

Biological Assessment of

Saufley Field Sewage Treament Plant

Escambia County

NPDES #FL0021041

Sampled 23 April 1991

August 1991

Biology Section
Division of Administrative and Technical Services

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger: Saufley Field Sewage Treatment Plant
County: Escambia
NPDES Number: FL0021041
State Permit Expiration Date: October 3, 1991

Toxics Sampling Inspection (XSI)	
Date Sampled:	Effluent contained copper (31 µg/L), an aromatic compound (est. 120 µg/l), and an aliphatic compound (16 µg/l).

Compliance Biomonitoring Inspection (CBI)	
Date Sampled:	22 April 1991
Results:	Toxic to *Ceriodaphnia dubia.* Not toxic to *Pimephales promelas.*

Impact Bioassessment Inspection (IBI)	
Date Sampled:	23 April 1991
Results:	North Perdido Bay was generally depauperate of benthic macroinvertebrates, but degradation cannot be attributed to this facility alone. Lush periphyton growth on the concrete swale (stimulated by nutrient addition by the effluent) should be periodically harvested and removed from the system. Algal growth potential was high immediately below the discharge, and decreased along the treatment system gradient. Algal growth potential at both test and reference sites in Perdido Bay was somewhat elevated, but other point and non-point sources of enrichment are also present in this system.

Water Quality Inspection (WQI)	
Date Sampled:	22 April 1991
Results:	Nitrate-nitrite and total phosphorus in the effluent are contributing to abundant growth of algae below the point of discharge, but nutrient concentrations do not seem to be a problem where the discharge enters Waters of the State.

These fifth year inspections provide the necessary information to evaluate the facility's impact on its receiving waters and to provide the basis for specific condition recommendations for permit renewal.

Introduction

The Saufley Field Sewage Treatment Plant, located in Escambia County, is operated by the Navy Public Works Center and provides secondary sewage treatment for the wastewater generated at the Saufley Field Naval Air Station. This facility (0.21 MGD maximum monthly average) is a trickling filter plant consisting of a grit chamber, comminutor, primary clarifier, trickling filter, secondary clarifier, and a chlorine contact tank. Effluent is discharged through an 0.8 mile concrete swale (Saufley Ditch, which is considered as part of the plant's treatment system) to Perdido Bay (see maps in Appendix).

A review of the monthly operating reports revealed no permit violations for the past 12 month period. Northwest District plant inspections have shown minor problems such as low growth on trickling filter rock media and sludge drying beds overgrown with weeds. The flow through the plant is low, therefore, the operators waste sludge only once per year. One TKN excursion was recorded in October, 1988, as a result of maintenance work on the primary clarifier.

In January, 1980, the Tallahassee DER Biology Section performed one static acute definitive bioassay on the cladoceran, *Daphnia pulex*, which resulted in an 18 hour LC_{50} of 5.6%. This toxicity was attributed to the chlorine content of the effluent (FDER 1980).

Methods

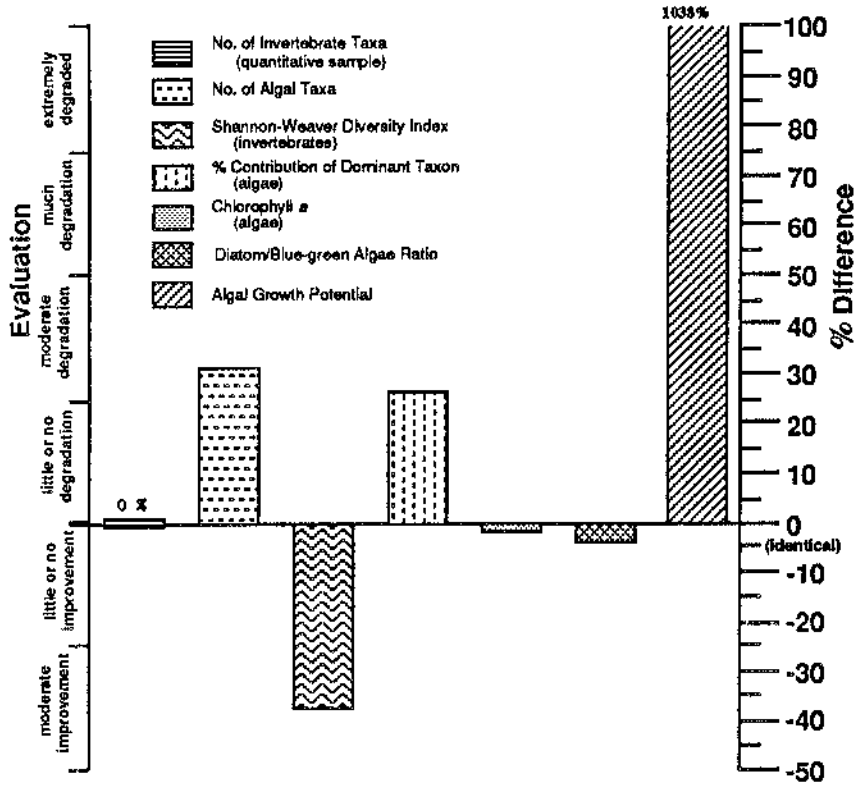
The focus of this investigation was to determine the discharger's effects on the receiving waters. A comparison of biological community health was made by employing several strategies. A habitat assessment was performed *in situ* to establish comparability between the area in Perdido Bay closest to the plant discharge (Station 5), and another site in the bay which is part of the Northeast District's ambient monitoring network (Station 6). Supplemental physical/chemical data were also collected on the effluent and study sites. In addition to the previously mentioned Station 5, these study sites included three areas along Saufley Ditch. Stations 2 and 3 were situated immediately above and approximately 100 yards below the point of discharge, respectively, and Station 4 was located at the end of the swale near the dam (see diagram in Appendix). Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Pimephales promelas* as test organisms, were performed on an effluent sample (Peltier and Weber 1985, FDER 1985). The effluent was analyzed for organic constituents (base neutrals, acid extractables, and pesticide extractables), and metals. Additionally, nutrient analyses were performed on test sites 2 through 5. Methods used for all chemical analyses are on file at the Tallahassee DER Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at Station 5 and compared to historical data collected at Station 6 in 1981 and 1982. Collection methods consisted of three ponar dredge grabs per station (Ross 1990). At Station 5, an additional timed (45 minute) multisubstrate (*e.g.*, vegetation, sediment) semi-quantitative dip net sample was collected. Periphyton was sampled at Stations 2 and 3 by scraping a known area (8" x 3") off the concrete swale. Periphyton was also sampled at Stations 4, 5, and 6 by incubating glass microscope slides in a standard

