

Biological Assessment of

Premier Services Corporation

Gulf County

NPDES #FL0002607

January 1996

June 1996

Biology Section
Division of Administrative and Technical Services

Comprehensive Quality Assurance Plan No. 870346G

Department of Environmental Protection
Results of Fifth Year Inspections

Discharger: Premier Services
County: Gulf
NPDES Number: FL0002607
State Permit Expiration Date: 7 September 1996

Toxics Sampling Inspection (XSI)

Date Sampled: 16 January 1996

Results: No organic priority pollutants were detected in the effluent sample. No metals were found in the effluent at levels exceeding Class III standards. However, calcium (1,560 mg/L) was present in the effluent at a level which was about 370% higher than expected for that salinity, and probably contributed to the toxicity observed in the bioassays.

Compliance Biomonitoring Inspection (CBI)

Date Sampled: 16 January 1996

Results: The raw, undiluted effluent (with a pH of 9.7 SU) was toxic to both the invertebrate, *Mysidopsis bahia*, and to the fish, *Menidia beryllina*. After adjusting the effluent pH to 7.9 SU, the effluent was still toxic to *M. bahia*, but not to *M. beryllina*. This toxicity represents violations of Rules 62-302.530(62) FAC, 62-302.500(1)(d) FAC, and 62-4.244(3)(a) FAC.

Impact Bioassessment Inspection (IBI)

Date Sampled: 17 January 1996

Results: Quantitative measures of benthic macroinvertebrate community health were somewhat inconclusive, mainly due to complications caused by the fluctuating salinity regime in the area. Despite some encouraging measures of macroinvertebrate health at test site 1 (*e.g.*, good Shannon-Weaver diversity), the relative absence of pollution sensitive taxa there suggests possible effects from the (toxic) discharge. Test site 2 appeared to be unaffected by the discharge. The current macroinvertebrate data collected from St. Joe Bay near Palm Point compared favorably with historical data (from 1985). This site presently has excellent taxa richness, good diversity, and is characterized by a strong representation of pollution-sensitive organisms. The facility did not appear to have an adverse effect on the receiving water algal communities, which were typical of an oligohaline estuary.

Water Quality Inspection (WQI)

Date Sampled: 16 January 1996

Results: The effluent TSS (79 mg/L) violated the facility's permit limit, and turbidity (45 NTU) was one unit below the permit limit. The high effluent solids content interfered with the metals and orthophosphate analyses. On 17 January 1996, a laboratory-measured effluent pH (10.1 SU) violated the facility's permit of 10.05 SU. All bacterial measures complied with ambient standards. Nutrient concentrations in the effluent were low or undetected. With the exception of nitrate-nitrite concentrations (which were much higher than those found in approximately 95% of other Florida estuaries), nutrient levels at all three Gulf County Canal sites were low to average. All effluent and canal site AGP values were below the "problem threshold" of 10 mg dry wt/L for marine waters.

Introduction

Premier Services Corporation is located on State Road 382, in Port St. Joe, Gulf County, Florida (see maps in Appendix). This facility functions as a magnesium hydroxide recovery plant, utilizing a 300,000 gallon reactor and a 4.66 million gallon thickener tank. Wastewater is treated in three clarification tanks (situated in-series, with a total capacity of 6.3 million gallons). Effluent from this 13.5 MGD design flow system is released to a barge basin in the Class III Gulf County Canal. The effluent flow during this survey (8.6 MGD) was similar to the facility's mean flow (8.25 MGD).

Permit limits include: flow (13.5 MGD), pH (6.5 - 10.05 SU), TSS (30 mg/L as a monthly average, maximum of 60 mg/L) and turbidity (less than or equal to 29 NTU above background). A toxicity testing program has also been implemented. Note that the permit limit for pH exceeds the Class III water quality standard of 8.5 SU.

In February, 1995, violations of permit limits for pH (with a measurement of 10.2 SU), and TSS (with a monthly average of 31.0 mg/L) were noted. In the past, the effluent has been toxic to *Mysidopsis bahia* and *Menidia beryllina*, in both raw and pH adjusted samples.

Major characteristics of community structure of control and test sites.

	Reference Site	Test Site 1	Test Site 2	St. Joe Bay Site
Macroinvertebrate Ponar				
Number of Taxa	12	18	13	51
Shannon-Weaver Diversity	1.8	3.6	3.0	3.4
# Polychaete taxa	4	5	4	20
% Polychaeta	10.2	37.5	29.2	80.4
% Diptera	0.0	22.0	1.1	0
% Amphipoda	84.4	34.4	55.1	7.8
% Gastropoda	0.3	0	1.1	2.2
% Isopoda	3.8	1.6	12.4	0.3
% Pelecypoda	0.3	0	0	4.7
% Other	1.0	4.5	1.1	4.6
% Predator/Carnivores	0	19.6	2.8	5.8
% Above-Surface Deposit Feeders	6.6	26.2	14.6	15.1
% Below Surface Deposit Feeders	1.0	11.9	1.1	45.4
% Scavengers	10.3	18.0	23.0	3.8
% Suspension Feeders	71.4	1.6	34.3	21.6
% Browser-grazers	10.3	18.0	23.0	3.7
% Other	0.4	4.7	1.2	1.0
Phytoplankton Algae				
Number of Taxa	17	12	14	
Shannon-Weaver Diversity	2.4	1.9	1.6	
Chlorophyll a (µg/L)	0.9 U	1.0 U	0.8	
Algal Density (#/mL)	5960	5136	4119	
% Blue-green	1.8	2.5	6.1	
% Green	2.6	4.3	1.4	
% Diatoms	66.1	77.9	83.0	
% Cryptophyceae	27.8	15.3	8.2	
Algal Growth Potential (mg dry wt/l)	1.9	1.8	2.0	

Methods

The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made between a reference site (located in the Gulf County Canal approximately 1200 m northeast of the discharge), and two test sites (test site 1 was located in the barge basin directly adjacent to the discharge, and test site 2 was situated in the Gulf County Canal approximately 400 m southwest of the discharge) (see maps in Appendix). Another site, located in St. Joe Bay near Palm Point, was sampled to assess any potential far-field effects and to compare with historical data gathered there. A habitat assessment was performed *in situ* to establish comparability between sites. Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Mysidopsis bahia* and *Menidia beryllina* as test organisms, were performed on an effluent sample (Weber 1991). The effluent was analyzed for metals and for organic constituents (base neutral and acid extractables, and pesticide ex-

tractables). Additionally, nutrient analyses were performed on effluent, reference, and test sites. Methods used for all chemical analyses are on file at the Tallahassee DEP Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at reference and test sites. Invertebrates were collected from three replicate petite Ponar grabs. Phytoplankton was sampled at both reference and test sites. Chlorophyll *a* was also determined for phytoplankton communities (Ross 1990). Algal Growth Potential tests, using *Selenastrum capricornutum* for the freshwater effluent, and *Dunaliella tertiolecta* for the marine receiving water sites, followed Miller *et al.* (1978) and EPA (1974). Other parameters, such as fecal and total coliforms, TSS, and total residual chlorine were also sampled.

Explanation of Measurements of Community Health

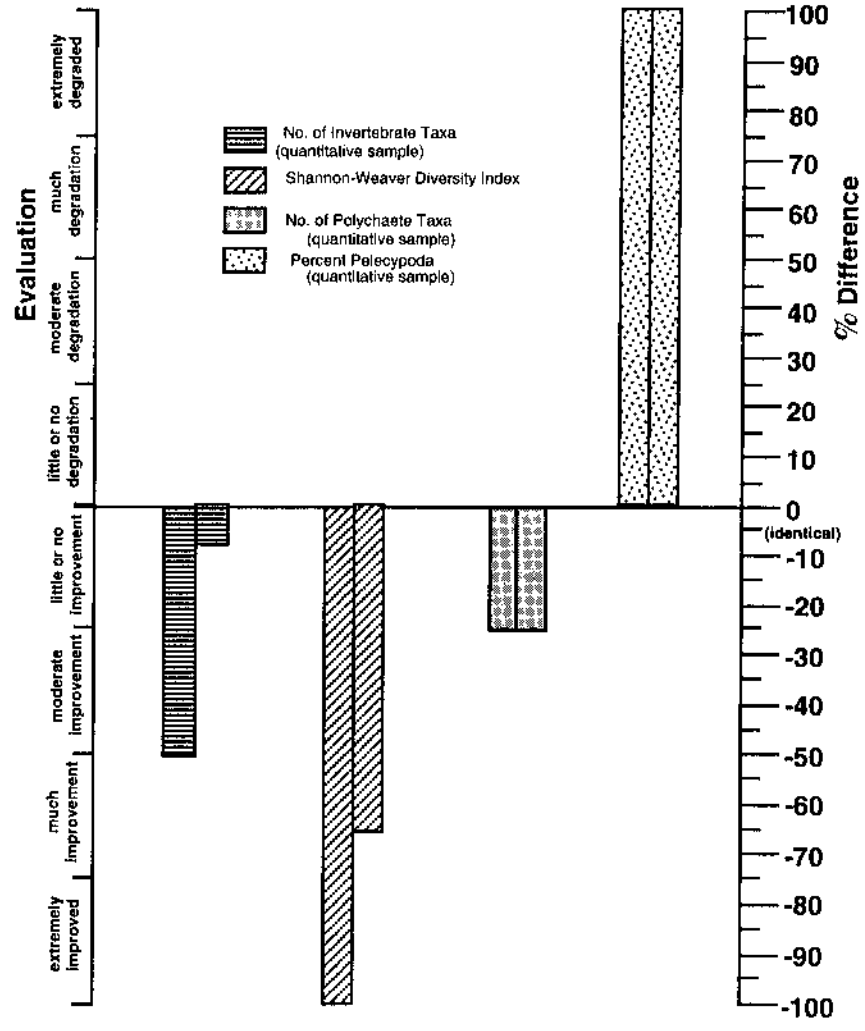
Several different measurements of macroinvertebrate and algal community health have been employed to determine the effects of a discharge. These are briefly discussed here.

Taxa richness: Stress tends to reduce the number of different types of organisms present in a system, although moderate nutrient enrichment may sometimes be correlated with increased algal taxa richness.

Shannon-Weaver diversity: This index is specified in the Florida Administrative Code as a measure of biological integrity. Low diversity scores are undesirable. They represent conditions where only a few organisms are abundant, to the exclusion of other taxa. Excessive numerical dominance of a single type of organism (a high % contribution of the dominant taxon) is a related measure which is also associated with disturbance.

Numbers of pollution sensitive taxa: Some organisms become rare or absent as the intensity or duration of disturbance increases. For example, the Florida Index assigns points to stream-dwelling macroinvertebrates based on their sensitivity to pollution (see Ross 1990). A site with a high Florida Index score is considered healthy. Species sensitivity data from other sources, such as Hulbert (1990), Hudson *et al.* (1990), Lenat (1993), Farrell (1992), Chang *et al.* (1992), and Whitmore (1989), are used as appropriate.

