
Osmunda regalis	8.04											
Panicum hemitomon	5.82											
Panicum repens(1)	0.00											
CONOCLINIUM & COELESTINUM				1						1		
COMMELINA & DIFUSA											1	COLL
											1	V-T
If no Dominant or Co-Dominant were selected, indicate with an "X"												

V_T = VERIFIED TALLAHASSEE

V-JT = VERIFIED John Tobe, pH

V-A = VERIFIED PENSACOLA (T. MCHALE)

* DOG FENNEL

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: Bayou Marcus N-1 Transect: T4 County: Escambia Date: 11-1-2011

Analyst: Rick Nabad Signature:

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Paspalidium geminatum	6.36											
Paspalum distichum	5.54											
Paspalum repens	6.69											
Peltandra virginica	7.31											
Pennisetum purpureum(1)	2.79											
Phragmites australis	4.39											
Pistia stratioides(1)	0.00											
Pluchea odorata	4.96											
Pluchea rosea	5.45											
Polygonum densiflorum	5.32											
Polygonum hydropiperoides	4.02											
Polygonum punctatum	4.02		1	D		D	D	D	D	D	D	V-T
Pontederia cordata	5.38											
Potamogeton diversifolius	7.15											
Potamogeton illinoensis	6.64											
Potamogeton pusillus	7.80											
Potemogeton pectinatus	7.80											
Proserpinaca pectinata	5.50											
Rhynchospora microcarpa	5.29											
Rhynchospora microcephala	6.50											
Rhynchospora tracyi	9.03											
Ricca fluitans	4.64											
Ricciocarpus natans	4.55											
Ruppia maritima	7.24											
Sabatia grandiflora	7.09											
Sacciolepis striata	5.35											
Sagittaria kurziana	9.75											
Sagittaria lancifolia	4.96											
Sagittaria latifolia	6.50											
ANDROPOGON SP		1				1	1	1				V-T
TORICODENDRON RADICANS		1	1				1					
PASAPALUM URVILLEI										1	1	V-T
CYPERUS VIRENS *							1	1				V-T

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Sagittaria graminea	5.53											
Salvinia minima	2.03											
Saururus cernuus	7.33											
Scirpus americanus	6.50											
Scirpus californicus	6.01											
Scirpus cubensis	3.77											
Scirpus validus	5.55											
Solanum tampicense(1)	0.00											
Sparganium americanum	6.50											
Spartina alterniflora	7.94											
Spartina bakeri	5.98											
Thalia geniculata	7.12											
Triadenum virginicum	8.16											
Typha domingersis	0.59											
Typha ~~latifolia~~	~~4.60~~					1	1	1	1	1	1	
Utrichularia floridana	6.34											
Utrichularia foliosa	6.44											
Utrichularia inflata	5.85											
Utrichularia purpurea	6.50											
Utricularia cornuta	7.46											
Utricularia radiata	6.01											
Vallisneria americana	7.28											
Wedelia trilobata(2)	0.00											
Wolffiella spp.	4.37											
Zizania aquatica	6.69											
Zizaniopsis milacea	6.21											
VITIS ROTUNDIFOLIA		1		1	1							V-T
SMILAX LAURIFOLIA					1							V-T
HYPERICUM CANADENSE						1						V-T
POLYGALA NANA						1						V-T
SCIRPUS CYPERINUS					1							V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Acer rubrum	4.65											
Baccharis glomeruliflora	6.12											
Cephalanthus occidentalis	7.27											
Clethra alnifolia	5.63											
Cliftonia monophylla	5.63											
Cyrilla racemiflora	5.20				1							
Gordonia lasianthus	9.03											
Ilex cassine *	7.66											
Itea virginica	7.09											
Lyonia ferruginea	8.39											
Lyonia ligustrina	8.67											
BACCHARIS HALIMIFOLIA			1	1		1						V-T

WOODY SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Leucothoe racemosa	7.33											
Lyonia lucida	7.06											
Magnolia virginiana	9.44	1	1		1							
Melaleuca quinquenervia(1)	0.00											
Myrica cerifera	3.82	1			1	1	1	1	1			
Nyssa sylvatica var. biflora	9.04											
Pinus elliottii	4.21				1							V-T
Salix carolina	2.95											
Sapium sebiferum(1)	0.00	1		1	1							
Schinus terebinthifolius(1)	0.00											
Taxodium ascendens	7.21											
Taxodium ~~distichum~~ SP	7.21				1							
MYRICA HETERO-PHYLLA								1				V-T

* Listed as Cyperus SURINAMENSIS (VIRENS)? UPON VERIFICATION SPREAD SHEET.

Wetland Condition Index Vegetation Transect Survey Data Sheet (7-28-08)

Wetland: BAYOU MARCUS WRF. N-1 Transect: T-4 County: ESCAMBIA Date: 11-01-2011

Analyst: Rick ABAD, ~~NATHAN ABBOTT~~

Plants in bold=exotic. (1)= category 1 invasive (worst), (2)=category 2 invasive.

Signature: Rick Abad

Except where noted on sheet, species level identification required.

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Alternanthera philoxeroides(2)	1.00											
Azolla caroliniana	1.81											
Bacopa caroliniana	5.31											
Bacopa monnieri	4.49											
Bidens laevis	7.19											
Brachiaria mutica	0.00											
Brasenia schreberi	8.79											
Cabomba caroliniana	5.07											
Canna flaccida	6.75											
Carex albolutescens (C. longii)	3.47											
Carex stipata	4.46											
Carex verrucosa	7.97											
Ceratophyllum demersum	4.16											
Ceratopteris thalictroides	2.93											
Chara spp.	3.90											
Cladium jamaicense	9.04											
Colocasia esculenta(1)	0.00											
Crineum americanum	8.67											
Cyperus alternifolius(2) (C. involucratus	1.11											
Cyperus articulatus	6.64											
Cyperus haspan	5.68											
Cyperus lanceolatus	2.04											
Cyperus polystachyos	1.56											
Cyperus prolifer(2)	0.00											
Cyperus surinamensis	2.03											
Decodon verticillatus	7.80											
Echinochloa crusgalli	0.22											
Echinochloa walteri	3.36											
Echinodorus cordifolia	6.50											
Egeria densa	0.49											
Eichhornia crassipes(1)	0.00											
Eleocharis baldwinii	2.82											
Eleocharis cellulosa	7.80											
Eleocharis equisetoides	9.10											
Eleocharis interstincta	7.80											
Eriocaulon compressum	7.50											
Eriocaulon decangulare	7.50											
Fuirena breviseta	7.60											
Fuirena scirpoidea	6.50											
Habenaria repens	4.58											
Hydrilla verticillata(1)	0.00											
Hydrochloa caroliniensis	4.79											
Hydrocotyle umbellata	1.92											
Hygrophila polysperma(1)	3.90											
Hymenachne amplexicaulis(1)	0.00											
Hypericum fasciculatum	7.27											
Hypericum hypericoides	5.44											
BOEHMERIA CYLINDRICA 2		1	1	1	1	1	1	1	1		1	V-T
CYPERUS ODORATUS							1	1				
If no Dominant or Co-Dominant were selected, indicate with an "X"												