Major characteristics of community structure of control and test sites.

WRONG TABLE

	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	30	25
Florida Index	14	6
% Contribution of Dominant Taxon	34.0	61.5
% Malacostraca	1.6	2.8
% Diptera	75.6	88.1
% Ephemeroptera	16.9	2.3
% Gastropoda	1.1	4.3
% Odonata	1.4	1.0
% Coleoptera	2.3	0.7
% Other	1.1	0.8
% Predators	4.6	22.1
% Collector-Gatherers	70.3	44.2
% Collector-Filterers	7.0	1.9
% Scrapers	12.9	9.9
% Shredders	5.2	21.9
Algal Growth Potential (mg dry wt/l)		Effluent = 0.9



Effect of discharge on receiving stream
(measured as difference between control and test sites).

periphytometer for 28 days (Ross 1990). Unfortunately, the samplers at Stations 4 and 5 were not recovered. Chlorophyll *a* was determined for periphyton communities (Ross 1990). Algal Growth Potential tests, using *Selenastrum capricornutum* and *Dunaliella tertiolecta* as the test organisms for the freshwater and marine stations, respectively, were performed (Miller *et al.* 1978, EPA 1974).

Explanation of Measurements of Community Health

Several different measurements of macroinvertebrate and algal community health have been employed. Many of these, such as the number of taxa, Shannon-Weaver Diversity Index, and chlorophyll *a* are well known. Others are briefly explained here. Excessive numerical dominance of a single type of organism (a high % contribution of dominant taxon) is usually associated with disturbance. A decreased diatom to blue-green algae ratio (calculated by dividing the proportion of individuals in the Bacillariophyta by the proportion of individuals in the Bacillariophyta + Cyanophyta) is often indicative of nutrient enriched conditions. The determination of the Quantitative Stability Index (for taxonomic % composition) is a two step process. First, the relative proportions of major taxonomic groups are calculated for each site. Then, the lesser of the two percentages for each discrete taxonomic group is totaled. A QSI (% composition) of 100% means that the two sites being compared are identical. This same type of procedure is used for calculating the QSI (functional feeding groups).

For graphical purposes, the percent differences between the reference and test sites involving the number of taxa, the diversity index, and the diatom to blue-green algae ratio are measured as the reference site minus test site divided by the reference site. The percent differences between sites involving the percent contribution of dominant taxon, 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 (DER Northeast District) and Lyn Burton, Russel Frydenborg, Kathleen Lurding, and Sandy McClure (Tallahassee Biology Laboratory).

Results and Discussion

Habitat quality at the two Perdido Bay sites was similar, with scores of 38 and 33 at Stations 5 and 6, respectively. Littoral alterations were more extensive at the latter station, with more vertical seawalls present. Substrate quality varied slightly between these sites, with a higher proportion of sand and less mud at Station 5 (Appendix). Besides these physical differences, water at both sites was slightly alkaline (pH = 7.57 at Station 5 and 7.75 at Station 6), and salinity was between 2 and 5 ppt. Secchi depth was consid-

erably greater (>1.0 m) at Station 5 than the 0.4 m observed at Station 6. Both areas were adequately oxygenated (Appendix).

None of the pesticides which were analyzed for were detected in the effluent sample. Other analyses for organic constituents resulted in the tentative identification of an aromatic compound (estimated 120 µg/L) and an aliphatic compound at an estimated value of 16 µg/L (Appendix).

The following metals were found in the effluent sample: aluminum (124 µg/L), barium (13 µg/L), calcium (6 mg/L), copper (31 µg/L), iron (195 µg/L), magnesium (1.9 mg/L), manganese (13 µg/L), potassium (8 mg/L), sodium (71.3 mg/L), strontium (16 µg/L), and zinc (33 µg/L). Most of these metals are naturally occurring and these concentrations are not considered troublesome. The level of copper detected in the discharge was 31 µg/L. At Station 3, 100 yards below the discharge, the copper concentration was reduced to 13 µg/L, which is below ambient standards for marine waters. No other metals occurring at either Stations 2 or 3 were cause for concern (Appendix).