Community structure: Substantial shifts in proportions of major groups of organisms, compared to reference conditions, may



Effect of discharge on the benthic macroinvertebrate community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

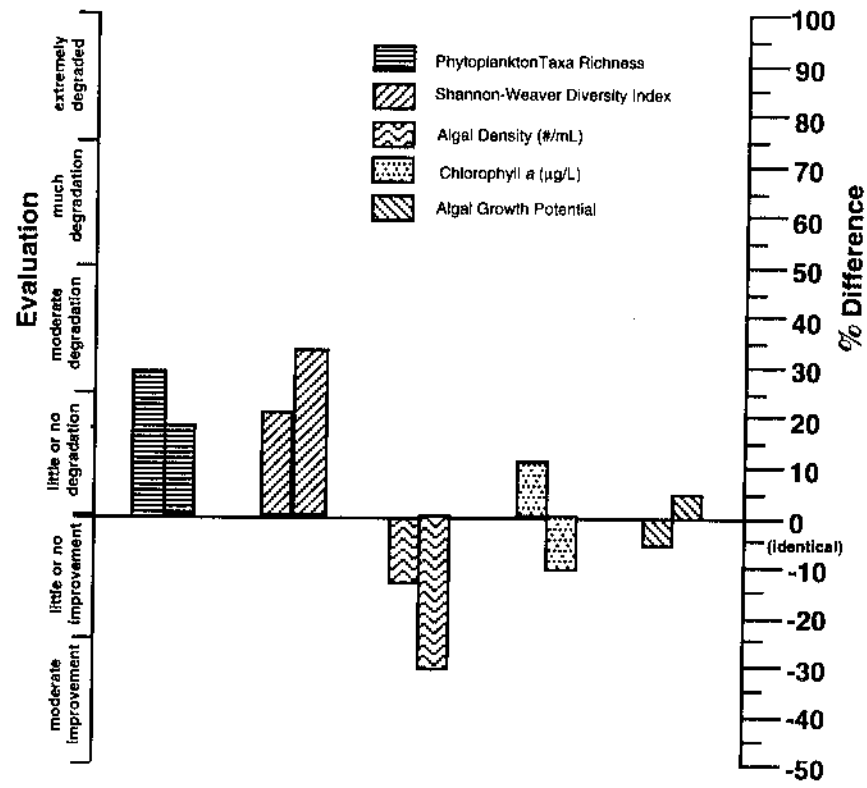
indicate degradation. In marine systems, an increase in the % tubificid oligochaetes, a decrease in the % pelecypods, and a decrease in the number of polychaete taxa are all considered indicators of disturbance (Engel *et al.* 1994).

Algal biomass: High algal biomass (algal density or chlorophyll *a*) implies nutrient stress. A decreased diatom to blue-green algae ratio (calculated by dividing the number of individuals in the Bacillariophyta by the number of individuals in the Bacillariophyta + Cyanophyta) is often indicative of nutrient enriched conditions in flowing streams.

Trophic composition/feeding guilds: Disturbance can shift the feeding strategies of invertebrates. In Florida, for example, pollution may be responsible for reducing the numbers of filter-feeders (FDEP 1994) and shredders (EA Engineering 1994).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, the number of polychaete taxa, and the % pelecypods are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving the % tubificids, algal density, chlorophyll *a*, and algal growth potential are measured as the test site minus reference site divided by the reference site.

The following personnel were involved in this investigation: Glenn Butts, Charles Goddard, Laurence Donelan, and Nicole Kilburn (DEP Northwest District) and Marshall Faircloth, Russel Frydenborg, Joy Jackson, Kathleen Lurding, Tina Mikulski, Elizabeth Miller, Urania Quintana, Todd Space, Lisa Tamburello, David Whiting, Vicki Whiting, and Greg Wynn (Tallahassee Biology Laboratory). The report was reviewed by the Point Source Studies Review Committee, consisting of Wayne Magley, Jan Mandrup-Poulsen, and Michael Tanski, as well as District representatives.



Effect of discharge on the algal community.

The left bar for each parameter shows differences between the reference site and test site 1. The right bar shows differences between the reference site and test site 2.

Results and Discussion

The Gulf County Canal is a tidally influenced, man-made channel, connecting St. Joe Bay with the Intracoastal Waterway system. A reference site and two test sites were situated in this highly altered environment to determine the potential effects of the Premier Services discharge. It should be noted that the St. Joe WWTP, largely consisting of pulp mill effluent, also discharges into the Gulf County Canal, approximately 1000 m southwest of the Premier discharge. Habitat quality was at the lower range of the "fair" category at the reference site (with 31 points), and in the "poor" category at test sites 1 and 2 (with 24 points). All three sites scored poorly in terms of the natural community types present in the Gulf County Canal. An additional St. Joe Bay site was sampled (for benthic macroinvertebrates) to determine potential far-field effects, as well as for comparison with historical data. Since the habitat at this site was quite dissimilar from the Gulf County Canal sites, it will be treated separately from them. Habitat at this St. Joe Bay

site scored in the "good" category (score = 52), mostly due to the presence of grass beds and natural beach in the vicinity.

There was significant salinity stratification at the three Gulf County Canal sites. Surface salinity ranged from 0 ppt at the reference site to 0.8 ppt at test site 1. In contrast, the bottom salinity ranged from 4.1 ppt at the reference site, to 7.8 ppt at test site 1, to 33.2 ppt at test site 2. The reference site, with a depth of 4.4 m, was deeper than test site 1 (1.3 m), but similar to test site 2 (4.7 m). Sediments at all three sites consisted mainly of sand, with some mud, muck, or silt. Waters were somewhat turbid at these stations, with Secchi depths between 0.4 m to 0.5 m. Dissolved oxygen levels were adequate to support aquatic life in all three canal sites, ranging from 9.0 mg/L to 10.7 mg/L at the bottom, and from 10.7 mg/L to 11.7 mg/L at the surface. Temperatures at the canal sites ranged between 11.1 °C and 12.6 °C. The bottom pH was lowest at the reference site (6.9 SU) and highest at test site 1 (8.0 SU). This increase in pH appeared related to the influence of the discharge, which had a field pH of 8.8 SU. Note that a day later, during initiation of toxicity tests, a sample of this same water was measured to be 9.7 SU. In a sample collected on January 17, 1996, a laboratory-measured pH for the effluent was 10.1 SU, which exceeded the facility's permit limit of 10.05 SU (Appendix).

The St. Joe Bay site was characterized by high salinity (28.1 ppt at the surface, 34.6 ppt at the bottom), well oxygenated waters (10.4 mg/L at the surface, 8.0 mg/L at the bottom). The pH there was 7.7 SU at both the surface and bottom. Substrate at this 5.0 m deep station consisted of seagrasses, sand, and silt.

The raw, undiluted effluent (with a pH of 9.7 SU) was toxic to both the invertebrate, *Mysidopsis bahia* (with 100% mortality), and to the fish, *Menidia beryllina* (with 65% mortality). Elevated effluent pH certainly contributed to this observed toxicity. After adjusting the effluent pH to 7.9 SU, the effluent was still toxic to *M. bahia* (with 100% mortality), but not to *M. beryllina* (with no mortality in the pH adjusted sample). This toxicity represents violations of Rules 62-302.530(62) FAC, 62-302.500(1)(d) FAC, and 62-4.244(3)(a) FAC. Because the effluent killed the mysids even after pH adjustment, this suggests the elevated effluent pH is not the sole cause of toxicity.

No metals were found in the effluent at levels exceeding Class III standards, however, detection limits were much higher than usual due to excessive interference from the high solids level of the effluent. An elevated calcium level (1,560 mg/L) was present in the effluent, which had a 'salinity' (as determined by specific conductance) of approximately 33 ppt. Calcium has been implicated as a toxicant when it (alone) is present in concentrations which are about twice normal for a given salinity. Normal calcium concentrations at a salinity of 35 ppt are around 420 mg/L. Calcium was present in the effluent at a level approximately 370% higher than expected for that salinity. Therefore, it is likely that the calcium in the discharge contributed to the observed toxicity in the pH adjusted *Mysidopsis bahia* test. The department has noted that a pronounced imbalance of seawater ions has contributed to acute toxicity at several reverse osmosis facilities that employ membrane technology throughout the state. Characteristics of this effluent are similar to these reverse osmosis facilities in that ionic imbalance is a potential problem.

No organic constituents were detected in the discharge.

The effluent turbidity, at 45 NTU, was one NTU less than the facility's permit limit (which allows a maximum of 29 NTU above background). The effluent TSS (79 mg/L) exceeded the facility's permit limit (which allows a maximum of 60 mg/L). These high solids levels interfered with metals and nutrient analyses (see Chemistry Summary Table).

All bacterial measures complied with Class III water quality standards. Total and fecal coliforms were very low in the effluent and at all receiving water sites (see Chemistry Summary Table).

Nutrient concentrations in the effluent were low or undetected. With the exception of nitrate-nitrite concentrations, nutrient levels at all three Gulf County Canal sites were low to average for a Florida estuary. Nitrate-nitrite levels at the three canal sites (0.35 mg/L at each site) were higher than those found in approximately 95% of other Florida estuaries (see Table of Typical Water Quality Values in Appendix). These data suggest nitrate-nitrite sources other than the Premier discharge.

As expected from the nutrient analyses, algal growth potential (AGP) of the effluent was quite low (2.6 mg dry wt/L). All canal site AGP values, with 1.9 mg dry wt/L at the reference site, 1.8 mg dry wt/L at test site 1, and 2.0 mg dry wt/

L at test site 2, were below the "problem threshold" of 10 mg dry wt/L for marine waters.

Quantitative measures of benthic macroinvertebrate community health were somewhat inconclusive, mainly due to complications caused by the fluctuating salinity regime in the area. While several measures suggested no disturbance from the facility, there appeared to be a decrease in pollution-sensitive taxa at the station closest to the Premier discharge (test site 1). The Figure on p. 2 indicates the degree of difference between the invertebrate populations of the reference and test sites. Larger differences (that is, higher percentages) correspond with greater degrees of degradation. Negative values mean that the test site is better than the reference.

In the Gulf County Canal, macroinvertebrate taxa richness was lowest at the reference site (with 12 taxa), highest at test site 1 (with 18 taxa), and intermediate at test site 2 (with 13 taxa). Note that seven of the additional taxa found at test site 1 were pollution-tolerant, freshwater chironomids. Shannon-Weaver diversity was lowest at the reference site (1.8), increasing to 3.6 at test site 1, and 3.0 at test site 2. The lower diversity at the reference site can be attributed to the extreme dominance of the amphipod, *Haustorius* sp., which accounted for 66% of the total population. The number of polychaete taxa was similar among all three sites (with 4 taxa at the reference site, 5 taxa at test site 1, and 4 polychaete taxa at test site 2). While pelecypods (considered sensitive to stress) were present in low numbers at the reference site (0.3% of the total population), they were absent from both test sites.

Polychaetes and amphipods were the most abundant groups at all three Gulf County Canal sites. Interestingly, stress-tolerant freshwater chironomids made up 22% of the test site 1 population, but were rare or absent at the other sites. These midges are probably being introduced into the barge basin along with the facility's "spent fresh wash water". The source of this wash water is a canal which delivers water from the Chipola River. There also appeared to be differences in the numbers of pollution sensitive taxa present between sites. Pollution-sensitive amphipods such as *Haustorius* sp., *Cerapus* sp. and *Corophium simile*, were present at either the reference site and/or at test site 2, but were absent from test site 1. Mysid shrimp and the gastropod, *Odostomia* sp. (both considered clean water taxa) were found at the reference site but not at either test site (Farrell 1992). Cosmopolitan species, such as capitellid polychaetes and *Streblospio benedicti*, and the amphipods, *Grandidierella bonnieroides* and *Gammarus mucronatus*, were common to all three canal sites. In summary, despite some encouraging measures of macroinvertebrate health at test site 1 (*e.g.*, good Shannon-Weaver diversity), the relative absence of pollution sensitive taxa there suggests possible effects from the (toxic) discharge. Test site 2 appeared to be unaffected by the discharge.