HERBACEOUS SPECIES	C of C	Meter Mark 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hypericum myrtifolium	6.56											
Ipomoea aquatica(1)	0.00											
Ipomoea sagittata	6.42											
Juncus effusus	3.25	1				1	1					V-T
Juncus marginatus	3.65											
Juncus megacephalus	5.70											
Juncus repens	6.91											
Lachnanthes caroliana	3.76											
Leersia hexandra	5.61											
Lemna minor	3.77											
Limnobium spongia	4.79											
Limnophila sessiliflora(2)	0.00											
Ludwigia arcuata	5.32											
Ludwigia leptocarpa	3.47											
Ludwigia octovalvis	4.09											
Ludwigia palustris	4.77											
Ludwigia peruviana	0.62											
Ludwigia repens	5.20					1						V-T
Ludwigia virgata	6.73											
Mayaca fluviatilis	8.45											
Micranthemum glomeratum	5.85											
Micranthemum umbrosum	5.66											
Mikania scandens	1.95	1	1	1		1	1	0	1	1	1	
Mimosa pigra(1)	0.00											
Myriophyllum aquaticum	0.67											
Myriophyllum heterophyllum	4.77											
Myriophyllum laxum	5.85											
Myriophyllum pinnatum	5.85											
Myriophyllum spicatum(2)	0.00											
Najas filifolia	8.45											
Najas guadalupensis	5.07											
Najas marina	5.50											
Najas minor	3.64											
Nasturtium officinale	2.93											
Nelumbo lutea	6.26											
Nitella spp.	7.28											
Nuphar luteum	6.09											
Nymphaea mexicana	8.61											
Nymphaea odorata	7.18											
Nymphoides aquatica	6.09											
Orontium aquaticum	8.39											
Osmunda cinnamomea	6.44											
Osmunda regalis	8.04											
Panicum hemitomon	5.82											
Panicum repens(1)	0.00											
LUDWIGIA SP						1						V-T
COMMELINA DIFUSA 2											1	V-JT
THELYPTERIS PALUSTRIS 2		0	0	1	0	1						V-JT
If no Dominant or Co-Dominant were selected, indicate with an "X"												

V-T = VERIFIED TLH
V-JT = VERIFIED JOHN TOBE
V-P = PENSACOLA

Appendix F
Chemical analysis of effluent and receiving water

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/10/2011 10:15	Effluent	AGP/LN	Algal Growth Potential	46.6		mg DryWt/L	0.3	0.9
10/10/2011 10:15	Effluent	AGP/LN	Algal Growth Potential-Salinity Adjusted	25.5		mg DryWt/L	3	3
10/10/2011 10:15	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	15	J	mg/L	0.2	2
10/10/2011 10:15	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55	U	ug/L	0.55	1.7
10/10/2011 10:15	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.4	U	ug/L	0.4	1.2
10/10/2011 10:15	Effluent	Field Parameter	Dissolved Oxygen	7.91		mg/L		
10/10/2011 10:15	Effluent	Field Parameter	pH	7.39				
10/10/2011 10:15	Effluent	Field Parameter	Sample Depth	0.15		m		
10/10/2011 10:15	Effluent	Field Parameter	Specific Conductance	460		umhos/cm		
10/10/2011 10:15	Effluent	Field Parameter	Temperature	26.38		C		
10/10/2011 10:15	Effluent	Metals	Aluminum	115		ug/L	5	20
10/10/2011 10:15	Effluent	Metals	Arsenic	0.33	I	ug/L	0.25	1
10/10/2011 10:15	Effluent	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Metals	Calcium	21.8		mg/L	0.075	0.3
10/10/2011 10:15	Effluent	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/10/2011 10:15	Effluent	Metals	Copper	1.94		ug/L	0.5	1
10/10/2011 10:15	Effluent	Metals	Iron	30	U	ug/L	30	120
10/10/2011 10:15	Effluent	Metals	Lead	0.29	I	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Metals	Magnesium	13.6		mg/L	0.04	0.16
10/10/2011 10:15	Effluent	Metals	Nickel	2.97		ug/L	0.25	1
10/10/2011 10:15	Effluent	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/10/2011 10:15	Effluent	Metals	Sodium	42.1		mg/L	0.5	2
10/10/2011 10:15	Effluent	Metals	Zinc	59		ug/L	5	20
10/10/2011 10:15	Effluent	Nutrients	Alkalinity	96		mg CaCO3/L	0.65	2.5
10/10/2011 10:15	Effluent	Nutrients	Ammonia-N	0.046		mg N/L	0.01	0.02
10/10/2011 10:15	Effluent	Nutrients	Chloride	45		mg Cl/L	1	2.5
10/10/2011 10:15	Effluent	Nutrients	Color (true)	26		PCU	2	6
10/10/2011 10:15	Effluent	Nutrients	Fluoride	0.27		mg F/L	0.035	0.1
10/10/2011 10:15	Effluent	Nutrients	Kjeldahl Nitrogen	1		mg N/L	0.08	0.2
10/10/2011 10:15	Effluent	Nutrients	NO2NO3-N	0.78		mg N/L	0.004	0.01
10/10/2011 10:15	Effluent	Nutrients	O-Phosphate-P	0.091		mg P/L	0.004	0.01
10/10/2011 10:15	Effluent	Nutrients	Organic Carbon	6		mg C/L	1	5
10/10/2011 10:15	Effluent	Nutrients	Sulfate	51		mg SO4/L	1	2.5
10/10/2011 10:15	Effluent	Nutrients	Sulfide	0.05	U	mg S/L	0.05	0.2
10/10/2011 10:15	Effluent	Nutrients	Total-P	0.19		mg P/L	0.004	0.01
10/10/2011 10:15	Effluent	Nutrients	TSS	3	I	mg/L	2	10
10/10/2011 10:15	Effluent	Nutrients	Turbidity	1.2		NTU	0.1	0.1
10/10/2011 10:15	Effluent	Overflow	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL	1	1
10/10/2011 10:15	Effluent	Pesticides	Alachlor	0.6	UJ	ug/L	0.6	2.4

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/10/2011 10:15	Effluent	Pesticides	Ametryn	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Atrazine	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Azinphos Methyl	0.2	U	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Pesticides	Bromacil	0.2	UJ	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Pesticides	Butylate	0.2	UJ	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Pesticides	Chlorpyrifos Ethyl	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Chlorpyrifos Methyl	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Diazinon	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Ethion	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Ethoprop	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Fenamiphos	0.2	U	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Pesticides	Fonofos	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Hexazinone	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Malathion	0.15	U	ug/L	0.15	0.6
10/10/2011 10:15	Effluent	Pesticides	Metalaxyl	0.25	UJ	ug/L	0.25	1
10/10/2011 10:15	Effluent	Pesticides	Metolachlor	0.5	UJ	ug/L	0.5	2
10/10/2011 10:15	Effluent	Pesticides	Metribuzin	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Mevinphos	0.2	U	ug/L	0.2	0.8
10/10/2011 10:15	Effluent	Pesticides	Naled	0.8	U	ug/L	0.8	3.2
10/10/2011 10:15	Effluent	Pesticides	Norflurazon	0.15	U	ug/L	0.15	0.6
10/10/2011 10:15	Effluent	Pesticides	Parathion Ethyl	0.15	U	ug/L	0.15	0.6
10/10/2011 10:15	Effluent	Pesticides	Parathion Methyl	0.1	U	ug/L	0.1	0.4
10/10/2011 10:15	Effluent	Pesticides	Phorate	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Pesticides	Prometryn	0.15	U	ug/L	0.15	0.6
10/10/2011 10:15	Effluent	Pesticides	Simazine	0.05	U	ug/L	0.05	0.2
10/10/2011 10:15	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	11	U	ug/L	11	44
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	16	U	ug/L	16	66
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2-Chlorophenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	2-Nitrophenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	44	UJ	ug/L	44	180
10/10/2011 10:15	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2	U	ug/L	2.2	8.8
10/10/2011 10:15	Effluent	Priority Organic Pollutants	4-Nitrophenol	16	U	ug/L	16	66
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Acenaphthene	0.22	U	ug/L	0.22	0.88