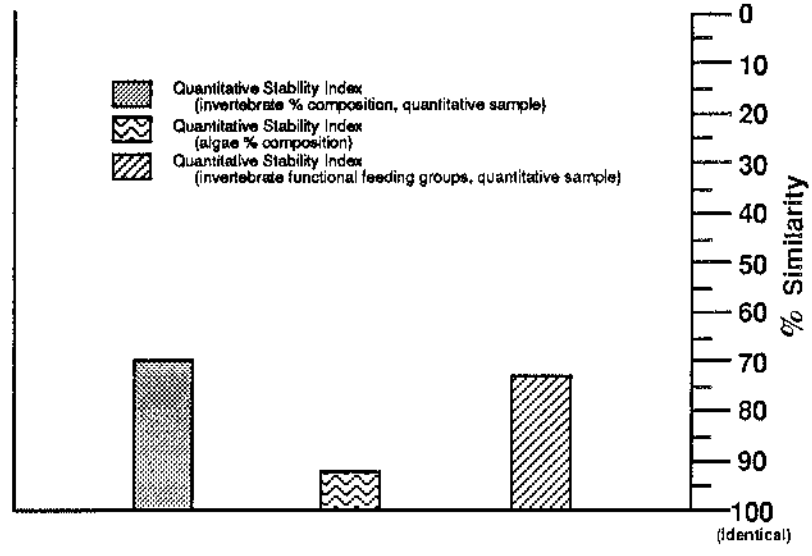
Nutrients were analyzed in the effluent sample, and at Stations 2 through 5 (Appendix). Nitrate-nitrite was fairly high at 14 mg/L N, and decreased along the route to the bay (4.6 mg N/l and 2.4 mg N/l at Stations 3 and 4, respectively). This form of nitrogen is bioavailable, as indicated by the lush growth of periphyton in Saufley Ditch. Total phosphorus values may be deceiving. As reported, the effluent contained 0.91 mg P/l, and was below the 0.4 mg P/l detection limit in the other Saufley Ditch stations. Phosphorus is known to stimulate algal growth at concentrations substantially less than this detection limit. Therefore, it is probable that phosphorus addition by the effluent is contributing to the extensive production of algae along the swale.

Results of Algal Growth Potential (AGP) tests demonstrated that Saufley Ditch (which is not Waters of the State) was fairly effective in reducing nutrient loadings to the bay. The AGP of the effluent was very high (58.8 mg dry wt/l), which is not unusual for sewage treatment plants. Above the point of discharge (Station 2), AGP was 3.8 mg dry wt/l, and increased by over 1000% to 44.0 mg dry wt/l at Station 3. Near the dam at Station 4 the AGP had dropped to 22.3 mg dry wt/l. Apparently, this decrease was possible due to assimilative capacity of the algae growing on the concrete swale. Below the dam in Perdido Bay, AGP measured at Stations 5 and 6 was 8.5 and 9.6 mg dry wt/l, respectively. While the 5 mg wt/l AGP "freshwater problem threshold" does not apply in estuarine systems, the observed levels are higher than expected for a pristine system (Raschke and Schultz 1987).

Results of past algal assays performed by the Biology Section in the same general area (Santa Rosa Sound, Perdido Bay, and Big Lagoon) indicated dry weights ranging from <1 to 5.9 mg dry wt/l. In Pensacola Bay, AGP assays were run at a site believed to be influenced by discharge from the Pensacola Main Street STP, and yielded 7.3 mg dry wt/l.

The effluent sample was toxic to the water flea, *Ceriodaphnia dubia*, in the 48 hour static acute bioassay. Because half of the test organisms died, the LC_{50} can be estimated as 100%. No mortality occurred in the *Pimephales promelas* test (Appendix).

Measures of benthic macroinvertebrate community health did not indicate a significant amount of difference between the two Perdido Bay sites. The figure on p. 2 indicates the degree of difference between 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



Effect of discharge on receiving stream
(measured as similarity between control and test sites).

reference. The figure on p. 3 summarizes similarities between the sites. Smaller similarities (lower percentages) generally correspond with greater degradation.

Taxa richness was identical (17) at both sites, which is considered somewhat low for an estuarine system (see taxa list in Appendix). This portion of Perdido Bay is known to be stressed, both from natural causes (D.O. stratification, drastic salinity fluctuations) and by paper mill effluents. A much greater proportion of dipterans was found at Station 5, mainly *Chironomus decorus* group, a freshwater organism known to be tolerant to organic enrichment. Station 6 was dominated by the marine pelecypod, *Rangia cuneata*, which accounts for the greater percentage of collector-filterers found here. Diversity was 37.5% lower at the reference site.

Periphyton algae were collected above and below the discharge in Saufley Ditch. Species richness was decreased at the downstream station, indicating mild to moderate degradation. Community structure was quite similar, and each station was dominated by green algae. Above the discharge, the filamentous *Mougeotia* sp. was the most abundant. The dominant organism below the outfall was *Scenedesmus* sp., which is commonly found in polluted conditions, particularly sewage ponds. Chlorophyll *a* was high at both sites, and was surprisingly similar.

Conclusions

The effluent sample collected from Saufley Field Sewage Treatment Plant was toxic to the invertebrate, *Ceriodaphnia dubia*, but not to the fathead minnow, *Pimephales promelas*. This toxicity may have been related to the presence of an aromatic or an aliphatic compound tentatively identified in the organics analyses. Additionally, copper was detected in the effluent at a potentially lethal concentration (31 µg/L).

The concentrations of nutrients were somewhat elevated in the effluent, and bioavailable nitrogen decreased along the downstream gradient in Saufley Ditch (a concrete swale which is not Waters of the State). Algal growth potential tests suggested that the assimilative capacity of the algae growing on the swale is aiding in nutrient removal before the effluent reaches the bay. This method of nutrient removal can be best utilized if the algae is periodically harvested and removed from the system. In the bay, AGP levels were somewhat higher than expected at both stations, probably due to the widespread influence of point and non-point sources of nutrient input to Perdido Bay. Although the influence from this particular sewage treatment plant cannot be isolated as the sole factor in nutrient enrichment, AGP in this area of the bay was higher than that measured in other studies involving Pensacola and Perdido Bays, and Big Lagoon.