In general, the current macroinvertebrate data collected from St. Joe Bay near Palm Point compared favorably with historical data. This site was sampled previously in July, 1985, and in September, 1985. Taxa richness during the present survey (51 taxa) was substantially higher than what was historically observed (ranging from 19 to 30 taxa). The current Shannon-Weaver diversity (3.4) was lower than the July, 1985 score (4.2) but higher than the September, 1985 value (1.7). Many more polychaete taxa were present in 1996 (with 20 polychaete taxa) than were recovered previously (ranging from 6 to 7 taxa). Several clean water indicators (Farrell 1992) which were found in 1985, including the polychaete, *Sthenelais* sp., the cumaceans, *Oxyurostylis* sp. and *Cyclaspis* sp., brittle stars (Ophiuroidea), and mysid shrimp, were also recovered in 1996. Several additional pollution-sensitive taxa which were not observed previously, such as the amphipods, *Amphithoe longimana*, *Elasmopus* sp., and *Acanthohaustorius* sp., as well as the decapod, *Palaemonetes pugio*, were recovered from this St. Joe Bay site in 1996. These data indicate this portion of St. Joe Bay is currently healthy, and perhaps, somewhat healthier than it was in 1985.

The Figure on p. 3 represents changes in the phytoplankton algal community. As was noted with the macroinvertebrates, larger differences (that is, higher percentages) correspond with greater degrees of degradation. Phytoplankton taxa richness at the reference site (with 17 taxa) was slightly higher than that found at test sites 1 and 2 (12 and 14 taxa, respectively). Algal diversity was 2.4 at the reference site, 1.9 at test site 1 and 1.6 at test site 2. The moderate decrease in diversity at the test sites corresponded to increases in the abundance of the diatom, *Leptocylindrus* sp. Diatoms were the most abundant algal group at all three sites. A higher percentage of cryptophytes were found at test site 1 and the reference site (15.3% and 27.8%, respectively) compared to test site

2 with (8.2%). The chlorophyll *a* concentrations at all three sites were low compared to other Florida estuaries (undetected at the reference site and test site 1, and 0.8 µg/L at test site 2). Algal abundance was similar between all three sites. Overall, the facility did not appear to have an adverse effect on the receiving water algal communities.

Conclusions

The raw, undiluted effluent (with a pH of 9.7 SU) was toxic to both the invertebrate, *Mysidopsis bahia* (with 100% mortality), and to the fish, *Menidia beryllina* (with 65% mortality). After adjusting the effluent pH to 7.9 SU, the effluent was still toxic to *M. bahia* (with 100% mortality), but not to *M. beryllina* (with no mortality in the pH adjusted sample). This toxicity represents violations of Rules 62-302.530(62) FAC, 62-302.500(1)(d) FAC, and 62-4.244(3)(a) FAC.

No metals were found in the effluent at levels exceeding Class III standards. However, calcium (1,560 mg/L) was present in the effluent at a level which was about 370% higher than expected for that salinity, and likely contributed to the observed toxicity in the pH adjusted sample.

No organic constituents were detected in the discharge.

The effluent turbidity, at 45 NTU, was one NTU less than the facility's permit limit (which allows a maximum of 29 NTU above background). The effluent TSS (79 mg/L), exceeded the facility's permit limit (which allows a maximum of 60 mg/L). These high solids levels interfered with metals and nutrient analyses. A laboratory-measured effluent pH (10.1 SU) violated the facility's permit.

All bacterial measures complied with Class III water quality standards. Total and fecal coliforms were very low in the effluent and at all receiving water sites.

Nutrient concentrations in the effluent were low or undetected. With the exception of nitrate-nitrite concentrations, nutrient levels at all three Gulf County Canal sites were low to average for a Florida estuary. Nitrate-nitrite levels at the three canal sites (0.35 mg/L at each site) were higher than those found in approximately 95% of other Florida estuaries, caused by sources other than the Premier discharge.

As expected from the nutrient analyses, algal growth potential (AGP) of the effluent was quite low (2.6 mg dry wt/L). All canal site AGP values, with 1.9 mg dry wt/L at the reference site, 1.8 mg dry wt/L at test site 1, and 2.0 mg dry wt/L at test site 2, were below the "problem threshold" of 10 mg dry wt/L for marine waters.

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The current macroinvertebrate data collected from St. Joe Bay near Palm Point compared favorably with historical data (from 1985). This site presently has excellent taxa richness (51 taxa), good diversity (3.4), and is characterized by a strong representation of pollution-sensitive organisms. These data indicate this portion of St. Joe Bay is currently healthy, and perhaps, somewhat healthier than it was in 1985.

The facility did not appear to have an adverse effect on the receiving water algal communities, which were typical of an oligohaline estuary.

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Chemistry Summary Table for Premier Services	Effluent	Reference Site	Test Site 1	Test Site 2	St. Joe Bay Site
Organic Constituents (ug/L)					
None Detected	None Detected				
Metals (ug/L) *					
Aluminum	2000 U				
Arsenic	200 U				
Calcium (mg/L)	1,560 A				
Copper	40 U				
Chromium	200 U				
Iron	200 U				
Lead	200 U				
Magnesium (mg/L)	346 A				
Mercury	0.1 U				
Nickel	80 U				
Selenium	600 U				
Zinc	200 U				
Nutrients (mg/L)					
Ortho-phosphate **	0.04 U	0.045 I	0.048 I	0.046 I	
Total phosphorus	0.015 U	0.041	0.041	0.038 I	
Ammonia	0.03 I	0.044	0.035 I	0.028 I	
Nitrate+Nitrite	0.03 I	0.35	0.35	0.35 A	
TKN	0.56	0.44	0.48	0.4	
General Phys-Chem Parameters					
Habitat Assessment		31	24	24	
D.O. (mg/L) Surface	9.6	10.7	11.6	11.7	10.4
D.O. (mg/L) Bottom		10.2	10.7	9.0	8.0
pH (SU) Surface	8.8	6.8	7.0	7.0	7.7
pH (SU) Bottom		6.9	8.0	7.7	7.7
Specific Conductance (umhos/cm) Surface	49,700	711	2,440	1,282	42,900
Specific Conductance (umhos/cm) Bottom		7,200	10,930	50,500	52,600
Salinity (ppt) Surface	32.7	0	0.8	0.7	28.2
Salinity (ppt) Bottom		4.1	7.8	33.2	34.6
Temperature (°C) Surface	12.9	12.1	12.4	12.6	12.0
Temperature (°C) Bottom		11.9	12.5	11.1	11.6
Total Suspended Solids (mg/L)	79	13	13	10	
Biological Oxygen Demand, 5 day (mg/L)	0.5	0.6	0.6	0.5	
Turbidity (NTU)	45	17	17	16	
Color (PCU)	5	50	50	40	
Hardness (mg/L CaCO3)	5,300	68	194	106	
Algal Growth Potential (mg dry wt/L)	2.6	1.9	1.8	2.0	
Toxicity					
Bioassay Fish	Toxic				
Bioassay Invertebrate	Toxic				
Bioassay Fish-pH adjusted	Not Toxic				
Bioassay Invertebrate-pH adjusted	Toxic				
Microbiological Communities (org/100 mL)					
Fecal Coliform	< 10	10	30	< 10	
Total Coliform	< 10	90	70	20	

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

I - Value reported is less than the minimum quantitation limit, and greater than or equal to the minimum detection limit.

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

* - Sample required dilution due to excessive interferences from dissolved solids.

** - Elevated MDL due to matrix interference. Spike recovery was outside control limits.

Typical Values for Selected Parameters in Florida Waters

Adapted from Joe Hand, FDER, personal communication, 1991
(data was collected between 1980 and 1989)

Percentile Distribution

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%
STREAMS (1617 stations)											
Phytoplankton Chlorophyll *a*	0.22	0.52	0.94	1.60	3.02	4.63	6.72	9.87	14.68	27.35	48.70
Periphyton Chlorophyll *a*	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85
H-D Diversity	0.84	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90
Qualitative Taxa Richness	9.00	12.00	17.00	20.00	22.00	24.50	26.00	28.00	31.00	37.00	53.00
H-D Taxa Richness	6.00	6.50	9.00	11.50	13.00	15.00	17.00	21.50	26.00	29.00	32.00
TKN	0.30	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80
Ammonia	0.02	0.02	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60
NO2-NO3	0.01	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05
Total Phosphorus	0.02	0.03	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51
Ortho Phosphorus	0.01	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37
Turbidity	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30
LAKES (477 stations)											
Phytoplankton Chlorophyll *a*	0.80	1.71	2.88	4.28	10.06	13.40	20.00	30.10	47.20	65.44	113.90
Dredge Diversity	0.71	0.97	1.43	1.74	1.98	2.12	2.21	2.59	2.85	3.15	3.17
Dredge Taxa Richness	3.00	5.00	6.50	7.00	9.00	10.00	11.00	13.00	15.00	17.00	21.00
TKN	0.36	0.49	0.67	0.83	1.08	1.26	1.40	1.51	1.68	2.11	3.46
NH3+NH4	0.01	0.02	0.02	0.03	0.04	0.06	0.08	0.12	0.15	0.21	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.10	0.14	0.23
Total Phosphorus	0.01	0.02	0.02	0.03	0.05	0.07	0.09	0.11	0.14	0.23	0.42
Ortho-Phosphorus	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.21	0.32
Turbidity	1.00	1.25	1.55	2.05	2.75	4.50	6.45	9.60	14.10	26.00	40.00
ESTUARIES (690 stations)											
Phytoplankton Chlorophyll *a*	2.14	3.28	4.49	5.13	6.00	6.93	7.94	9.60	12.40	17.60	22.20
Dredge Diversity	1.34	1.53	1.91	2.28	2.56	2.90	3.15	3.59	4.01	4.53	4.98
Dredge Taxa Richness	4.00	6.00	9.00	11.00	15.00	18.50	25.00	35.00	41.00	62.00	90.00
TKN	0.26	0.34	0.42	0.50	0.59	0.69	0.76	0.82	0.95	1.30	1.49
NH3+NH4	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.13	0.22	0.28
NO2-NO3	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.17	0.23
Total Phosphorus	0.01	0.02	0.06	0.07	0.10	0.11	0.14	0.17	0.23	0.43	0.59
Ortho-Phosphorus	0.01	0.02	0.03	0.04	0.04	0.05	0.07	0.09	0.12	0.21	0.44
Turbidity	3.50	4.00	4.50	5.05	5.40	5.60	6.30	6.80	8.00	11.40	11.75

Units:

Phytoplankton Chlorophyll *a* (ug/L), Periphyton Chlorophyll *a* (mg/m^2), Nutrients (mg/L), Turbidity (NTU), Taxa richness and diversity values are for macroinvertebrates

Facility Summary

Facility Name: Premier Services Corp. Date Summary Prepared: 01/09/96

Location map: N/A County: Gulf District: 10/Northwest
P. O. Box 160
State Road 382 North
Port St. Joe, Florida 32456

NPDES Permit # FL0002607 expiration date: 12/31/93
State GMS # 1023P01340 expiration date: 09/07/96
Facility Type: Industrial

* The NPDES Permit expired in 1993, but our files indicate the EPA continued working with Premier and intended to issue a new permit in January of 1995. This permit was not issued perhaps due to the NPDES delegation taking place in May 1995. Premier continued to operate under the state's temporary operating permit #IT23-250298, which expires in 1996.

Function of facility: To operate a magnesium hydroxide recovery facility with effluent flows to a barge basin in the Gulf County Canal. Facility is designed for a 13.5 MGD discharge.

Description of treatment process: Facility consists of a 300,000 gallons reactor, a 4.66 million gallon thickener tank, three 2.1 million gallon clarification tanks in series with a total of 6.3 million gallon capacity.