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Acenaphthylene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Anthracene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzidine	110	UJ	ug/L	110	440
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	16	U	ug/L	16	66
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	5.5	U	ug/L	5.5	22
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Chrysene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Diethyl phthalate	1.1	UJ	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Dimethyl phthalate	11	UJ	ug/L	11	44
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	5.5	UJ	ug/L	5.5	22
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Fluoranthene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Fluorene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Hexachlorobenzene	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Hexachloroethane	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Isophorone	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Naphthalene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Nitrobenzene	2.2	U	ug/L	2.2	8.8
10/10/2011 10:15	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2	U	ug/L	2.2	8.8
10/10/2011 10:15	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2	U	ug/L	2.2	8.8
10/10/2011 10:15	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.3	U	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Pentachlorophenol	3.3	UJ	ug/L	3.3	13
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Phenanthrene	0.22	U	ug/L	0.22	0.88
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Phenol	1.1	U	ug/L	1.1	4.4
10/10/2011 10:15	Effluent	Priority Organic Pollutants	Pyrene	0.22	U	ug/L	0.22	0.88
10/10/2011 8:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-FW-C.dubia, NOEC	100		NOEC		
10/10/2011 8:00	Effluent	Toxicology	Bioassay-Chronic-Scrn-FW-Fish, NOEC	100		NOEC		
10/12/2011 11:45	Control Site	AGP/LN	Algal Growth Potential-Salinity Adjusted	3	U	mg DryWt/L	3	3
10/12/2011 11:45	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.8	I	mg/L	0.2	2
10/12/2011 11:45	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	6.3		ug/L	0.55	1.7
10/12/2011 11:45	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	2.4		ug/L	0.4	1.2

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/12/2011 11:45	Control Site	Field Parameter	Dissolved Oxygen	3.7		mg/L		
10/12/2011 11:45	Control Site	Field Parameter	pH	6.65				
10/12/2011 11:45	Control Site	Field Parameter	Sample Depth	0.15		m		
10/12/2011 11:45	Control Site	Field Parameter	Specific Conductance	11245		umhos/cm		
10/12/2011 11:45	Control Site	Field Parameter	Temperature	22.04		C		
10/12/2011 11:45	Control Site	Metals	Aluminum	124		ug/L	15	60
10/12/2011 11:45	Control Site	Metals	Arsenic	0.76	I	ug/L	0.75	3
10/12/2011 11:45	Control Site	Metals	Cadmium	0.15	U	ug/L	0.15	0.6
10/12/2011 11:45	Control Site	Metals	Calcium	41.8		mg/L	0.075	0.3
10/12/2011 11:45	Control Site	Metals	Chromium	0.9	U	ug/L	0.9	3.6
10/12/2011 11:45	Control Site	Metals	Copper	1.5	U	ug/L	1.5	3
10/12/2011 11:45	Control Site	Metals	Iron	930		ug/L	30	120
10/12/2011 11:45	Control Site	Metals	Lead	0.6	U	ug/L	0.6	2.4
10/12/2011 11:45	Control Site	Metals	Magnesium	119		mg/L	0.4	1.6
10/12/2011 11:45	Control Site	Metals	Nickel	0.75	U	ug/L	0.75	3
10/12/2011 11:45	Control Site	Metals	Selenium	0.6	U	ug/L	0.6	2.4
10/12/2011 11:45	Control Site	Metals	Silver	0.075	U	ug/L	0.075	0.3
10/12/2011 11:45	Control Site	Metals	Sodium	944		mg/L	5	20
10/12/2011 11:45	Control Site	Metals	Zinc	5	U	ug/L	5	20
10/12/2011 11:45	Control Site	Nutrients	Alkalinity	23		mg CaCO3/L	0.65	2.5
10/12/2011 11:45	Control Site	Nutrients	Ammonia-N	0.022		mg N/L	0.01	0.02
10/12/2011 11:45	Control Site	Nutrients	Chloride	1500		mg Cl/L	10	25
10/12/2011 11:45	Control Site	Nutrients	Color (true)	40	A	PCU	2	6
10/12/2011 11:45	Control Site	Nutrients	Fluoride	0.11		mg F/L	0.035	0.1
10/12/2011 11:45	Control Site	Nutrients	Kjeldahl Nitrogen	0.38	I	mg N/L	0.16	0.4
10/12/2011 11:45	Control Site	Nutrients	NO2NO3-N	0.15		mg N/L	0.005	0.01
10/12/2011 11:45	Control Site	Nutrients	O-Phosphate-P	0.004	U	mg P/L	0.004	0.01
10/12/2011 11:45	Control Site	Nutrients	Organic Carbon	5.2	I	mg C/L	2	10
10/12/2011 11:45	Control Site	Nutrients	Sulfate	220		mg SO4/L	2	5
10/12/2011 11:45	Control Site	Nutrients	Sulfide	0.05	U	mg S/L	0.05	0.2
10/12/2011 11:45	Control Site	Nutrients	Total-P	0.022		mg P/L	0.008	0.02
10/12/2011 11:45	Control Site	Nutrients	TSS	8	I	mg/L	2	10
10/12/2011 11:45	Control Site	Nutrients	Turbidity	3.7		NTU	0.1	0.1
10/12/2011 11:45	Control Site	Overflow	Fecal Coliforms-Membrane Filter	1320	B	cfu/100 mL	1	1
10/12/2011 13:00	Test Site	AGP/LN	Algal Growth Potential	95.9		mg DryWt/L	0.3	0.9
10/12/2011 13:00	Test Site	AGP/LN	Algal Growth Potential-Salinity Adjusted	72.6		mg DryWt/L	3	3
10/12/2011 13:00	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.91	I	mg/L	0.2	2
10/12/2011 13:00	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	7.2		ug/L	0.55	1.7
10/12/2011 13:00	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	11		ug/L	0.4	1.2
10/12/2011 13:00	Test Site	Field Parameter	Dissolved Oxygen	7.43		mg/L		
10/12/2011 13:00	Test Site	Field Parameter	pH	7.67				
10/12/2011 13:00	Test Site	Field Parameter	Sample Depth	0.15		m		