The benthic macroinvertebrate communities at both Perdido Bay sites were indicative of moderately stressed conditions. This stress is probably a result of both natural (extreme salinity fluctuations, D.O. stratification) and anthropogenic (paper mill effluent) causes. The differences in community structure and dominant taxa may not have been so distinct had a comparison of the two stations occurred simultaneously.

The periphyton community observed in Saufley Ditch below the point of discharge was somewhat degraded compared to upstream populations. Taxa richness was reduced at the test site and the dominant algal taxon found there is known to thrive in eutrophic conditions. However, the overall community structure and algal biomass (measured as chlorophyll *a*) was not significantly different between sites.

Literature Cited

Environmental Protection Agency. 1974. Marine algal assay procedure: Bottle test. Nat'l Environ. Res. Center, Office of Res. and Dev., U.S. EPA, Corvallis, Oregon. 43 p.

Florida Department of Environmental Regulation. 1980. Bioassay of Saufley Field sewage treatment plant, Escambia County, Florida. Bureau Wat. Anal. 8 p.

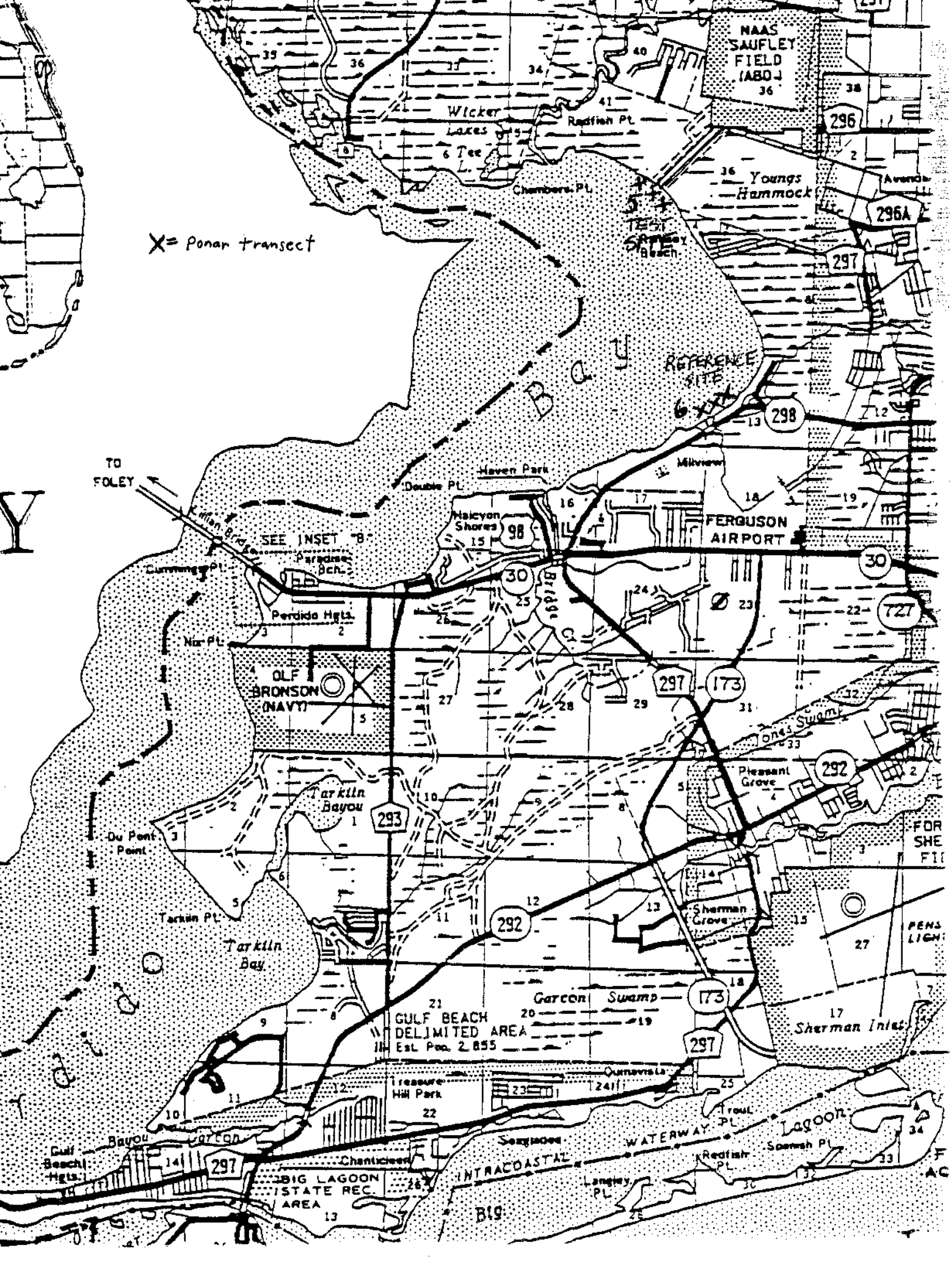
Florida Department of Environmental Regulation. 1985. Quality assurance manual for performing acute toxicity tests. 2nd edition. Fla. Dept. Environmental Regulation, Biology Section, Tallahassee. 53 pp.