Receiving waters: Gulf County Canal Classification: I II **III**

Design Flow: 13.5 MGD Mean Flow: 8.25 MGD Flow during survey: 8.6 MGD (AUG 95

Discharge is: **Continuous** Intermittent Seasonal Rainfall dependent
Other (describe)
best time to sample is: N/A

If facility has a mixing zone, give details (size, parameters, etc.)
N/A

List effluent limits (attach relevant paperwork):

Parameter	Frequency	Type of Sample	Limit (units)
Background (1023X12161) in canal sampling location shall be 50 yards upstream for outgoing flow and at Highway 98 bridge for the incoming flow.			
Turbidity	Three/week	Grab	
At the point of discharge (1023X10061)			
Flow	Continuous	Sum of Recorder for saltwater & Totalizer for freshwater	13.5 MGD
pH	Five/week	Grab	6.5-10.05 S.U.

			(See Note 1)
TSS	Three/week	24 Hour Composite	30 mg/l (mo. avg.) and no one sample t exceed 60 mg/l (See Note 2) 3,377 lbs/day (mo. avg.) and 6,755 lbs/day daily max.
Turbidity	Three/week	Grab	<= 29 NTU above background
Bioassay	---	---	(See Note 3)

Notes:

(1) Limit exceeds water quality criteria of 8.5 S.U..
(2) Limit exceeds secondary treatment standards for TSS of 20 mg/l annual mean.
(3) Screening test will be started at a time to be determined after the results of toxicity report.

List permit violations (from MOR data or other source) and plant upsets within past year*:

FEB 95 - Daily pH excursion of 10.20 S.U..
TSS monthly average violation of 31.0 mg/l.

* - Only reviewed MORs from SEP 94 to AUG 95. This is due to FDEP's Tallahasse office still inputting the latest MORs.

Describe previous impact bioassessments, WQBEL's and previous or current enforcement actions:

The latest bioassay on file was performed in January 1995. Effluent wa found to be toxic to saltwater species Mysidopsis bahia and Menidia beryllina. Because of the high pH levels recorded from daily monitoring of Premier's effluent (9.62 S.U. annual average), the bioassay tests were conducted with pH adjusted (8.3 +/- 0.1 S.U.) and non-adjusted final discharge water. These test were integrated with various concentrations of the final effluent. Results for **unadjusted** pH effluent at 100% concentrations over a 96 hour period showed a **100%** mortality rate with M. bahia and a **70%** mortality rate for M. beryllina. The results for **adjusted** pH effluent at 100% concentrations over a 96 hour period showed only a **50%** mortality rate for M. bahia and a **15%** mortality rate for M. beryllina. Because the mortality rates are still considered high with adjusted pH levels, other parameters will need to be examined in reducing the number of species killed by Premier's effluent.

A more current analysis was performed on Premier's effluent within the past few weeks. Although a formal report is yet to be received by FDEP, a faxe summary of the test results showed a continuation of toxicity in the facility's final effluent. Here the sampling was segregated into three separate tests: a

sample portion that was pH adjusted to 8.2 +/- 1 S.U. at the plant prior to shipment; a sample that was allowed to equilibrate to a pH of 8.2 +/- 1 S.U. under ambient lab temperature, with aeration of the sample; and a sample that was allowed to equilibrate to a pH of 9.0 +/- 1 S.U. under ambient temperature with aeration, and then adjusted to a pH of 8.2 +/- 1 with acid in the lab. Al three tests showed **100%** mortality to M. bahia at 100% effluent concentrations over a 96 hour period.

Discuss comparability of MOR results to past FDEP results and whether there are trends (improving, declining) in the data set:

The latest FDEP sampling report found in the facility file was written by Bill Chandler in February 1995. Actual data results were not listed to compare with similar month's operating report. He did note that the facility appears to provide acceptable data for TSS, temperature, flow, and pH. Data fc turbidity is questionable due to the calibration method being used for analysis Data reported for the toxicity assessment appears adequate for pH, TSS, and chloride, but is questionable for calcium, magnesium, conductivity and turbidity.

The MORs appear to have similar data with each parameter reported from month to month.

Additional information:

Staff contributing to this review (signature)

Glenn Butts ES III Biologist

Inspector

Engineer

Nikki Kilburn, Co-op ES1 Other

Other



LEGEND

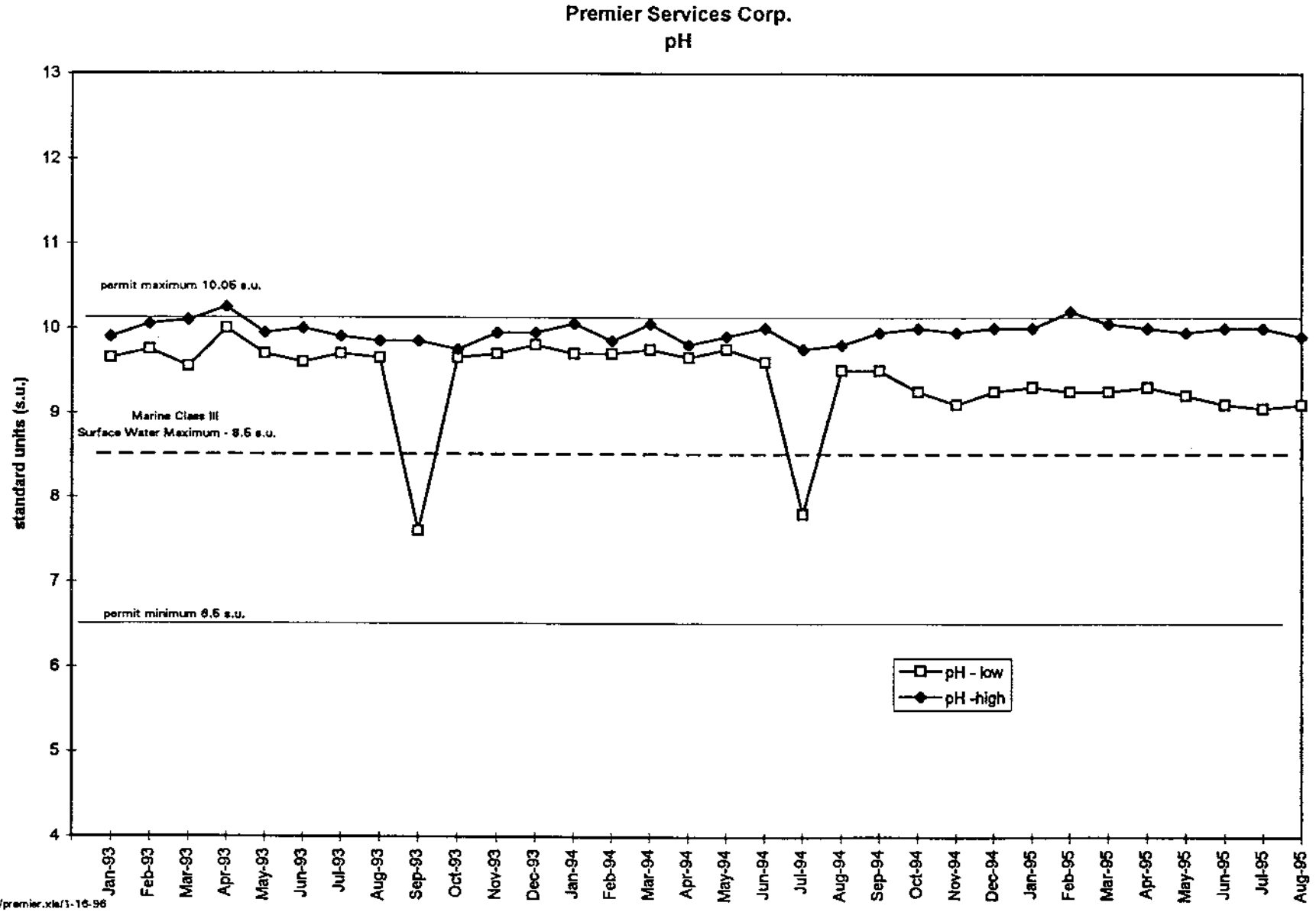
- Population Center
- State Route
- Geo Feature
- Town, Small City
- US Highway
- Street, Road
- Major Street/Road
- State Route
- US Highway
- Railroad
- RR Underpassing
- River
- Open Water

Scale 1:31,250 (at center)