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/12/2011 13:00	Test Site	Field Parameter	Specific Conductance	464		umhos/cm		
10/12/2011 13:00	Test Site	Field Parameter	Temperature	26.64		C		
10/12/2011 13:00	Test Site	Metals	Aluminum	238		ug/L	5	20
10/12/2011 13:00	Test Site	Metals	Arsenic	0.48	I	ug/L	0.25	1
10/12/2011 13:00	Test Site	Metals	Cadmium	0.05	U	ug/L	0.05	0.2
10/12/2011 13:00	Test Site	Metals	Calcium	21.5		mg/L	0.075	0.3
10/12/2011 13:00	Test Site	Metals	Chromium	0.31	I	ug/L	0.3	1.2
10/12/2011 13:00	Test Site	Metals	Copper	2.75		ug/L	0.5	1
10/12/2011 13:00	Test Site	Metals	Iron	53	I	ug/L	30	120
10/12/2011 13:00	Test Site	Metals	Lead	0.4	I	ug/L	0.2	0.8
10/12/2011 13:00	Test Site	Metals	Magnesium	13.6		mg/L	0.04	0.16
10/12/2011 13:00	Test Site	Metals	Nickel	2.23		ug/L	0.25	1
10/12/2011 13:00	Test Site	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/12/2011 13:00	Test Site	Metals	Silver	0.025	U	ug/L	0.025	0.1
10/12/2011 13:00	Test Site	Metals	Sodium	42.6		mg/L	0.5	2
10/12/2011 13:00	Test Site	Metals	Zinc	64		ug/L	5	20
10/12/2011 13:00	Test Site	Nutrients	Alkalinity	93		mg CaCO3/L	0.65	2.5
10/12/2011 13:00	Test Site	Nutrients	Ammonia-N	0.039		mg N/L	0.01	0.02
10/12/2011 13:00	Test Site	Nutrients	Chloride	44		mg Cl/L	1	2.5
10/12/2011 13:00	Test Site	Nutrients	Color (true)	28		PCU	2	6
10/12/2011 13:00	Test Site	Nutrients	Fluoride	0.3		mg F/L	0.035	0.1
10/12/2011 13:00	Test Site	Nutrients	Kjeldahl Nitrogen	1.1		mg N/L	0.08	0.2
10/12/2011 13:00	Test Site	Nutrients	NO2NO3-N	1.5		mg N/L	0.04	0.1
10/12/2011 13:00	Test Site	Nutrients	O-Phosphate-P	0.21		mg P/L	0.02	0.05
10/12/2011 13:00	Test Site	Nutrients	Organic Carbon	5.6		mg C/L	1	5
10/12/2011 13:00	Test Site	Nutrients	Sulfate	48		mg SO4/L	0.2	0.5
10/12/2011 13:00	Test Site	Nutrients	Sulfide	0.05	U	mg S/L	0.05	0.2
10/12/2011 13:00	Test Site	Nutrients	Total-P	0.33		mg P/L	0.005	0.05
10/12/2011 13:00	Test Site	Nutrients	TSS	6	I	mg/L	2	10
10/12/2011 13:00	Test Site	Nutrients	Turbidity	2.7		NTU	0.1	0.1
10/12/2011 13:00	Test Site	Overflow	Fecal Coliforms-Membrane Filter	42		cfu/100 mL	1	1
10/10/2011 10:30	Field Blank	Metals	Aluminum	5	U	ug/L	5	20
10/10/2011 10:30	Field Blank	Metals	Arsenic	0.25	U	ug/L	0.25	1
10/10/2011 10:30	Field Blank	Metals	Chromium	0.3	U	ug/L	0.3	1.2
10/10/2011 10:30	Field Blank	Metals	Copper	0.5	U	ug/L	0.5	1
10/10/2011 10:30	Field Blank	Metals	Iron	30	U	ug/L	30	120
10/10/2011 10:30	Field Blank	Metals	Lead	0.2	U	ug/L	0.2	0.8
10/10/2011 10:30	Field Blank	Metals	Nickel	0.25	U	ug/L	0.25	1
10/10/2011 10:30	Field Blank	Metals	Selenium	0.2	U	ug/L	0.2	0.8
10/10/2011 10:30	Field Blank	Metals	Sodium	0.5	U	mg/L	0.5	2
10/10/2011 10:30	Field Blank	Metals	Zinc	5	U	ug/L	5	20
10/10/2011 10:30	Field Blank	Nutrients	Alkalinity	0.65	U	mg CaCO3/L	0.65	2.5

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/10/2011 10:30	Field Blank	Nutrients	Chloride	0.2	U	mg Cl/L	0.2	0.5
10/10/2011 10:30	Field Blank	Nutrients	Color (true)	2	U	PCU	2	6
10/10/2011 10:30	Field Blank	Nutrients	Organic Carbon	1	U	mg C/L	1	5
10/10/2011 10:30	Field Blank	Nutrients	Sulfate	0.2	U	mg SO4/L	0.2	0.5
10/10/2011 10:30	Field Blank	Pesticides	Alachlor	0.64	UJ	ug/L	0.64	2.6
10/10/2011 10:30	Field Blank	Pesticides	Azinphos Methyl	0.21	U	ug/L	0.21	0.85
10/10/2011 10:30	Field Blank	Pesticides	Bromacil	0.21	UJ	ug/L	0.21	0.85
10/10/2011 10:30	Field Blank	Pesticides	Butylate	0.21	UJ	ug/L	0.21	0.85
10/10/2011 10:30	Field Blank	Pesticides	Fenamiphos	0.21	U	ug/L	0.21	0.85
10/10/2011 10:30	Field Blank	Pesticides	Metalaxyl	0.27	UJ	ug/L	0.27	1.1
10/10/2011 10:30	Field Blank	Pesticides	Metolachlor	0.53	UJ	ug/L	0.53	2.1
10/10/2011 10:30	Field Blank	Pesticides	Mevinphos	0.21	U	ug/L	0.21	0.85
10/10/2011 10:30	Field Blank	Pesticides	Naled	0.85	U	ug/L	0.85	3.4
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.7	U	ug/L	9.7	39
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15	U	ug/L	15	58
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39	UJ	ug/L	39	160
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9	U	ug/L	1.9	7.8
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	4-Nitrophenol	15	U	ug/L	15	58
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Benzidine	97	UJ	ug/L	97	390
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	15	U	ug/L	15	58
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	4.9	U	ug/L	4.9	19
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	9.7	U	ug/L	9.7	39
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	4.9	U	ug/L	4.9	19
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19	U	ug/L	0.19	0.78
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Fluorene	0.19	U	ug/L	0.19	0.78
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.97	U	ug/L	0.97	3.9

Date_Sampled	UDL	SCH_Group	Component	Value	Qualifier	Units_Word_Result	MDL	PQL
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19	U	ug/L	0.19	0.78
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Isophorone	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Naphthalene	0.19	U	ug/L	0.19	0.78
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9	U	ug/L	1.9	7.8
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9	U	ug/L	1.9	7.8
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9	U	ug/L	1.9	7.8
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Pentachlorophenol	2.9	U	ug/L	2.9	12
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19	U	ug/L	0.19	0.78
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Phenol	0.97	U	ug/L	0.97	3.9
10/10/2011 10:30	Field Blank	Priority Organic Pollutants	Pyrene	0.19	U	ug/L	0.19	0.78

Appendix G

Toxicological results

FDEP Biology Laboratory - Chronic Screen Bench Sheet
Ceriodaphnia dubia

Facility: Bayou Marcus Water Reclamation fac. SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0
Address: 3050 Fayal Drive
County: Pensacola, FL 32526 — Escambia County
NPDES Permit #: FL 0031801
Contact District: Nathan Mulkey / Northwest

LIMS entry: 10-24-11 MF verified: 10-31-11 BA

Diluent/Batch: 20% DMW / 10-4-11 Test Days Used: 0-3
20% DMW / 10-11-11 Test Days Used: 4-6