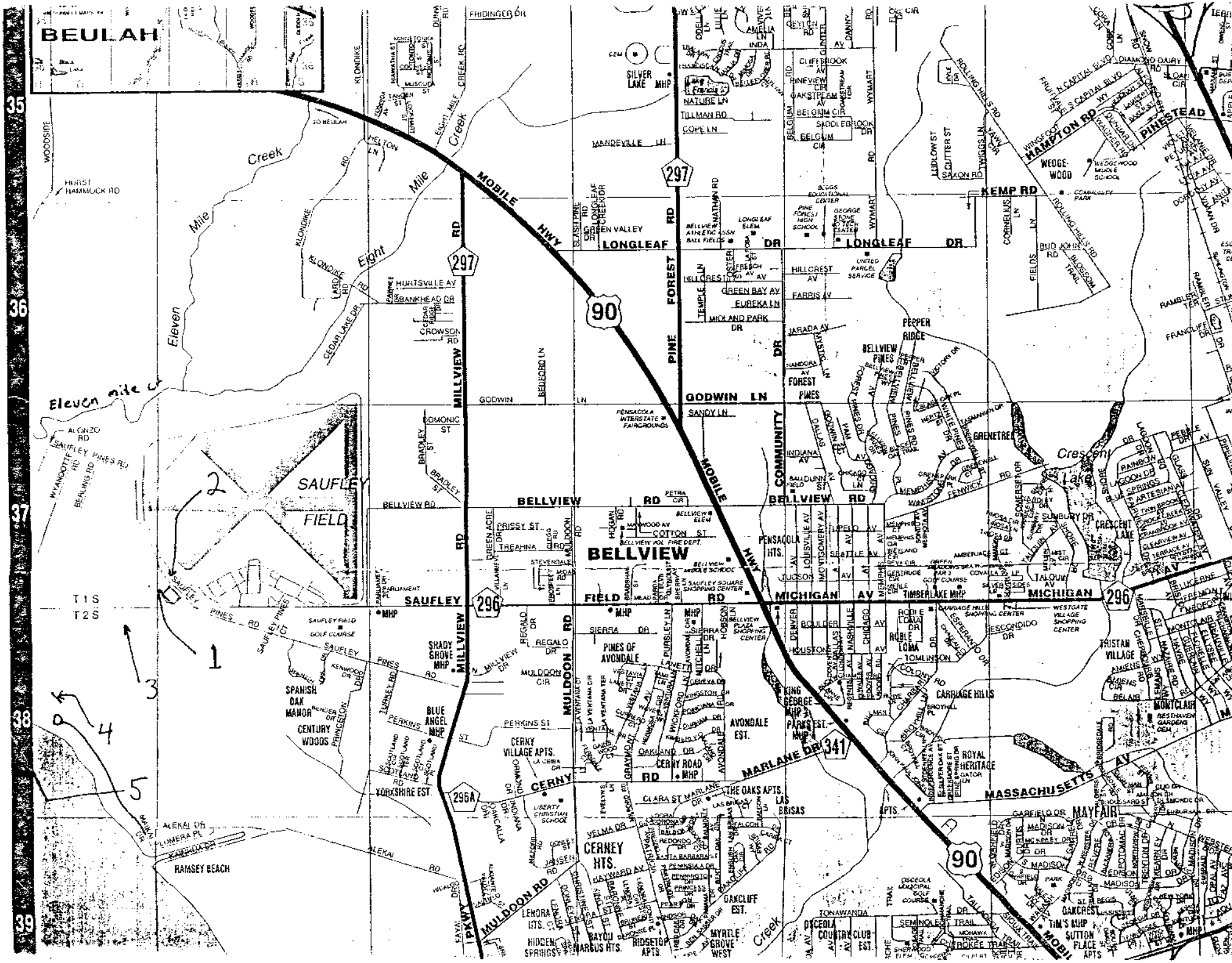
Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. U. S. Environ. Prot. Agency, EPA-600/9-78-018. 126 p.