2000 Feet

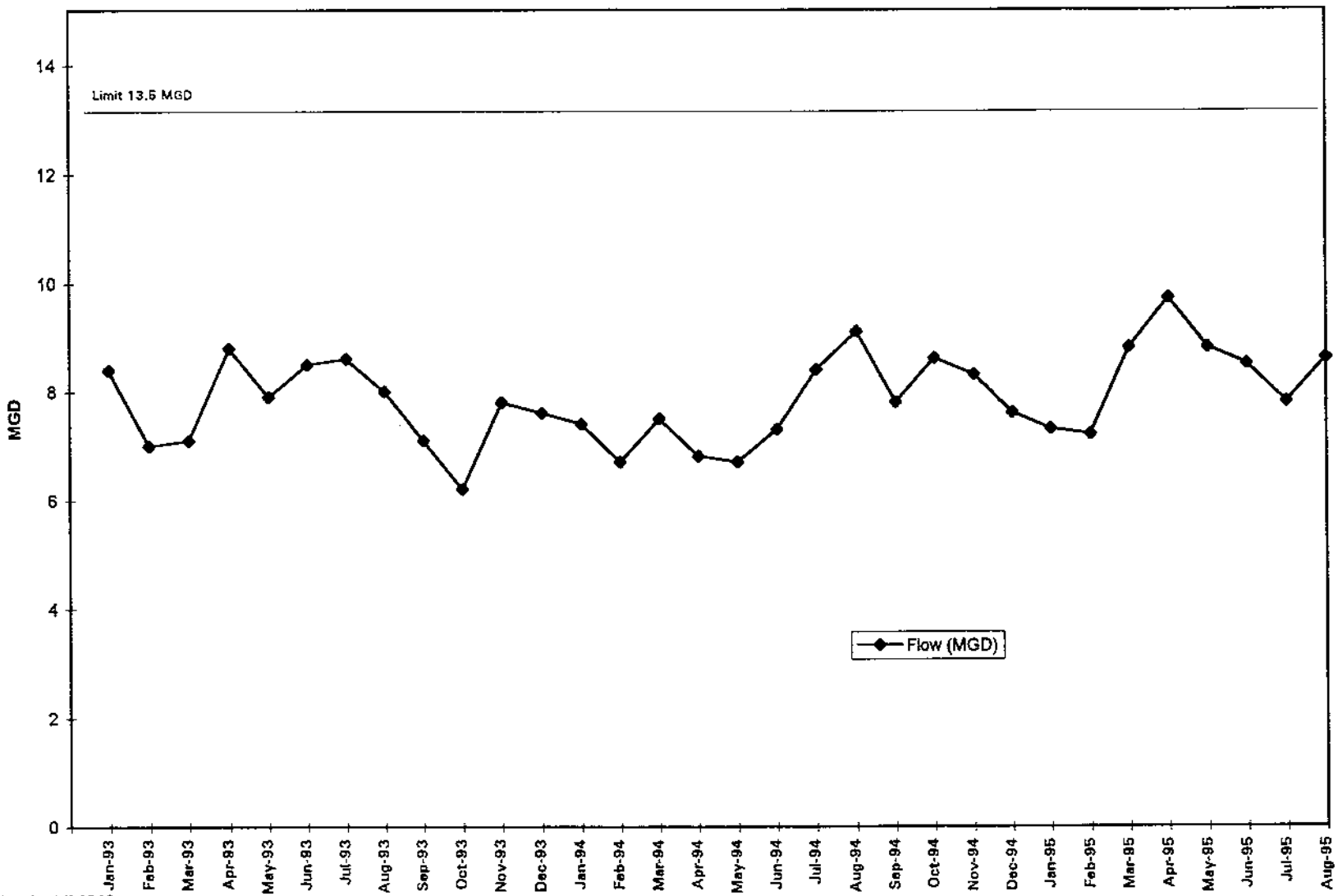
1000 Meters

Premier Services
Mag 14.00
Fri Jan 19 14:10:26 1996

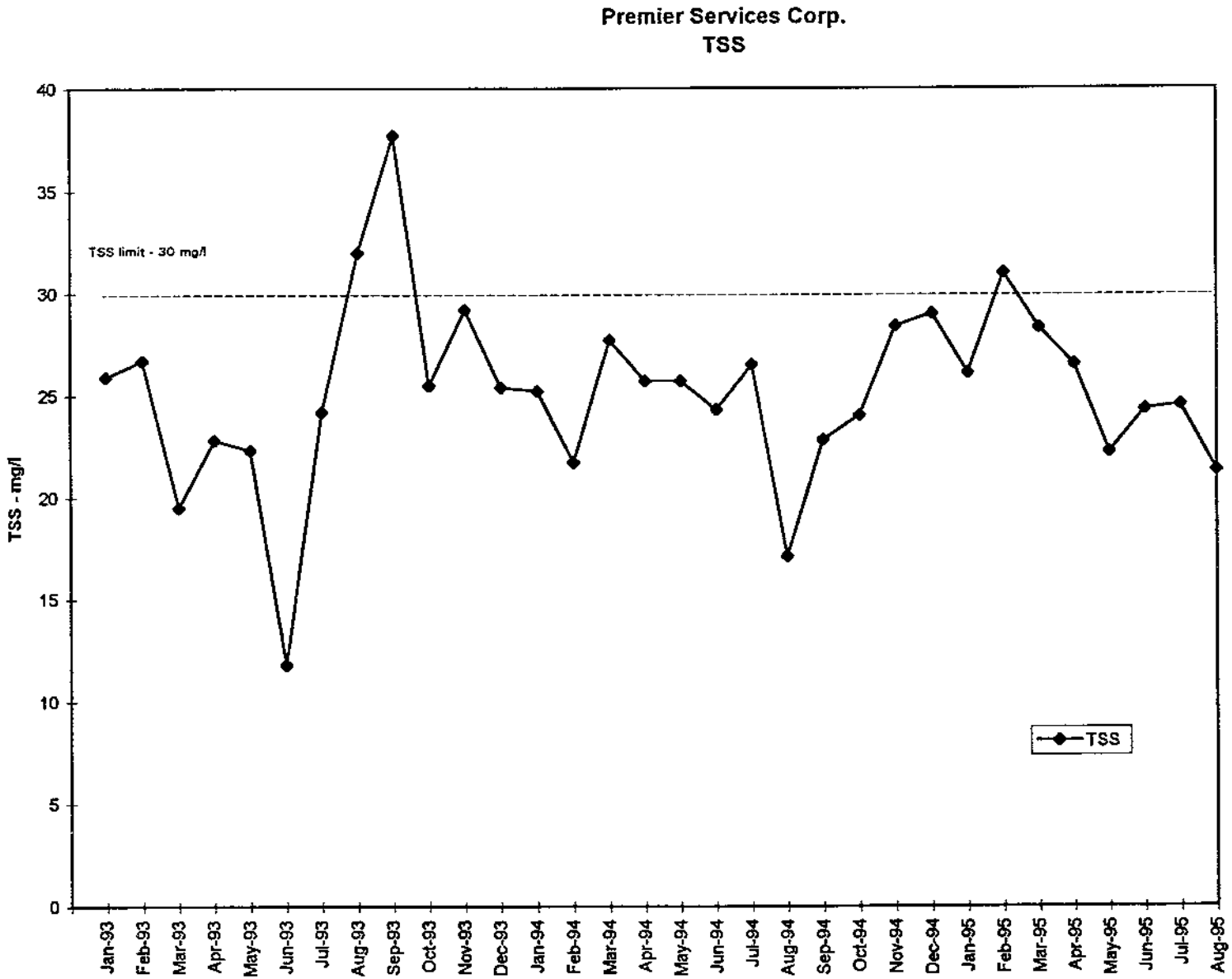


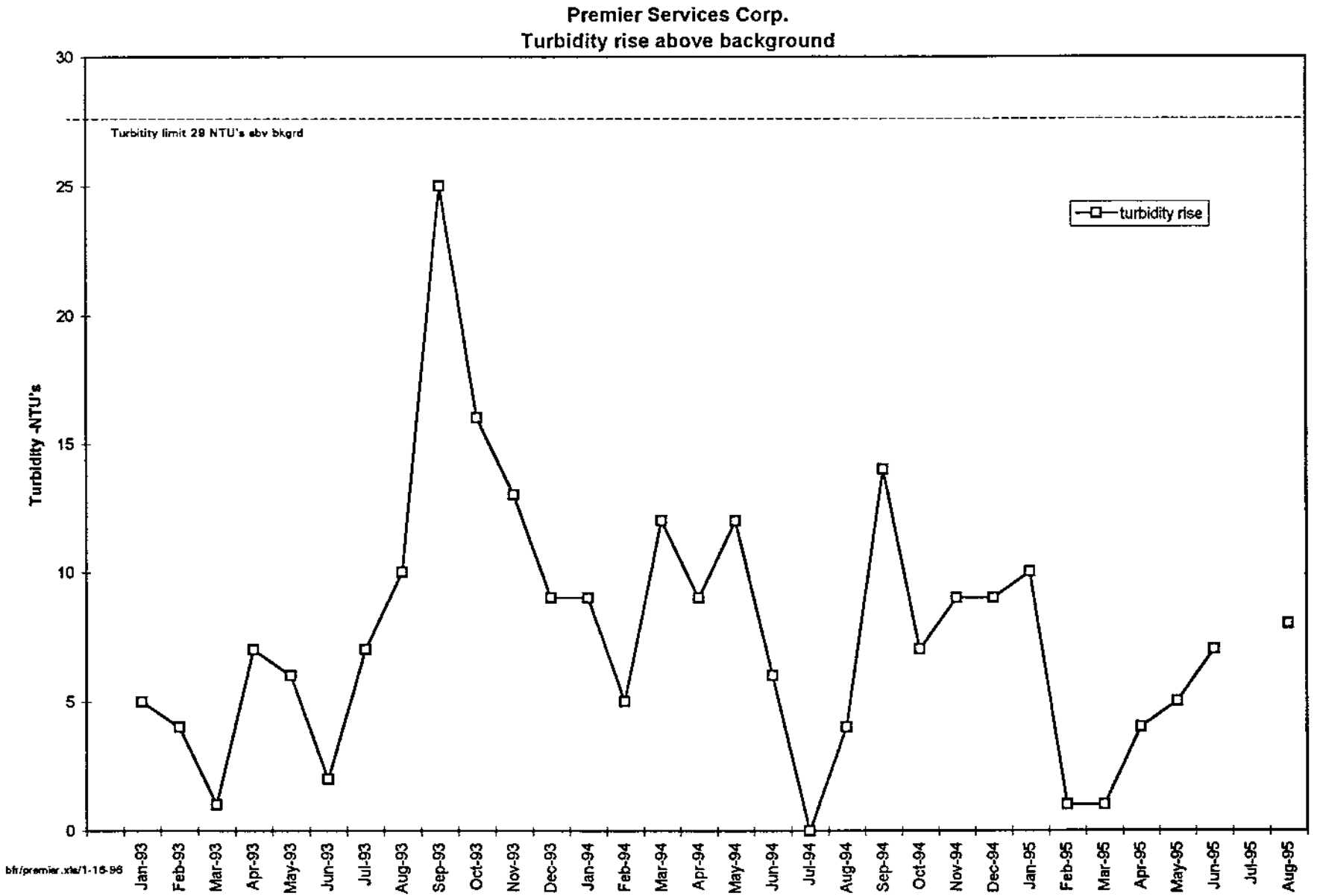
bfr/premier.xls/1-16-96

Premier Services Corp.
Flow



bfr/premier.xls/1-16-19


Premier Services Corp.
TSS
TSS - mg/l
TSS limit - 30 mg/l
TSS
0
5
10
15
20
25
30
35
40
Jan-93
Feb-93
Mar-93
Apr-93
May-93
Jun-93
Jul-93
Aug-93
Sep-93
Oct-93
Nov-93
Dec-93
Jan-94
Feb-94
Mar-94
Apr-94
May-94
Jun-94
Jul-94
Aug-94
Sep-94
Oct-94
Nov-94
Dec-94
Jan-95
Feb-95
Mar-95
Apr-95
May-95
Jun-95
Jul-95
Aug-95


Premier Services Corp.
Turbidity rise above background
Turbitity limit 29 NTU's abv bkgrd
turbidity rise
Turbidity -NTU's
30
25
20
15
10
5
0
Jan-93
Feb-93
Mar-93
Apr-93
May-93
Jun-93
Jul-93
Aug-93
Sep-93
Oct-93
Nov-93
Dec-93
Jan-94
Feb-94
Mar-94
Apr-94
May-94
Jun-94
Jul-94
Aug-94
Sep-94
Oct-94
Nov-94
Dec-94
Jan-95
Feb-95
Mar-95
Apr-95
May-95
Jun-95
Jul-95
Aug-95
bh/premier.xls/1-16-96

From: BUTTS_G (""""PNS1::A1::BUTTS_G""""@MRGATE@DER@DER@DERPS@MRGATE@DERPS)
Date: 01/30/1996 08:58:01
To: 1 FRYDENBORG_R
Cc:
Subj: Premier Services Data

From: NAME: Glenn Butts PEN
FUNC: Northwest District Office
TEL: 904/444-8340 <BUTTS_G@A1@PNS1>
To: NAME: Russell Frydenborg TAL <FRYDENBORG_R@A1@DER>,
NAME: Kathleen Lurding TAL <LURDING_K@A1@DER>

Here is the remainder of the data from Premier.

#1 Premier effluent, end of pipe GMS# 1023P01340 01-17-96

BOD	0.5 mg/L
TSS	79 mg/L
Turb	45 NTU
Color	5 Pt-Co
Lab pH	10.1 SU ★ EXCEEDS PERMIT LIMIT
Hardness	5300 mg/L CaC03
Total Coli	< 10
Fecal Coli	< 10

#2 Gulf County Canal Below Premier Basin 32.03.0048 01-17-96

BOD	0.5 mg/L	Depth	1.0 ft
TSS	10 mg/L	Temp	12.58
Turb	16 NTU	Cond	1282
Color	40 Pt-Co	Secchi	0.4 M
Lab pH	7.7 SU	Field pH	7.0
Hardness	106 mg/L CaC03	DO	11.65
Total Coli	20	Salinity	0.7
Fecal Coli	< 10		

#3 Gulf County Canal at Premier Barge Basin 32.03.0049 01-17-96

BOD	0.6 mg/L	Depth	1.0 ft
TSS	13 mg/L	Temp	12.38
Turb	17 NTU	Cond	2440
Color	50 Pt-Co	Secchi	0.5 M
Lab pH	7.4 SU	Field pH	6.95
Hardness	194 mg/L CaC03	DO	11.58
Total Coli	70	Salinity	0.8
Fecal Coli	30		

#4 Gulf County Canal at Powerlines, Above Premier 32.03.0053 01-17-96

BOD	0.6 mg/L	Depth	1.0 ft
TSS	13 mg/L	Temp	12.11
Turb	17 NTU	Cond	711
Color	50 Pt-Co	Secchi	0.5 M
Lab pH	7.3 SU	Field pH	6.83
Hardness	68 mg/L CaC03	DO	10.72
Total Coli	90	Salinity	0.4
Fecal Coli	10		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0053	DATE (M/D/Y): 01-17-96	TIME: 0945	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS:	LOCATION: AT POWER LINES ABOVE PREMIER SERVICES	FIELD ID/NAME: # 4 REFERENCE SITE