Organism: *Ceriodaphnia dubia*
Organism Batch #: 10-11-11
Organism age: <24hr hours
Feeding: Prior to Test and Daily
Food: ☑ YCT ☑ *P. subcapitata*
Food Batch: 8-4-11 8-22-11
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-2011-~~10-13~~-11-24	1382843	10-10-11 0800	10-11-11 1016
Test Day 2	2	TLH-2011-~~10-12~~-11-25	1383653	10-12-11 0800	10-13-11 0959
Test Day 4	3	TLH-2011-10-17-03	1384715	10-14-11 0800	10-15-11 0940

Batch #	10-4-11	10-11-11	NA	NA	NA			
Water Quality Parameters	20% DMW	20% DMW	Sample 1	Sample 2	Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	—	—	—		—	MF
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	<0.03	<0.03	0.04		MF/JD	MF/JD
Alkalinity (mg/L as $CaCO_3$):	81	76	117	104	112		MF/JD	JD/MF
Hardness (mg/L as $CaCO_3$):	84	84	111	109	103		MF/JD	JD/MF
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017	—		MF	JD
Conductivity: ~~µmhos~~ mmhos:	187	178	487	484	462		BA	MF
Salinity (ppth):								

Test Incubated in: Incubator #: 2

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 # 2 min. 24.6 max. 27.6 mean —
Room B246 min. 22.5 max. 24.6 mean —
Test min. ____ max. ____ mean ____

Loaded by: BA

Test Replicates	Loaded from culture vial
1	A14
2	A20
3	A23
4	A28
5	A19
6	A22
7	A25
8	A26
9	A27
10	TS4

Results	
Control % CV:	27.2 %
Dunnetts PMSD:	19.1 %
Reproduction NOEC:	100 %
Reproduction LOEC:	>100 %
Survival NOEC:	100 %
Survival LOEC:	>100 %
ICP_{20}:	>100 %
ICP_{25}:	>100 %

Investigators' signatures
Bruce McConnaha
Marshall Faircloth
James Bond

REVIEWER

Comments:

Test Page 1 of 4 PAGE 00 25 Revised 07/15/2008 MF

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Bayou Marcos

LIMS Sample # 1382893 for lab sample 1

Start Date: 10.11.11 Time: 12.30

End Date: 10.18.11 Time: 12:45

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	~~Inf~~ 0	0	0	0	0	0	0	0	0	0	0	10	0
	3	2	4	0	0	3	0	0	0	0	0	9	10	0.9
	4	0	0	0	0	0	3	0	1	4	4	12	10	1.2
	5	8	9	7	8	8	0	1	7	0	6	54	10	5.4
	6	9	11	8	7	7	8	8	9	0	0	67	10	6.7
	7	0	*9	11	9	~~*8~~	9	9	0	8	0	46	10	4.6
	8													
	Total	19	24	26	24	18	20	18	17	12	10	188	10	18.8

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total Neonates	Surviving adults	Neonates per adult
[OC % sample	0*												10	
	1												10	
	2	~~Inf~~ 0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	5	4	~~*8~~	4	4	3	4	5	4	~~38~~ 39	10	3.9
	4	0	0	0	8	0	~~8~~	0	0	0	0	8	10	0.8
	5	6	4	1	0	6	10	8	5	12	3	55	10	5.5
	6	11	10	11	14	16	~~*14~~	12	14	3	6	107	10	10.7
	7	*5	*9	*15	*8	*0	12	*6	*10	17	*9	—	10	
	8													
	Total	20	19	16	24	26	25	23	23	20	13	209	10	20.9

Organisms loaded by: BA

Day	Counted/ verified by:
0	MF
1	BA
2	MF
3	MF
4	BA
5	BA
6	MF
7	MF
8	

Concentration	Mean neonates /adult	% survival
Control	18.8	100%
100%	20.9	100%

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

revised 7/15/2008 MF

Comments: * 4th broods not counted MF

00 26

*Day 0 is test initiation day

FDEP Biology Laboratory - Chronic Screen Bench Sheet

Ceriodaphnia dubia Parameters

Facility: Bayou Marcus SOP TA07_05

LIMS Sample #: 1382843 for lab sample 1

Circle µmhos-cm or mmhos-cm

Test Day ↓		Concentration	New Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)	Old Sample: Test Replicate	pH (su)	Temp (°C)	DO (mg/L)	Conductivity (µmhos/cm) (mmhos/cm)
Day 0	sample: Control		M	7.8	24.2	7.1	187					
	1	100%	M	8.0	26.0	7.2	487					
	Measured by:			BA	BA	BA	BA					
	Recorded by:			BA	BA	BA	BA					
Day 1	sample: Control		M	8.0	24.1	7.3	182	M	8.0	24.0	7.4	197
	1	100%	M	8.3	24.3	7.6	481	M	8.1	24.0	7.6	484
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 2	sample: Control		M	8.1	25.0	8.0	187	M	8.1	24.6	8.2	201
	2	100%	M	8.3	25.4	8.4	484	M	8.3	24.8	8.2	510
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 3	sample: Control		M	8.0	24.5	8.0	~~187~~	M	8.1	24.2	8.0	200
	2		M	8.4	25.3	8.3	488	M	8.2	24.4	8.1	486
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 4	sample: Control		M	7.8	24.2	7.5	178	M	8.0	24.0	6.9	189
	3	100%	M	8.1	24.1	7.3	462	M	8.0	24.0	7.2	473
	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	7.9	24.1	7.0	179	M	7.9	24.1	7.1	207
	3	100%	M	8.1	25.3	7.2	464	M	8.2	24.4	7.1	520
	Measured by:			BA	BA	BA	BA		BA	BA	BA	BA
	Recorded by:			BA	BA	BA	BA		BA	BA	BA	BA
Day 6	sample: Control		M	8.0	24.2	7.6	178	M	8.1	24.6	7.8	205
	3		M	8.1	25.2	8.2	461	M	8.2	25.3	8.4	493
	Measured by:			MF	MF	MF	MF		MF	MF	MF	MF
	Recorded by:			MF	MF	MF	MF		MF	MF	MF	MF
Day 7	sample: Control		M					M	8.1	24.2	7.9	~~498~~ 205
	3		M					M	8.1	24.2	7.7	518
	Measured by:								MF	MF	MF	MF
	Recorded by:								MF	MF	MF	MF
Day 8	sample: Control							M				
	3							M				
	Measured by:											
	Recorded by:											

Comments:

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

FDEP Biology Laboratory - Bioassay Instrument Identification

Test ID: Bayou Marcus WRF Dates: 10-11-11 — 10-18-11

METER / DEVICE	ID	SOP	Parameter	Method	v 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	EC#5
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 electronic and non-mercury filled thermometers.
Insert other device information in blank spaces(if used). Test ID = Facility or SRTs (acute SRT--Chronic SRT)

1 by ? mments: Entered by:

V 1.4 8/21/08 BA Pg 6 of 6

00 28

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimphales promelas or Menidia beryllina

Facility: Bayou Marcus Water Reclamation facility
Address: 3650 Fayal Drive, Pensacola, Florida 32526
County: Escambia
NPDES Permit #: FL 00 31801
Contact/District: Nathan Mulkey

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: 10.11.11 Time: 1235
End Date: 10.18.11 Time: 1000