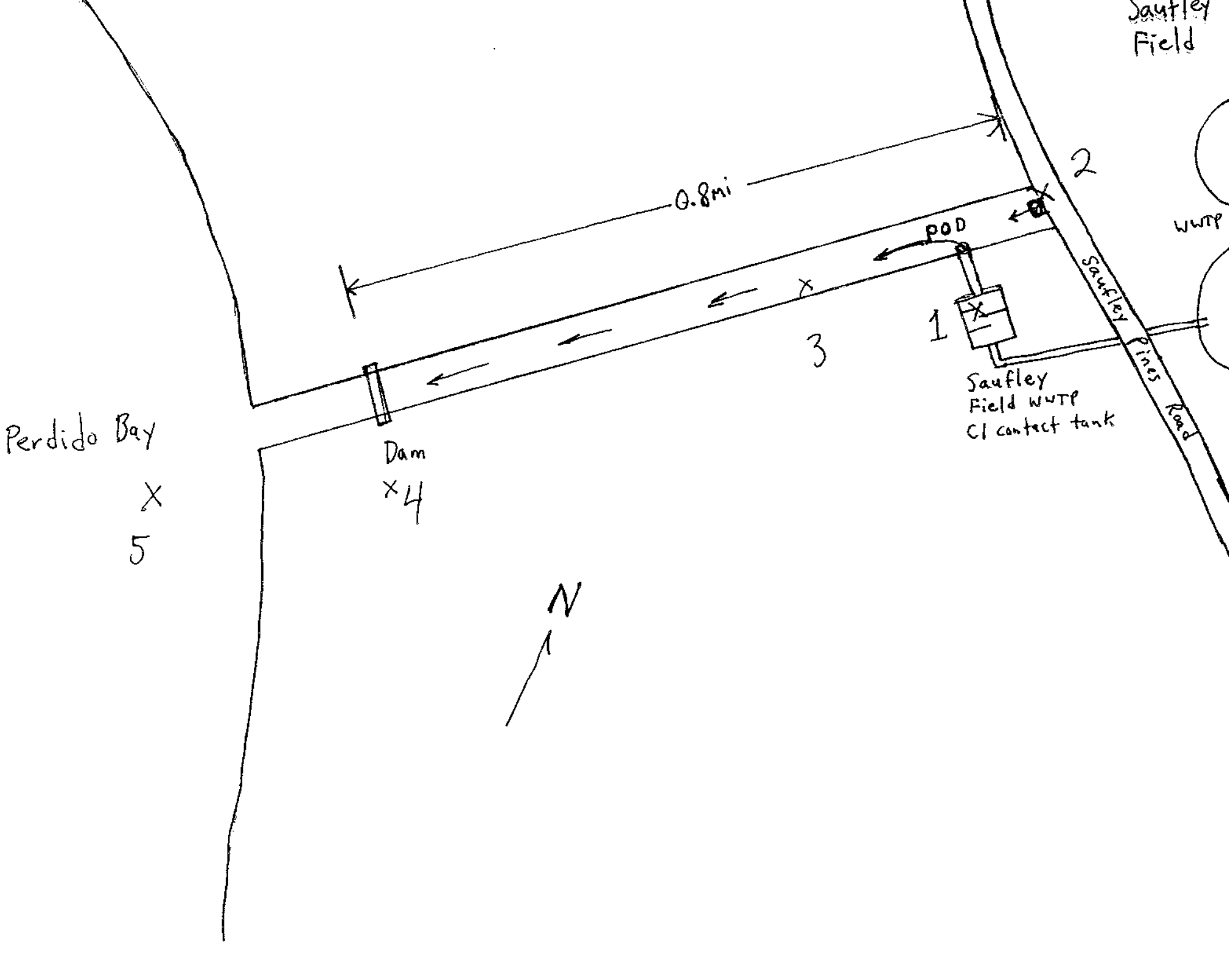
Peltier, W. H. and C. I. Weber. 1985. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 3rd edition. EPA/600/4-85/013. U. S. EPA, Cincinnati, Ohio. 216 pp.

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.

Ross, L. T. 1990. Methods for aquatic biology. Fla. Dept. Environ. Reg. Tech. Ser. 10(1): 1-47.


X= Ponar transect
B a y
REFERENCE SITE
NAAS SAUFLEY FIELD (ABD)
Wicker Lakes
Redfish Pt.
Chambers Pt.
Youngs Hammock
TEST SITE
Haven Park
Double Pt.
Halcyon Shores
FERGUSON AIRPORT
SEE INSET "B"
Paradise Bch.
Currents Pt.
Perdido Hgts.
Nix Pt.
GULF BRONSON (NAVY)
Tarkiln Bayou
Du Pont Point
Tarkiln Pt.
Tarkiln Bay
Garcon Swamp
GULF BEACH DELIMITED AREA
Est. Pop. 2,855
Sherman Inlet
Sherman Grove
Pleasant Grove
Treasure Hill Park
Gulf Beach Hgts.
Bayou Garcon
Chanticleer
BIG LAGOON STATE REC. AREA
INTRACOASTAL WATERWAY
Seagrove
Redfish Pl.
Spanish Pl.
Langley Pl.
Trout Pl.
Lagoon
Big
TO FOLEY
Millview
Quintavia La.
296
296A
297
298
30
98
727
173
292
293


BEULAH
35
36
37
38
39
Eleven Mile Creek
Eight Mile Creek
MOBILE HWY
90
297
296
296A
341
MILLVIEW RD
PINE FOREST RD
MULDOON RD
PKWY
LONGLEAF DR
KEMP RD
GODWIN LN
BELLVIEW RD
SAUFLEY FIELD RD
MICHIGAN AV
MARLANE DR
CERNY RD
COMMUNITY DR
MASSACHUSETTS AV
HAMPTON RD
PINESTEAD
Eleven mile cr
SAUFLEY
FIELD
BELLVIEW
PENSACOLA HTS.
PEPPER RIDGE
BELLVIEW PINES
FOREST PINES
GRENETREE
Crescent Lake
SILVER LAKE MHP
WEDGEWOOD
SADDLEBROOK
TIMBERLAKE MHP
TRISTAN VILLAGE
CARRIAGE HILLS
ROYAL HERITAGE
MAYFAIR
OAKCREST
SUTTON PLACE APTS
TIM'S MHP
SHADY GROVE MHP
BLUE ANGEL MHP
SPANISH OAK MANOR
CENTURY WOODS
CERNY VILLAGE APTS.
CERNY HTS.
PINES OF AVONDALE
AVONDALE EST.
OAKCLIFF EST.
KING GEORGE MHP
PARKS MHP
THE OAKS APTS.
LAS BRISAS APTS.
YORKSHIRE EST.
RAMSEY BEACH
HIDDEN SPRINGS
BAYOU MARCUS HTS.
RIDGETOP APTS.
MYRTLE GROVE WEST
LENORA HTS.
OSCEOLA COUNTRY CLUB EST.
SAUFLEY FIELD GOLF COURSE
T1S
T2S
1
2
3
4
5