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land-Use (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
	50	50					

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☒ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☐ Obvious sources ☒

Width of riparian vegetation (m) on least buffered side: ***List & map dominant vegetation on back***

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values) →

Artificially Channelized ☐ no ☐ recent, severe ☒ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark (m above bed):

Canopy Cover % : Open : ☒ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☐ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none ☐ slight ☐ moderate ☐ severe ☐ Silt smothering: none ☐ slight ☐ moderate ☐ severe ☐ Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand	95		PONAR
Leaf Packs or Mats				Mud/Muck/Silt	5		
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				***Draw aerial view sketch of habitats found in 100 m section***			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	.4	12.11	6.83	10.72	711			0.5
Mid-depth								
Bottom	4.4	11.85	6.86	10.22	7,200	4.1		

System Type : Stream: ☐ (1st - 2nd order ☐ 3rd - 4th order ☐ 5th - 6th order ☐ 7th order or greater ☐) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☐ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☐	☐
Fish	☐	☐	☐	☐
Aquatic Macrophytes	☐	☐	☐	☐
Iron/sulfur Bacteria	☐	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Glenn Butts / Laurence Donelan		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0053	DATE (M/D/Y): 01-17-96	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS: MAN-MADE CANAL	LOCATION: AT POWER LINES ABOVE PREMIER SERVICES	FIELD ID/NAME: REFERENCE # 4 SITE

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 6	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 8	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 5	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 5	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 4	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 31

COMMENTS: UNDEVELOPED SHORELINE, STEEP BANKS

ANALYSIS DATE:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0049	DATE (M/D/Y): 01-17-96	TIME: 1035	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS:	LOCATION: AT OUTFALL INTO PREMIER BARGE BASIN	FIELD ID/NAME: # 3 TEST SITE 1

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land-Use (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
						100	

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☒

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☐ Obvious sources ☒

Width of riparian vegetation (m) on least buffered side: ***List & map dominant vegetation on back***

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)

Artificially Channelized ☐ no ☐ ☒ ☐
Artificially Impounded ☐ yes
recent, severe | some recovery | mostly recovered, more sinuous

High Water Mark (m above bed):

Canopy Cover % : Open : ☒ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☐ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none ☐ slight ☐ moderate ☐ severe ☐ Silt smothering: none ☐ slight ☐ moderate ☐ severe ☐ Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand	20		PONAR
Leaf Packs or Mats				Mud/Muck/Silt	70		
Aquatic Vegetation				Other:			
Rock or Shell Rubble	10		PONAR	Other:			
Shorezone (Roots/Veg.)				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	SAL		Secchi (m):
Top	.4	12.38	6.95	11.58	2440	0.8		0.4
Mid-depth								
Bottom	1.3	12.46	8.05	10.7	10,930	7.8		

System Type : Stream: ☐ (1st - 2nd order ☐ 3rd - 4th order ☐ 5th - 6th order ☐ 7th order or greater ☐) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☐ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☐	☐
Fish	☐	☐	☐	☐
Aquatic Macrophytes	☐	☐	☐	☐
Iron/sulfur Bacteria	☐	☐	☐	☐

SAMPLING TEAM: Glenn Butts / Laurence Donelan	SIGNATURE:	DATE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: X010 / SUBMITTING AGENCY NAME: FDEP MWD	STORET STATION NUMBER: 32.03.0049	DATE (M/D/Y): 01-17-96	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS: MAN MADE CANAL	LOCATION: AT OUTFALL INTO PREMIER BARGE BASIN	FIELD ID/NAME: # 3 TEST SITE 1

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 5	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 6	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 2	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 5	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 3	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 24

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0048	DATE (M/D/Y): 01-17-96	TIME: 1105	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS:	LOCATION: ABOVE BARGE DOCK, BELOW PREMIER SERVICES	FIELD ID/NAME: TEST SITE 2 # 2

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land-Use (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
					50	50	

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☒ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☐ Obvious sources ☒

Width of riparian vegetation (m) on least buffered side: | ***List & map dominant vegetation on back***

Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)

Artificially Channelized ☐ no ☐ recent, severe ☒ some recovery ☐ mostly recovered, more sinuous

Artificially Impounded ☐ yes

High Water Mark (m above bed):

Canopy Cover % : Open : ☒ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☐ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☐ Sand smothering: none ☐ slight ☐ moderate ☐ severe ☐ Silt smothering: none ☐ slight ☐ moderate ☐ severe ☐ Other:

Substrate Types	% coverage	# times sampled	method	**Substrate Types**	% coverage	# times sampled	method
Woody Debris (Snags)				Sand			
Leaf Packs or Mats				Mud/Muck/Silt			
Aquatic Vegetation				Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				***Draw aerial view sketch of habitats found in 100 m section***			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):	SAL		Secchi (m):
Top	1.0	12.58	7.0	11.65	1282	0.7		0.4
Mid-depth								
Bottom	4.7	11.08	7.68	9.0	50,500	33.2		

System Type : Stream: ☐ (1st - 2nd order ☐ 3rd - 4th order ☐ 5th - 6th order ☐ 7th order or greater ☐) Lake: ☐ Wetland: ☐ Estuary: ☐ Other: ☐

Water Odors (check box): Normal: ☐ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☐ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☐ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☐

Weather Conditions/Notes:

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☐	☐	☐
Fish	☐	☐	☐	☐
Aquatic Macrophytes	☐	☐	☐	☐
Iron/sulfur Bacteria	☐	☐	☐	☐

SAMPLING TEAM: Glenn Butts / Laurence Donelan	SIGNATURE:	DATE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 32.03.0048	DATE (M/D/Y): 01-17-96	RECEIVING BODY OF WATER: GULF COUNTY CANAL

REMARKS: MAN-MADE CANAL FROM ST JOE BAY, N. TO THE ICW	LOCATION: ABOVE BARGE DOCK, BELOW PREMIER SERVICES	FIELD ID/NAME: TEST SITE # 2

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 5	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed 6	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation 3	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations 2	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action 5	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type 3	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 24

COMMENTS: GULF COUNTY CANAL RECEIVES DISCHARGES FROM PREMIER SERVICES AND PORT ST JOE WWTP

ANALYSIS DATE:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET (Version 5)

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 320300V1	DATE (M/D/Y): 01-17-96	TIME: 1430	RECEIVING BODY OF WATER: Gulf of Mexico

REMARKS: AFFECTED AREA IN ST. JOE BAY	LOCATION: ST JOE BAY 1200 yds NW of Gulf Co. Canal	FIELD ID/NAME: 5 ST. JOE BAY SITE

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land-Use (specify relative percent in each category):

Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other (Specify)
5	80			3	2	10	

Local Watershed Erosion (check box): None ☐ Slight ☐ Moderate ☑ Heavy ☐

Local Watershed NPS Pollution (check box): No evidence ☐ Some potential sources ☐ Obvious sources ☐

Width of riparian vegetation (m) on least buffered side: | ***List & map dominant vegetation on back*** | Typical Width (m)/Depth (m) /Velocity (m/sec) Transect (draw cross-section & provide at least 3 velocity & depth values)

Artificially Channelized ☐ no / Artificially Impounded ☐ yes — recent, severe ☐ | some recovery ☐ | mostly recovered, more sinuous ☐

High Water Mark (m above bed):

Canopy Cover % : Open : ☑ Lightly Shaded (11-45%): ☐ Moderately Shaded (46-80%): ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☐

Sediment Oils: Absent: ☑ Slight: ☐ Moderate: ☐ Profuse: ☐

Sediment Deposition: Sludge: ☑ Sand smothering: none ☐ slight ☐ moderate ☐ severe ☐ Silt smothering: none ☐ slight ☐ moderate ☐ severe ☐ Other:

Substrate Types	% coverage	# times sampled	method	Substrate Types	% coverage	# times sampled	method
Woody Debris (Snags)				Sand	70	1/3	Ponar
Leaf Packs or Mats				Mud/Muck/Silt	29	1/3	Ponar
Aquatic Vegetation	1	1/3	Ponar	Other:			
Rock or Shell Rubble				Other:			
Shorezone (Roots/Veg.)				*Draw aerial view sketch of habitats found in 100 m section*			

WATER QUALITY	Depth (m):	Temp. (°C):	pH (SU):	D.O. (mg/l):	Cond. (µmho/cm) or Salinity (ppt):			Secchi (m):
Top	.4	12.74	7.72	10.38	42900			1.2
Mid-depth								
Bottom	5.0	11.61	7.71	8.0	52600			

System Type : Stream: ☐ (1st - 2nd order / 3rd - 4th order / 5th - 6th order / 7th order or greater) Lake: ☐ Wetland: ☑ Estuary: ☐ Other: ☐ Bay

Water Odors (check box): Normal: ☑ Sewage: ☐ Petroleum: ☐ Chemical: ☐ Other: ☐

Water Surface Oils (check box): None: ☑ Sheen: ☐ Globs: ☐ Slick: ☐

Clarity (check box): Clear: ☐ Slightly turbid: ☑ Turbid: ☐ Opaque: ☐

Color (check box): Tannic: ☐ Green (algae): ☐ Clear: ☐ Other: ☑

Weather Conditions/Notes: 18-20 mph E.

Abundance:	Absent	Rare	Common	Abundant
Periphyton	☐	☑	☐	☐
Fish	☑	☐	☐	☐
Aquatic Macrophytes	☐	☑	☐	☐
Iron/sulfur Bacteria	☑	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:
Dowlon / Baths / Goddard		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
MARINE BENTHIC HABITAT ASSESSMENT FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDEP NWD	STORET STATION NUMBER: 320300V1	DATE (M/D/Y): 01-17-96	RECEIVING BODY OF WATER: Gulf of Mexico
REMARKS: AFFECTED AREA IN ST. JOE BAY	LOCATION: ST JOE BAY 1200yds NW of Gulf Co. Canal	FIELD ID/NAME: 5	ST JOE BAY SITE

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations: 6	None—Unaltered shoreline. **9-10 points**	Mostly natural shoreline, but with occasional riprap. **6-8 points**	Shoreline consisting mostly of riprap and vertical seawalls. **3-5 points**	Shoreline consisting almost entirely of vertical seawalls. **0-2 points**
Community Types Observed: 26	At least four communities observed from the following list: mangrove swamp, marsh, oyster bar, grass bed, reef, saltern, natural beach, or tidal creek. **38-50 points**	Two or three communities observed from those listed. **26-37 points**	One community observed from those listed. **13-25 points**	No communities observed from those listed. **0-12 points**
Tidal Fluctuation: 1	>0.75 m. **4-5 points**	0.5 - 0.75 m. **3 points**	0.25 - 0.5 m. **2 points**	<0.25 m. **0-1 point**
Freshwater Discharges/ Alterations: 1	Only natural runoff.. **9-10 points**	Mostly natural runoff, but with a few, small stormwater sources. **6-8 points**	Considerable stormwater discharge from local roads, parking lots, etc. **3-5 points**	Extensive manmade discharges, especially from canals draining large tracts of land. **0-2 points**
Flow and Wave Action: 9	Light to moderate wave action present except under the harshest weather conditions. Flow unrestricted by manmade structures. **9-10 points**	—	—	Heavy wave action sometimes present even during average weather conditions, or flow restricted by manmade structures so that velocities are very high. **0-2 points**
Sediment Type: 7	Combination of sand, gravel, and shell. **12-15 points**	Primarily sand, with small areas of mud. **8-11 points**	Mixture of sand and mud, or well-aerated mud only. **4-7 points**	Anaerobic mud. **0-3 points**