Diluent/ Batch:
MHW / 10.10.11 Test Days Used: 0-7
MHW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____

Organism age : 24 hr3 ~~days~~ JD
Feeding Prior to Test and Daily
Artemia Lot # : 23613
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Batch #		Day 3	178-11
Day 0	175-11	Day 4	179-11
Day 1	176-11	Day 5	180-11
Day 2	177-11	Day 6	181-11

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2011-10-11-24	1382843	10-10-11 0800	10-11-11 1016
Test Day 2	2	TLH-2011-10-13-11	1383653	10-12-11 0800	10-13-11 0959
Test Day 4	3	TLH-2011-10-17-03	1384715	10-14-11 0800	10-15-11 0940

Water Quality Parameters	Field Chlorine (mg/L)			Lab Chlorine (mg/L)			Alkalinity (mg/L as $CaCO_3$)			Hardness (mg/L as $CaCO_3$)		
Lab Sample #:	1	2	3	1	2	3	1	2	3	1	2	3
Sample:	not	measured		<0.03	<0.03	0.04	117	104	112	111	109	103
Diluent/Control:				<0.03	—	—	83	—	—	90	—	—
Method:				Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach	Hach
Measured by:				JD	JD	JD	MF	MF	JD	MF	MF	JD
Verified by:	MF	MF	MF	MF	MF	MF	JD	JD	MF	JD	JD	MF

	Conductivity (circle one) (umhos-cm mmhos-cm)			Ammonia (mg/L)			Salinity (ppth)		
Lab Sample#:	1	2	3	1	2	3	1	2	3
Sample:	507	475	481	<0.017	<0.017	<0.017	—	—	—
Diluent/Control:	348	—	—	<0.017			—	—	—
Method:	Mettler	Mettler	Mettler	Denver	Denver	Denver	Mettler	Mettler	Mettler
Measured by:	JD	JD	JD	MF	MF	MF			
Verified by:	MF	MF	MF	JD	JD	JD			

lims entry 10.28-11 mi
Entry verification 10.28.11 RS

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 3 min 23.4 max 26.4 mean —
Water bath # ___ min ___ max ___ mean ___
Room B246 min 22.5 max 24.5 mean —

Statistics	
Growth NOEC:	100%
Growth LOEC:	>100%
Growth IC_{20}:	>100%
Growth IC_{25}:	>100%
Ctrl % CV:	9.15%
Dunnetts PMSD:	16.3%
Survival NOEC:	100%
Survival LOEC:	>100%

Investigators' signatures
James Danek
Maustin Faircloth
Bruce Ackerman
Lisa Mullen
REVIEWER

Comments:

revised 08/24/06 MF/SP

Chronic Bioassay Survival Benchsheet

Facility: Bayou Marcus

LIMS Sample Number: 178 2843
(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)

Concentration	Replicate	TEST DAY 0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Sample %	A	10							
	B	10							
	C	10							
	D	10							
Loaded by: JD	Checked by:		JD	JD	JD	JD	JD	JD	JD
Verified by: BA									

Comments:

Page 23

Chronic Bioassay Parameters Benchsheet

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

Sample Source: Bayou Marcus
LIMS Sample #: 1382843 (for Lab sample #1)

Start Date: 10.11.11 End Date: 10.18.11
Start Time: 1235 End Time: 1000

conc = concentration rep = replicate circle umhos or mmhos

Test Day			Before Renewal						After Renewal					
		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 0	sample:	Control	A	7.8	25.6	8.0	348							
	1	100%	A	8.1	25.9	8.4	507							
	1		A											
	1		A											
	1		A											
	1		A											
	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	7.8	24.0	7.4	334		B	7.7	24.6	7.1	336	
	1	100%	B	8.0	24.0	7.4	467		B	8.2	25.5	7.7	478	
	1		B						B					
	1		B						B					
	1		B						B					
	1		B						B					
	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	7.5	336		C	7.5	24.0	8.4	334	
	2	100%	C	8.0	24.1	7.2	475		C	8.0	24.9	8.5	468	
	2		C						C					
	2		C						C					
	2		C						C					
	2		C						C					
	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	7.3	24.0	7.2	339		D	7.8	24.3	7.1	326	
	2	100%	D	7.6	24.0	6.6	481		D	8.1	25.4	7.2	477	
	2		D						D					
	2		D						D					
	2		D						D					
	2		D						D					
	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.

Chronic Bioassay Parameters Benchsheet

P. promelas and M. beryllina SOP TA07_09 and TA-07_15 parameter pg 2

Sample Source: Bayou Marcus

LIMS Sample #: 13823443 (for Lab sample #1)

Start Date: 10.11.11 End Date: 10.18.11

Start Time: 1235 End Time: 1000

conc = concentration rep = replicate

Test Day			Before Renewal							After Renewal						
		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	24.9	6.4	340			A	7.6	25.5	6.9	340		
	3	100%	A	7.7	24.8	6.5	481			A	8.0	25.2	6.7	473		
	3		A							A						
	3		A							A						
	3		A							A						
	3		A							A						
	3		A							A						
	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 5	sample:	Control	B	7.5	24.9	6.2	343			B	7.6	25.7	7.3	343		
	3	100%	B	7.6	24.8	6.0	473			B	7.9	24.4	7.5	463		
	3		B							B						
	3		B							B						
	3		B							B						
	3		B							B						
	3		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 6	sample:	Control	C	7.3	24.5	5.7	338			C	7.6	25.6	7.3	348		
	3	100%	C	7.5	24.7	6.3	472			C	7.9	25.7	7.7	488		
	3		C							C						
	3		C							C						
	3		C							C						
	3		C							C						
	3		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 7	sample:	Control	D	7.3	24.8	5.3	335			D						
	3	100%	D	7.5	25.2	5.0	472			D						
	3									D						
	3									D						
	3									D						
	3									D						
	3									D						
	Measured by:			JD	JD	JD	JD									
	Recorded by:			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

Appendix H

Standard Reference Toxicant Data

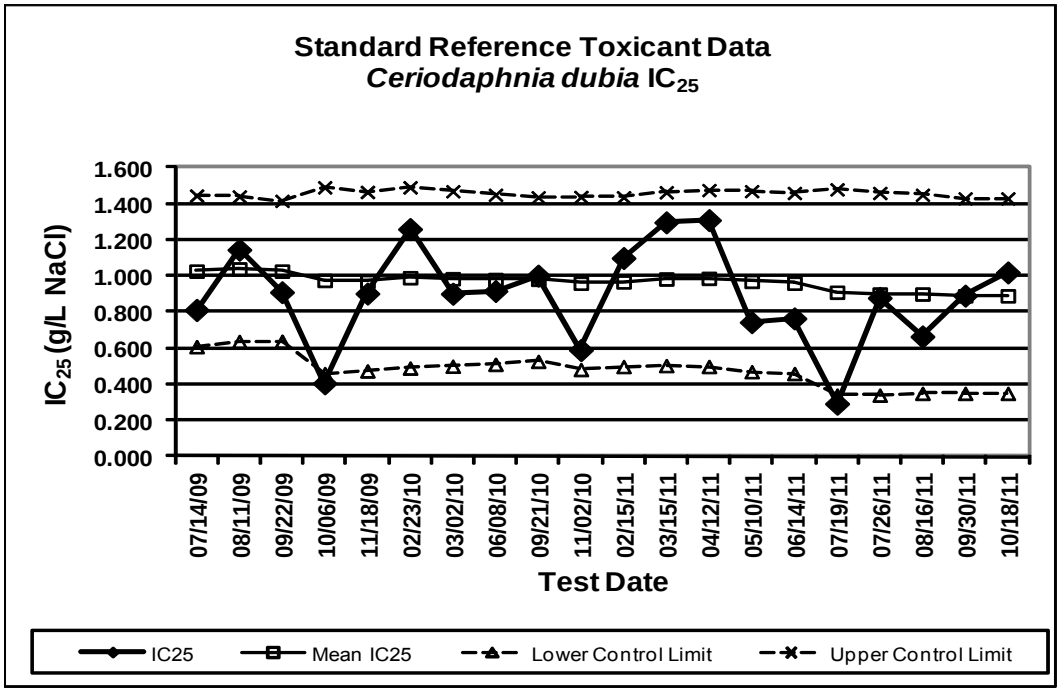
Florida Department of Environmental Protection
Bureau of Laboratories

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

Date	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit
07/14/09	0.812	1.03	0.21	0.61	1.45
08/11/09	1.146	1.04	0.20	0.64	1.44
09/22/09	0.911	1.03	0.19	0.64	1.42
10/06/09	0.406	0.98	0.26	0.46	1.49
11/18/09	0.903	0.97	0.25	0.47	1.47
02/23/10	1.260	0.99	0.25	0.49	1.49
03/02/10	0.902	0.98	0.24	0.50	1.47
06/08/10	0.917	0.98	0.23	0.51	1.45
09/21/10	1.002	0.98	0.23	0.53	1.44
11/02/10	0.590	0.96	0.24	0.48	1.44
02/15/11	1.100	0.97	0.23	0.50	1.44
03/15/11	1.297	0.98	0.24	0.50	1.46
04/12/11	1.310	0.99	0.24	0.50	1.48
05/10/11	0.744	0.97	0.25	0.47	1.47
06/14/11	0.765	0.96	0.25	0.46	1.46
07/19/11	0.293	0.91	0.28	0.34	1.48
07/26/11	0.879	0.90	0.28	0.34	1.46
08/16/11	0.665	0.90	0.27	0.35	1.45
09/30/11	0.891	0.89	0.27	0.35	1.43
10/18/11	1.020	0.89	0.27	0.35	1.43

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

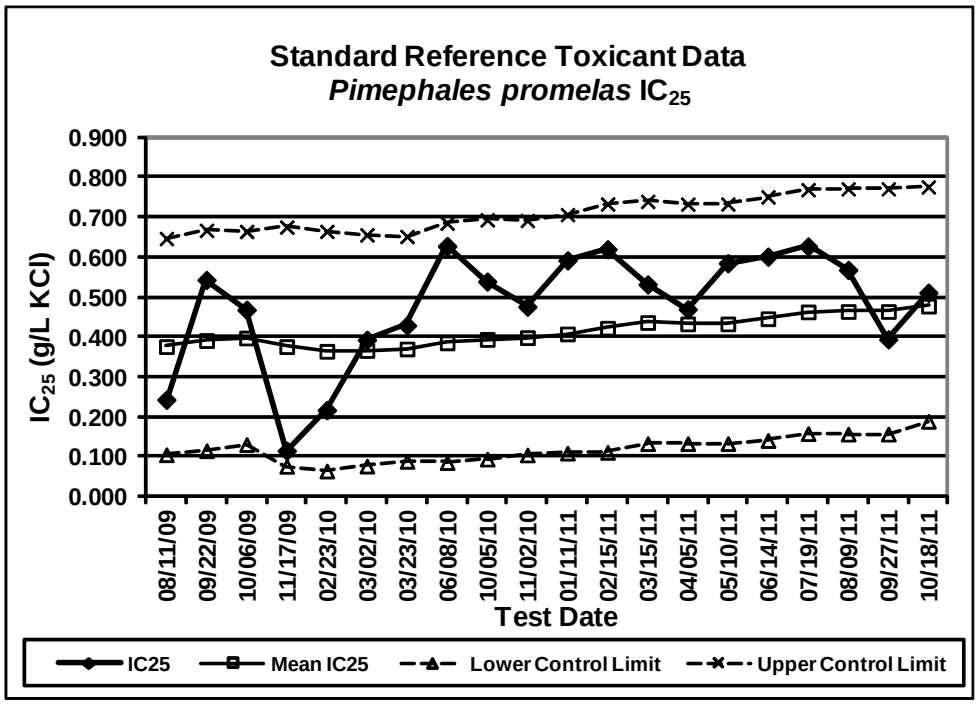
EPA 75th Percentile %CV for Reproduction **45%**
Last 20 - Lab %CV Reproduction 30.4%



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	IC25	Mean IC25	Std Dev	Lower Control Limit	Upper Control Limit	Date
08/11/09	0.243	0.376	0.14	0.105	0.647	08/11/09
09/22/09	0.543	0.391	0.14	0.115	0.667	09/22/09
10/06/09	0.468	0.398	0.13	0.131	0.664	10/06/09
11/17/09	0.115	0.376	0.15	0.076	0.676	11/17/09
02/23/10	0.217	0.365	0.15	0.064	0.665	02/23/10
03/02/10	0.393	0.366	0.14	0.077	0.656	03/02/10
03/23/10	0.429	0.370	0.14	0.089	0.652	03/23/10
06/08/10	0.628	0.385	0.15	0.086	0.685	06/08/10
10/05/10	0.539	0.394	0.15	0.094	0.694	10/05/10
11/02/10	0.476	0.398	0.15	0.105	0.692	11/02/10
01/11/11	0.592	0.408	0.15	0.109	0.707	01/11/11
02/15/11	0.620	0.422	0.16	0.111	0.733	02/15/11
03/15/11	0.532	0.436	0.15	0.133	0.740	03/15/11
04/05/11	0.470	0.433	0.15	0.133	0.733	04/05/11
05/10/11	0.585	0.433	0.15	0.133	0.733	05/10/11
06/14/11	0.601	0.446	0.15	0.141	0.751	06/14/11
07/19/11	0.627	0.463	0.15	0.158	0.769	07/19/11
08/09/11	0.568	0.464	0.15	0.157	0.771	08/09/11
09/27/11	0.394	0.464	0.15	0.157	0.771	09/27/11
10/18/11	0.511	0.478	0.14	0.189	0.776	10/18/11

Means are from the last 20 SRTs.
Lower Confidence Limit = mean - 2 * Std Dev
Upper Confidence Limit = mean + 2 * Std Dev