TOTAL SCORE 52

COMMENTS: Donelan / Butts / Goddard

ANALYSIS DATE: 01-17-96	ANALYST:	SIGNATURE: Glenn Butts

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Premier
County: Gulf
Contact / District: Glenn Batts / Northwest
NPDES Permit #: FL0002607
LIMS Sample #: 127098 (sample log 1-30-96) LIMS Job #: 96-JAN-17-19.01

Sample Collection: Date 1-16-96 Time 1200
Test Beginning: Date 1-17-96 Time 1500
Test Ending: Date 1-19-96 Time 1500
Organism Batch #: 14 Diluent Batch #: NSW
Organism Age: 3
Test Organism: Mysidopsis bahia

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 4
Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	24.4 @ 24.5 (corr 1/17/96 entry error)	8.3 @ 24.5 °C	106.9 @ 106.2 1009 @ 1025 @ 24.4 °C (9910 @ 10180)
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.1	8.3 @ 24.5 °C	105.5 @ 106.2 1004 @ 1025 @ 23.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.0 @ 23.0	8.3 @ 24.5 °C	106.5 @ 106.2 1013 @ 1025 @ 24.6 °C (9870 @ 10180)

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Control A	57	5	5	5	7.9	8.0	8.0	23.7	24.0	23.0	6.8	6.4	6.4	44.5	44.8	44.5
Control B	610	5	5	5	7.9	8.0	8.0	23.5	24.0	23.0	6.8	6.4	6.4	44.4	44.9	44.5
Control C	75	5	5	5	7.9	8.0	8.0	23.5	24.0	23.1	6.9	6.4	6.4	44.4	45.0	44.5
Control D	350	5	5	5	7.9	8.0	8.0	23.5	24.1	23.3	6.9	6.5	6.5	44.5	45.1	44.6
100% A	214	5	0 SD	—	9.7	9.0	8.5	23.8	24.0	23.1	7.1	6.5	6.4	45.0	45.2	44.8
100% B	77	5	1 MD	0 ID	9.7	9.0	8.7	23.7	23.9	23.0	7.3	6.5	6.5	44.8	45.1	44.6
100% C	606	5	0 SD	—	9.7	9.0	8.5	23.7	23.9	23.0	7.3	6.5	6.5	44.8	45.1	44.7
100% D	21	5	0 SD	—	9.7	9.0	8.6	23.7	24.0	23.2	7.4	6.6	6.5	44.9	45.2	44.9
Measured/Loaded by:		TM	TM	TM	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	TM	TM	DW	JN	JRS	DW	JN	JRS	DW	JN	JRS	DW	JN	JRS

Investigators' Signatures

Marshall Faircloth
Tina M. Kuhlow
Jennifer Sparapani
Reviewer

form updated 5/05/95

Water Quality Parameters

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			NOT Measured		
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TM
Alkalinity (mg/L as $CaCO_3$):	118	—	333	Hach	JN
Hardness (mg/L as $CaCO_3$):	—	—	—	Hach	JN
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.6 Ammonia Blank: <0.017 Control Salinity: 29.5 ppt Sample Salinity: 29.1 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Premier
County: Escambia
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0002607
LIMS Sample #: 127098 LIMS Job #: 96-JAN-17-19-01

Sample Collection: Date 1-16-96 Time 1200
Test Beginning: Date 1-17-96 Time 1500
Test Ending: Date 1-19-96 Time 1500
Organism Batch #: 1 Diluent Batch #: NSW
Organism Age: 12 days
Test Organism: Menidia beryllina

Test Type: (Screening) | Definitive
Static | (Static Renewal) | Flow-through

Test Number: 2 of 4

Remarks:

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.4 @ 22.5	8.3 @ 24.5 °C	1069 @ 1062 1009 @ 1025 @ 24.5 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.1	8.3 @ 24.5 °C	1055 @ 1062 1004 @ 1025 @ 23.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.0 @ 23.0	8.3 @ 24.5 °C	1065 @ 1062 1013 @ 1025 @ 24.6 °C

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
Control A	287	5	4[10]	4	7.9	8.0	8.0	23.7	23.9	23.1	7.0	6.5	6.4	44.5	44.7	44.4
Control B	304	5	5	5	7.9	8.0	8.0	23.5	23.8	23.1	7.0	6.5	6.4	44.4	44.7	44.4
Control C	413	5	5	5	7.9	8.0	8.0	23.5	23.8	23.1	7.0	6.5	6.3	44.4	44.8	44.4
Control D	198	5	5	5	7.9	8.0	8.0	23.6	23.9	23.2	7.0	6.5	6.4	44.5	45.1	44.7
100% A	412	5	4[10]	4	9.7	9.6	8.6	23.7	23.8	23.2	7.3	6.5	6.3	44.9	45.1	44.8
100% B	76	5	1[40]	1	9.7	9.0	8.6	23.8	23.8	23.1	7.3	6.5	6.3	44.9	45.0	44.6
100% C	119	5	3[20]	2[10]	9.7	9.0	8.6	23.7	23.8	23.1	7.4	6.4	6.4	44.9	45.0	44.7
100% D	149	5	0[00]	—	9.7	9.0	8.6	23.7	23.9	23.2	7.4	6.4	6.4	44.9	45.1	44.9
Measured/Loaded by:		MF	TM	TM	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		TM	TM	TM	DW	JN	JBS	DW	JN	JBS	DW	JN	JBS	DW	JN	JBS

Investigators' Signatures

Marshall Faircloth
Joseph Smith
Tina M. Kuklis
Jennifer Sparagan

reviewer

form updated 5/05/95

Water Quality Parameters (Salt Water: Well Water | 20% Min Water)

	Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):	<0.03	—	DR/100	<0.03	TM
Alkalinity (mg/L as $CaCO_3$):	118	—	Hach	333	JN
Hardness (mg/L as $CaCO_3$):	—	—	Hach	—	JN
Total ammonia (mg/L as N):	<0.017	—	Orion	<0.017	JN

JN 1-17-96

Ammonia Meter #98136 Ammonia Meter Slope: -57.6 Ammonia Blank: <0.017 Control Salinity: 29.5 ppt Sample Salinity: 29.1 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Premier
County: Gulf
Contact / District: Glenn Batts
NPDES Permit #: FL0002607
LIMS Sample #: 127098 **LIMS Job #:** 96-JAN-17-19-01

Sample Collection: Date 1-16-96 Time 1200
Test Beginning: Date 1-17-96 Time 1500
Test Ending: Date 1-19-96 Time 1500
Organism Batch #: 14 **Diluent Batch #:** NSW
Organism Age: 3 days
Test Organism: Mysidopsis bahia

Test Type: Screening | Definitive
(Static) / Static Renewal | Flow-through
Test Number: 3 of 4
Remarks: pH adjusted test

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.4 @ 22.5	8.3 @ 24.5 °C	106.9 @ 106.2 1009 @ 1025 @ 24.4 °
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.1	8.3 @ 24.5 °C	9910 @ 10180 105.5 @ 106.2 1004 @ 1025 @ 23.8 °
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.0 @ 23.0	8.3 @ 24.5 °C	106.5 @ 106.2 1013 @ 1025 @ 24.6 ° 9870 @ 1018 @

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond (mmhos/cm) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	26	5	5	5	7.9	8.0	8.0	23.4	23.8	23.2	7.1	6.5	6.4	44.4	44.7	44.4
Control B	17	5	5	5	7.9	8.0	8.0	23.4	23.8	23.2	7.0	6.5	6.4	44.3	44.8	44.4
Control C	883	5	5	5	7.9	8.0	8.0	23.3	23.8	23.2	7.1	6.5	6.4	44.3	44.9	44.8
Control D	520	5	5	5	7.9	8.0	8.0	23.4	23.9	23.2	7.1	6.5	6.4	44.4	45.2	44.7
100% A	174	5	0 SD	—	7.9	7.6	7.4	24.0	23.9	23.2	7.0	6.5	6.4	44.5	~~45.6~~	44.7
100% B	136	5	1 UD	0 UD	7.9	7.6	7.4	24.0	23.9	23.1	7.0	6.4	6.4	45.0	45.1	44.7
100% C	28	5	0 SD	—	7.9	7.6	7.4	24.0	23.9	23.1	7.0	6.5	6.4	45.0	45.1	44.7
100% D	503	5	0 SD	—	7.9	7.6	7.4	24.0	23.9	23.2	7.0	6.5	6.4	45.1	45.4	44.9
Measured/Loaded by:			TM	TM	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:			TM	TM	DW	JN	JRS	DW	JN	JRS	DW	JN	JRS	DW	JN	JRS

Investigators' Signatures
Marshall Faircloth
Jerry Martin
Tina Mikulasky
Jennifer Sparapani
reviewer

form updated 5/05/95

Water Quality Parameters

	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			NOT measured		
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TM
Alkalinity (mg/L as $CaCO_3$):	118	—	333	Hach	JN
Hardness (mg/L as $CaCO_3$):	—	—	—	Hach	JN
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.6 Ammonia Blank: <0.017
Control Salinity: 29.5 ppt Sample Salinity: 29.1 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Premier
County: Gulf
Contact / District: Glenn Butts / Northwest
NPDES Permit #: FL0002607
LIMS Sample #: 127098 **LIMS Job #:** 96-JAN-17-19.01

Sample Collection: Date 1-16-96 Time 1200
Test Beginning: Date 1-17-96 Time 1500
Test Ending: Date 1-19-96 Time 1500
Organism Batch #: 1 **Diluent Batch #:** NSW
Organism Age: 12 days
Test Organism: Menidia beryllina

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Test Number: 4 of 4

Remarks: pH adjusted test

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.4 @ 24.5 (a) MF 1/17/96 entry error	8.3 @ 24.5 °C	1069 @ 1062 1009 @ 1025 @ 24.4 °C 99.0 @ 101.80
24 hr	7.0 @ 7.0 9.0 @ 9.0	23.2 @ 23.1	8.3 @ 24.5 °C	105.5 @ 106.2 1004 @ 1025 @ 23.8 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	23.0 @ 23.0	8.3 @ 24.5 °C	106.5 @ 106.2 1013 @ 1025 @ 24.6 °C 98.20 @ 101.80

		Number Live			pH			Temperature (°C)			D.O. (mg/L)			UNCORRECTED Cond. (~~µmhos/cm~~) Cond. (µmhos/cm)		
Conc.	Chamber #	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h	0 hr	24 h	48 h
Control A	317	5	5	5	7.9	8.0	8.0	23.6	23.9	23.2	7.0	6.5	6.4	44.4	44.9	44.7
Control B	41	5	5	5	7.9	8.0	8.0	23.4	23.9	23.2	7.0	6.5	6.4	44.3	44.9	44.5
Control C	219	5	5	5	7.9	8.0	8.0	23.3	23.9	23.2	7.0	6.5	6.4	44.3	44.9	44.6
Control D	500	5	5	5	7.9	8.0	8.0	23.4	23.9	23.3	7.1	6.5	6.4	44.4	45.2	44.8
100% A	148	5	5	5	7.9	7.6	7.3	24.0	24.1	23.3	7.0	6.4	6.1	45.1	45.2	44.9
100% B	53	5	5	5	7.9	7.6	7.3	24.0	24.0	23.3	7.0	6.4	6.1	45.1	45.2	44.9
100% C	308	5	5	5	7.9	7.6	7.3	24.0	24.0	23.3	7.0	6.3	6.2	45.2	45.2	44.9
100% D	366	5	5	5	7.9	7.6	7.3	24.1	24.1	23.4	7.0	6.4	6.2	45.2	45.3	45.0
Measured/Loaded by:		MF	TM	TM	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		TM	TM	TM	DW	JN	JAS	DW	JN	JAS	DW	JN	JAS	DW	JN	JAS