Appendix I
Wetland Condition Index Plant Taxa List

TAXA		CONTROL SITE				TEST SITE			
Scientific Name	**Common Name**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**
Acer rubrum	RED MAPLE	-	X	-	X	-	-	-	-
*Alternanthera philoxeroides***	ALLIGATOR WEED	X	-	-	X	-	-	-	-
Andropogon glomeratus	BUSHY BLUESTEM	X	X	X	X	-	X	-	-
Baccharis glomeruliflora	SILVERLING	X	X	X	-	-	X	X	-
Baccharis halimifolia	GROUNDSEL TREE; SEA MYRTLE	-	-	-	X	-	-	-	X
Bacopa monnieri	HERB-OF-GRACE	-	X	-	X	-	-	-	-
Boehmeria cylindrica	FALSE NETTLE; BOG HEMP	-	-	X	-	X	X	X	X
Centella asiatica	SPADELEAF	-	X	-	-	-	-	-	-
Chamaecyparis thyoides	ATLANTIC WHITE CEDAR	-	X	-	-	-	-	-	-
Cladium jamaicense	JAMAICA SWAMP SAWGRASS	X	X	-	-	-	-	-	-
Cliftonia monophylla	BLACK TITI; BUCKWHEAT TREE	-	-	-	-	-	X	-	-
*Commelina diffusa***	COMMON DAYFLOWER	-	-	-	X	-	-	X	X
Conoclinium coelestinum	BLUE MISTFLOWER	-	-	-	-	X	-	X	-
Cyperus haspan	HASPAN FLATSEDGE	-	-	-	-	-	-	X	-
Cyperus odoratus	FRAGRANT FLATSEDGE	X	X	X	X	-	X	-	X
Cyperus polystachyos	MANYSPIKE FLATSSEDGE	X	-	-	-	-	-	-	-
Cyperus virens	GREEN FLATSEDGE	-	-	-	-	-	X	-	X
Cyrilla racemiflora	TITI	-	-	-	-	-	-	-	X
Eupatorium capillifolium	DOGFENNEL	-	X	-	-	-	X	X	-
Hydrocotyle sp.	MARSH PENNYWORT	X	-	X	X	-	-	X	-
Hypericum nudiflorum	EARLY ST.JOHN'S-WORT	-	-	-	-	-	-	-	X
Ilex cassine	DAHOON	-	-	-	X	-	-	-	-
Ilex coriacea	LARGE GALLBERRY; SWEET GALLBERRY	-	-	-	-	-	X	-	-
Ilex vomitoria	YAUPON	X	X	X	X	-	-	-	-
Ipomoea sagittata	SALTMARSH MORNING-GLORY	-	X	X	X	-	-	-	-
Juncus effusus	SOFT RUSH	-	-	-	-	-	-	X	X
Juniperus virginiana	RED CEDAR	-	-	-	X	-	-	-	-

Appendix I. Continued

TAXA		CONTROL SITE				TEST SITE			
Scientific Name	**Common Name**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**
Limnobium spongia	AMERICAN SPONGEPLANT; FROG'S-BIT	-	-	-	-	X	X	X	-
Ludwigia leptocarpa	ANGLESTEM PRIMROSEWILLOW	-	-	-	-	-	X	-	-
*Ludwigia peruviana***	PERUVIAN PRIMROSEWILLOW	-	-	-	-	-	X	X	-
Ludwigia repens	CREEPING PRIMROSEWILLOW	-	-	-	-	-	-	-	X
Magnolia virginiana	SWEETBAY	X	X	X	X	X	X	X	X
Mikania scandens	CLIMBING HEMPVINE	-	X	X	X	X	X	X	X
Myrica caroliniensis	EVERGREEN BAYBERRY; NORTHERN BAYBERRY	X	-	X	-	-	-	-	X
Myrica cerifera	SOUTHERN BAYBERRY; WAX MYRTLE	X	X	X	X	X	X	X	X
Nyssa sylvatica var. biflora	SWAMP TUPELO	X	-	-	X	-	-	-	-
Osmunda cinnamomea	CINNAMON FERN	-	-	X	-	X	X	X	-
Osmunda regalis	ROYAL FERN	-	X	X	X	-	-	-	-
Panicum hemitomon	MAIDENCANE	-	-	-	X	-	-	-	-
*Panicum repens***	TORPEDO GRASS	X	X	-	-	-	-	-	-
Panicum scabriusculum	PANIC GRASS	X	-	X	-	-	-	-	-
Panicum virgatum	SWITCHGRASS	-	X	X	-	-	-	-	-
*Paspalum urvillei***	VASEYGRASS	-	-	-	-	-	-	-	X
Persea palustris	SWAMP BAY	-	-	-	-	X	-	-	-
*Phyllanthus urinaria***	CHAMBER BITTER	-	-	-	-	X	-	-	-
Pinus elliottii	SLASH PINE	-	-	-	-	X	X	-	X
Polygala nana	CANDYROOT	-	-	-	-	-	-	-	X
Polygonum punctatum	DOTTED SMARTWEED	-	X	X	-	X	X	X	X
Rubus argutus	SAWTOOTH BLACKBERRY	-	-	-	X	-	-	-	-
Rubus trivialis	SOUTHERN DEWBERRY	X	X	X	-	X	X	X	-
Rumex verticillatus	SWAMP DOCK	-	-	X	X	-	-	-	-
Sacciolepis striata	AMERICAN CUPSCALE	-	X	X	-	-	-	-	-
Sagittaria lancifolia	BULLTONGUE ARROWHEAD	-	X	X	X	-	-	-	-
*Sapium sebiferum***	CHINESE TALLOW	-	X	X	X	X	X	-	X
Saururus cernuus	LIZARD'S TAIL	-	-	-	-	X	-	-	-

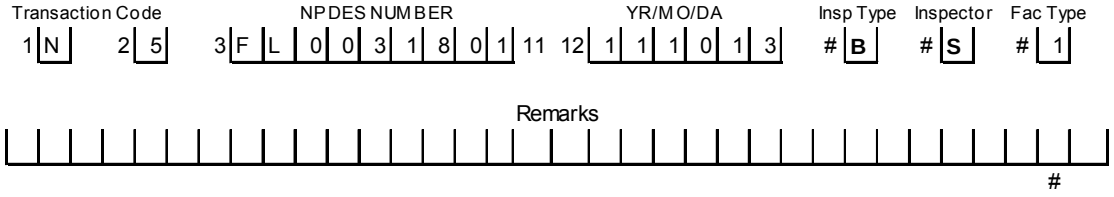
Appendix I. Continued

TAXA		CONTROL SITE				TEST SITE			
Scientific Name	**Common Name**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**	**Transect 1**	**Transect 2**	**Transect 3**	**Transect 4**
Scirpus cyperinus	WOOLGRASS	-	-	-	-	-	-	X	X
Smilax laurifolia	LAUREL GREENBRIER; BAMBOO VINE	-	-	-	-	-	-	-	X
Solidago altissima	GOLDENROD	-	-	-	-	X	-	-	-
Solidago fistulosa	PINEBARREN GOLDENROD	-	-	-	-	X	-	-	-
Solidago leavenworthii	LEAVENWORTH'S GOLDENROD	X	X	X	X	-	-	-	-
Taxodium sp.	CYPRESS	-	-	-	X	-	-	-	X
Thelypteris palustris	MARSH FERN	-	-	-	-	-	-	-	X
Toxicodendron radicans	EASTERN POISON IVY	-	-	-	X	X	X	-	X
Typha sp.	CATTAIL	X	X	X	-	X	-	X	X
Vaccinium corymbosum	HIGHBUSH BLUEBERRY	-	-	-	-	X	-	-	-
Vitis rotundifolia	MUSCADINE GRAPE	-	-	-	-	X	X	-	X
NOTE: ** Exotic species									

EPA Endsheet

The Bioassay of the Bayou Marcus WRF effluent sampled on October 13, 2011, NPDES #FL0031801

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



The Priority Pollutants Analysis for Bioassay of the Graceville WWTF effluent sampled on October 10, 2011 NPDES #FL0031801

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