Investigators' Signatures

Marshall Fairchild

Joseph Morris

Lisa M. Kubiak

Jennifer Spainhour

reviewer

form updated 5/05/95

Water Quality Parameters

	(Salt Water) Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			not measured		
Lab Total Residual Cl2 (mg/L):	<0.03	—	<0.03	DR-100	TM
Alkalinity (mg/L as $CaCO_3$):	118	—	333	Hach	JN
Hardness (mg/L as $CaCO_3$):	—	—	—	Hach	JN
Total ammonia (mg/L as N):	<0.017	—	<0.017	Orion	JN

Ammonia Meter #98136 Ammonia Meter Slope: -57.6 Ammonia Blank: <0.017 Control Salinity: 29.5 ppt Sample Salinity: 24.1 ppt

HISTORICAL DATA ST JOE BAY NEAR PALM POINT

StaNickName	PREMBAY	PREMBAY
StoretCode	320300V1	320300V1
Date	7/23/85	9/10/85
NSamplesBENPetitePonr	1	1
AvgNindCountedBENPetitePonr	73	132
Nind/UnitAreaBENPetitePonr	3041.68	1833.36
AvgNTaxaBENPetitePonr	30	19
AvgDBarBENPetitePonr	4.16	1.72
Sub col-gthr/dep fdrPercentPetitePonr	2.74	3.79
Scavenger (animals)PercentPetitePonr	9.59	1.89
Predator/carnivorePercentPetitePonr	10.96	3.79
Epi col-gthr/dep fdrPercentPetitePonr	15.75	37.88
Col-fltr/susp fdrPercentPetitePonr	45.21	49.24
Browser-grazer (mar)PercentPetitePonr	6.16	1.89
FFUnknownPercentPetitePonr	2.74	0
*PolychaetaPercentPetitePonr	35.62	81.82
*PolychaetaNTaxaPetitePonr	6	7
*AmphipodaPercentPetitePonr	1.37	1.52
*AmphipodaNTaxaPetitePonr	1	2
*IsopodaPercentPetitePonr	4.11	0
*IsopodaNTaxaPetitePonr	1	0
*GastropodaPercentPetitePonr	12.33	3.03
*GastropodaNTaxaPetitePonr	6	4
*PelecypodaPercentPetitePonr	17.81	9.85
*PelecypodaNTaxaPetitePonr	5	2
*CumaceaPercentPetitePonr	6.85	0
*CumaceaNTaxaPetitePonr	3	0
*DecapodaPercentPetitePonr	8.22	2.27
*DecapodaNTaxaPetitePonr	4	2
DominantTaxonPetitePonr	Paraprionospio pinnata	Paraprionospio pinnata
DominantTaxonPercentPetitePonr	27.4	74.24
DominantTaxonNTaxaPetitePonr	1	1

ST. JOE BAY NEAR PALM POINT prembaytaxa

HISTORICAL TAXA LIST 7-23-85 & 9-11-85

Station nickname:	PREMBAY	
STORET name:	320300V1	
Sample date:	7/23/85	
Benthos gear:	PetitePonr	
Quantitative data as entered.		
Phylum: Nemertea		
Carinoma tremaphoros	2	83.33
Phylum: Annelida		
Sthenelais	1	41.67
Phyllodoce arenae	2	83.33
Nereis pelagica	1	41.67
Scoloplos	1	41.67
Paraprionospio pinnata	20	833.33
Armandia agilis	1	41.67
Phylum: Mollusca		
Neritina virginea	2	83.33
Cerithium variabile	1	41.67
Crepidula	1	41.67
Nassarius vibex	3	125
Jaspidella jaspidea	1	41.67
Inodrillia aepynota	1	41.67
Nuculana concentrica	1	41.67
Mulinia lateralis	2	83.33
Tellina alternata	8	333.33
Tellina texana	1	41.67
Dosinia discus	1	41.67
Phylum: Arthropoda		
Mysidopsis bigelowi	2	83.33
Oxyurostylis smithi	2	83.33
Almyracuma	1	41.67
Cyclaspis	2	83.33
Edotea triloba	3	125
Cymadusa compta	1	41.67
Trachypenaeus constrictus	2	83.33
Acetes americanus	2	83.33
Lucifer faxoni	1	41.67
Callinectes	1	41.67
Phylum: Echinodermata		
Ophiophragmus	4	166.67
Phylum: Chordata		

Branchiostoma caribaeum	2	83.33
Total number of individuals	73	3,041.68
*** End of List ***		
Station nickname:	PREMBAY	
STORET name:	320300V1	
Sample date:	9/10/85	
Benthos gear:	PetitePonr	
Quantitative data as entered.		
Phylum: Annelida		
Sthenelais	1	13.89
Sigambra tentaculata	2	27.78
Syllidae	1	13.89
Paraprionospio pinnata	98	1,361.11
Travisia hobsonae	1	13.89
Notomastus	4	55.56
Amphicteis	1	13.89
Phylum: Mollusca		
Crepidula fornicata	1	13.89
Crepidula maculosa	1	13.89
Mitrella lunata	1	13.89
Olivella mutica	1	13.89
Mulinia lateralis	12	166.67
Corbula contracta	1	13.89
Phylum: Arthropoda		
Ampelisca verrilli	1	13.89
Cymadusa compta	1	13.89
Solenocera necopina	2	27.78
Pagurus longicarpus	1	13.89
Phylum: Echinodermata		
Ophiuroidea	1	13.89
Phylum: Chordata		
Branchiostoma caribaeum	1	13.89
Total number of individuals	132	1,833.36
*** End of List ***		

Benthic macroinvertebrate taxa list for Premier Services, collected via Ponar grab samples in Gulf County Canal and St. Joe Bay, on 17 January, 1996. Densities, in number/m^2, represent the mean of three replicates.

	St. Joe Bay Site	Reference Site	Test Site 1	Test Site 2
Anthozoa				
Actiniaria	5	–	–	–
Nemertea				
Nemertea	–	–	9	–
Polychaeta				
Arabella sp.	5	–	–	–
Armandia maculata	125	–	–	–
Capitella sp.	1037	–	–	–
Chone sp.	9	–	–	–
Chone americana	5	–	–	–
Dispio sp.	5	–	–	–
Glycera sp.	69	–	–	9
Hobsonia florida	5	56	9	–
Laeonereis culveri	–	–	28	–
Lumbrineris verrilli	32	–	–	–
Neanthes succinea	60	–	–	–
Nereis sp.	–	–	5	–
Nereis succinea	–	–	23	5
Pectinaria gouldi	5	–	–	–
Prionospio sp.	14	–	–	–
Prionospio pinnata	593	–	–	–
Prionospio pygmaea	51	–	–	–
Prionospio steenstrupi	28	–	–	–
Sigambra tentaculata	23	–	–	–
Spio pettiboneae	60	–	–	–
Spiophanes sp.	5	–	–	–
Spiophanes bombyx	157	5	–	–
Sthenelais limicola	9	–	–	–
Streblospio benedicti	14	65	5	79
Capitellidae	343	14	32	5
Goniadidae	5	–	–	–
Lumbrineridae	5	–	–	–
Onuphidae	5	–	–	–
Pectinariidae	5	–	–	–
Spionidae	9	–	–	23
Polychaeta	5	9	9	–
Gastropoda				
Mitrella sp.	5	–	–	–
Mitrella lunata	56	–	–	–
Oliva sayana	5	–	–	–
Odostomia sp.	5	5	–	–

Retusa sp.	–	–	–	5
Naticidae	5	–	–	–
Pelecypoda				
Brachidontes sp.	5	–	–	–
Laevicardium sp.	5	–	–	–
Mercenaria sp.	5	–	–	–
Tellina versicolor	65	–	–	–
Mactridae	19	–	–	–
Solenidae	–	5	–	–
Tellinidae	46	–	–	–
Pelecypoda	14	–	–	–
Mysidacea				
Bowmaniella sp.	9	–	–	–
Mysidacea	–	14	–	–
Cumacea				
Cyclaspis varians	9	–	–	–
Leucon sp.	23	–	–	–
Leucon nasicoides	9	–	–	–
Oxyurostylis smithi	37	–	–	–
Tanaidacea				
Hargeria rapax	–	–	–	5
Isopoda				
Cyathura polita	–	–	–	14
Edotea montosa	5	56	5	37
Sphaeromatidae	5	–	–	–
Amphipoda				
Acanthohaustorius sp.	23	–	–	–
Ampelisca abdita	23	–	–	–
Ampithoe longimana	37	–	–	–
Cerapus sp.	28	–	–	51
Corophium simile	–	23	–	–
Elasmopus sp.	19	–	–	–
Ericthonius brasiliensis	37	–	–	–
Gammarus sp.	–	–	–	5
Gammarus mucronatus	–	56	37	28
Grandidierella bonnieroides	–	185	65	56
Haustorius sp.	–	963	–	60
Lembos sp.	14	–	–	–
Listriella barnardi	46	–	–	–
Synchelidium americanum	9	–	–	–
Ampithoidae	9	–	–	–
Caprellidae	5	–	–	–
Haustoriidae	–	–	–	28
Melitidae	–	5	–	–
Amphipoda	9	–	–	–
Decapoda				
Clibanarius vittatus	9	–	–	–
Palaemonetes pugio	5	–	–	–
Pinnixa sp.	5	–	–	–

Rhithropanopeus harrisii	5	–	–	–
Diogenidae	32	–	–	–
Decapoda	–	–	5	–
Diptera				
Chaoborus sp.	–	–	5	–
Chironomus sp.	–	–	9	–
Cryptochironomus sp.	–	–	14	–
Cryptotendipes sp.	–	–	19	–
Dicrotendipes sp.	–	–	5	–
Dicrotendipes modestus	–	–	–	5
Nanocladius sp.	–	–	5	–
Polypedilum illinoense	–	–	9	–
Ophiuroidea				
Ophiuroidea	5	–	–	–

Phytoplankton taxa list and densities (#/mL) for Premier Services, collected via subsurface grabs in Gulf County Canal, on 16 January, 1996.

	Reference Site	Test Site 1	Test Site 2
Cyanophyceae			
Anabaena sp.	26	-	-
Aphanothece sp.	-	32	56
Chroococcus sp.	26	-	28
Dactylococcopsis sp.	26	63	140
Oscillatoria sp.	-	32	-
Synechococcus sp.	26	-	28
Chrysophyceae			
Mallomonas sp.	26	-	-
Synura sp.	79	-	-
Bacillariophycea			
Cocconeis sp.	-	-	56
Cyclotella sp.	105	95	-
Leptocylindrus sp.	2652	3403	3082
Melosira sp.	893	315	168
Navicula sp.	105	-	-
Nitzschia longissima	-	-	28
Nitzschia obtusa	-	32	-
Nitzschia sp.	79	158	28
Rhizosolenia sp.	53	-	-
Synedra sp.	-	-	28
Pennales	53	-	28
Chlorophyceae	53	95	-
Chlorella sp.	26	63	-
Closteriopsis sp.	-	32	-
Dunaliella sp.	26	-	-
Micractinium sp.	53	-	-
Scenedesmus sp.	-	-	56
Tetrastrum sp.	-	32	-
Euglenophyceae			
Euglena sp.	-	-	28
Dinophyceae			
Peridinium sp.	-	-	28
Cryptophyceae			
Chroomonas sp.	1418	693	308
Cryptomonas sp.	236	95	28

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0026077 11	12 960116 17	18 X	19 S	20 2

Remarks

21 66

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 FL0026077 11	12 960116 17	18 B	19 S	20 2

Remarks

21 66