Saufley Field
0.8mi
POD
2
WWTP
Saufley Pines Road
1
3
Saufley Field WWTP Cl contact tank
Perdido Bay
Dam
4
5
N

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

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDER NW DIST	STORET STATION NUMBER: 33.01.00A5	DATE (M/D/Y): 04-23-91	RECEIVING BODY OF WATER: Perdido Bay

REMARKS: Bio Transect across Saufley Field Discharge Ditch	LOCATION: near Saufley Field Discharge Ditch	FIELD ID/NAME: # 5

Habitat Parameter / score	Excellent	Good	Fair	Poor
Littoral Alterations 8	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 15	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 2	>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 6	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 38

COMMENTS: NO SUBMERGED SEA GRASS, ONLY ONE SMALL PATCH OF *JUNCUS roemerianus*
NO OYSTER BARS, VERTICAL SUBSTRATES CONSISTS OF OLD PILINGS

ANALYSIS DATE: 04-23-91	ANALYST: G. BUTTS	SIGNATURE: Glenn Butts

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

SUBMITTING AGENCY CODE: 8010 SUBMITTING AGENCY NAME: FDER NW DIST.	STORET STATION NUMBER: 33.01.0006	DATE (M/D/Y): 04-23-91	RECEIVING BODY OF WATER: Perdido Bay

REMARKS: Periphyton rack in place use old PNS data for Biota	LOCATION: South Shore along 4A 98 (Lillian Hwy), Millview	FIELD ID/NAME: # 6

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 15	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 2	>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 4	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 5	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 33

COMMENTS: No submerged sea grass, no oyster bars, patches of Juncus roemerianus, phragmites, Spartina; vertical pilings, sea walls

ANALYSIS DATE: 04-23-91	ANALYST: G. Butts	SIGNATURE: Glenn Butts

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: FDER NW DIST	STORET STATION NUMBER: 33.01.00A5	DATE (M/D/Y): 04-23-91	RECEIVING BODY OF WATER: Perdido Bay near Saufley Field Discharge Ditch

REMARKS: BIO TRANSECT ACROSS DITCH IN BAY, Periphyton racks	LOCATION: US NAVY SAUFLEY FIELD	FIELD ID/NAME: # 5

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
	25		25			50

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

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

Point-Source Pollution (list location and describe): CHAMPION PAPER CO. 22 MGD, AVONDALE WWTP 3 MGD

Estimated Stream Width (range, m): NA	Estimated Stream Depth (range, m): NA	yes
High Water Mark (m above bed): —	Velocity (range, m/s): NA	Impounded ☐ Channelized ☐

Canopy Cover % (check box): Open: ☒ Lightly Shaded: ☐ Moderately Shaded: ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

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

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

Sediment Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☒ Sand: ☒ Shell: ☐ Other: ☐

Substrate Types (estimated % surface coverage):

Limestone:		Sand/Silt/Clay Mix:	
Consolidated Clay:		Clay/Silt (inorganic):	
Gravel/Shell	15	Coarse Organic Debris:	5
Sand:	75	Mud/Muck (organic):	5

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
Top	23.86	9.52	Secchi Depth (m):	>1.0
Mid-depth			pH (SU):	7.57
Bottom			Conductivity (µmho/cm):	9100
			Other Parameters: ORP .259, SAL 4.8	

Stream Type (check box): Blackwater: ☐ Deep Aquifer Fed: ☐ Surficial Aquifer Fed: ☐ Alluvial: ☐ Other: ☐ BAY

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

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

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

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

Weather Conditions:

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

ANALYSIS DATE: 04-23-91	ANALYST: G. BUTTS	SIGNATURE: Glenn Butts

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET

SUBMITTING AGENCY CODE: 8010 / SUBMITTING AGENCY NAME: EDER NW DIST	STORET STATION NUMBER: 33.01.0006	DATE (M/D/Y): 04-09-81	RECEIVING BODY OF WATER: Perdido Bay

REMARKS: Past PNS Data	LOCATION: South shore along HY 98 Millview	FIELD ID/NAME: H 6

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
			100			

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

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

Point-Source Pollution (list location and describe): CHAMPION PAPER, AVONDALE WWTP, SAUFLEY FIELD WWTP

Estimated Stream Width (range, m): NA	Estimated Stream Depth (range, m): NA	yes
High Water Mark (m above bed): —	Velocity (range, m/s): NA	Impounded ☐ Channelized ☐

Canopy Cover % (check box): Open: ☒ Lightly Shaded: ☐ Moderately Shaded: ☐ Heavily Shaded: ☐

SEDIMENT/SUBSTRATE

Sediment Odors: Normal: ☐ Sewage: ☒ Petroleum: ☐ Chemical: ☐ Anaerobic: ☐ Other: ☒ PAPER MILL

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

Sediment Deposits: Sludge: ☐ Paper Fiber: ☐ Mud: ☒ Sand: ☒ Shell: ☐ Other: ☒ foam

Substrate Types (estimated % surface coverage):

Limestone:		Sand/Silt/Clay Mix:	
Consolidated Clay:		Clay/Silt (inorganic):	
Gravel/Shell	25	Coarse Organic Debris:	10
Sand:	50	Mud/Muck (organic):	15

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
Top	21.0	9.05	Secchi Depth (m):	0.4
Mid-depth			pH (SU):	7.75
Bottom			Conductivity (µmho/cm):	9676
			Other Parameters: SAL 2	

Stream Type (check box): Blackwater: ☐ Deep Aquifer Fed: ☐ Surficial Aquifer Fed: ☐ Alluvial: ☐ Other: ☐ Bay

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

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

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

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

Weather Conditions:

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

ANALYSIS DATE: 04-09-81	ANALYST: G. Butts	SIGNATURE: Glenn Butts

17859/91-APR-23-14-02 Continued from Page 2

Analysis ID: W-PEST-CL SAUPLEY FIELD EFFLUENT
Chlorinated pesticide in water and waste
Analyzed: 14-MAY-1991 By: Adrian Niculescu
Authorized: 30-MAY-1991 By: Adrian Niculescu

Storet#	Analyte	Value	Units
39330	Aldrin	0.01 U	ug/L
39337	Alpha-BHC	0.01 U	ug/L
39338	Beta-BHC	0.01 U	ug/L
34259	Delta-BHC	0.01 U	ug/L
39340	Gamma-BHC	0.01 U	ug/L
39350	Chlordane	0.2 U	ug/L
39460	Chlorobenzilate	N	ug/L
39360	DDD-p,p'	0.02 U	ug/L
39365	DDE-p,p'	0.02 U	ug/L
39370	DDT-p,p'	0.05 U	ug/L
39380	Dieldrin	0.02 U	ug/L
	Endosulfan I	0.01 U	ug/L
	Endosulfan II	0.01 U	ug/L
34351	Endosulfan sulfate	0.05 U	ug/L
39390	Endrin	N	ug/L
34366	Endrin aldehyde	0.01 U	ug/L
39410	Heptachlor	0.01 U	ug/L
39420	Heptachlor epoxide	0.01 U	ug/L
39430	Isodrin	0.01 U	ug/L
39480	Methoxychlor	0.02 U	ug/L
	PCNB	0.05 U	ug/L
39400	Toxaphene	0.5 U	ug/L

Comment (1):
(2):

********** END OF REPORT **********

17848/91-APR-23-12-01/W-BNA Continued from Page 2

Storet#	Analyte	Value	Units
34596	Di-n-octyl phthalate	2 U	ug/L
34361	Endosulfan-I	3 U	ug/L
34356	Endosulfan-II	3 U	ug/L
34351	Endosulfan-sulfate	3 U	ug/L
39390	Endrin	3 U	ug/L
34366	Endrin-aldehyde	3 U	ug/L
34376	Fluoranthene	2 U	ug/L
34381	Fluorene	2 U	ug/L
39410	Heptachlor	3 U	ug/L
39420	Heptachlor-epoxide	3 U	ug/L
39700	Hexachlorobenzene	2 U	ug/L
34391	Hexachlorobutadiene	2 U	ug/L
34396	Hexachloroethane	2 U	ug/L
34386	Hexachlorocyclypentadiene	5 U	ug/L
34403	Indeno(1,2,3-cd)pyrene	5 U	ug/L
34408	Isophorone	2 U	ug/L
34696	Naphthalene	2 U	ug/L
34447	Nitrobenzene	2 U	ug/L
34438	N-Nitrosodimethylamine	2 U	ug/L
34428	N-Nitrosodi-n-propylamine	2 U	ug/L
34433	N-Nitrosodiphenylamine	2 U	ug/L
34671	PCB-1016	1.0E+03 U	ug/L
39488	PCB-1221	1.0E+03 U	ug/L
39492	PCB-1232	1.0E+03 U	ug/L
39496	PCB-1242	1.0E+03 U	ug/L
39500	PCB-1248	1.0E+03 U	ug/L
39504	PCB-1254	1.0E+03 U	ug/L
39508	PCB-1260	1.0E+03 U	ug/L
	PCB-1262	1.0E+03 U	ug/L
34461	Phenanthrene	2 U	ug/L
34469	Pyrene	2 U	ug/L
39400	Toxaphene	1.0E+03 U	ug/L
34551	1,2,4-Trichlorobenzene	2 U	ug/L
34462	4-Chloro-3-methyl phenol	2 U	ug/L
34586	2-Chlorophenol	2 U	ug/L
34601	2,4-Dichlorophenol	2 U	ug/L
34606	2,4-Dimethylphenol	2 U	ug/L
34616	2,4-Dinitrophenol	15 U	ug/L
34657	2-Methyl-4,6-dinitrophenol	15 U	ug/L
34591	2-Nitrophenol	2 U	ug/L
34646	4-Nitrophenol	15 U	ug/L
39032	Pentachlorophenol	5 U	ug/L
34694	Phenol	2 U	ug/L
34621	2,4,6-Trichlorophenol	2 U	ug/L

Comments (1) Tentative identification of an
(2) aromatic compound, est. concentration
(3) 120 ug/L, & an aliphatic compound,
(4) est. concentration 16 ug/L.
(5)
(6)

Sample ID: 18301/91-APR-26-10-01 Matrix: W-EFFLUENT
Location: Saufley Field WWTP
Field ID: #1
Collected: 22-APR-1991 10:00 By: G. Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 29-MAY-1991 By: Kate Brackett
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	124 J	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	15 U	ug/L
01007	Barium	13	ug/L
01012	Beryllium	0.5 U	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	6.0 J	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	3 U	ug/L
01042	Copper	31	ug/L
01045	Iron	195	ug/L
01051	Lead	15 U	ug/L
00927	Magnesium	1.9	mg/L
01055	Manganese	13	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	8.0	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	3 U	ug/L
00929	Sodium	71.3	mg/L
01082	Strontium	16	ug/L
01059	Thallium	50 U	ug/L
01087	Vanadium	3 U	ug/L
01092	Zinc	33	ug/L
Comment	NONE		

Sample ID: 18302/91-APR-26-10-02 Matrix: W-SURF-FRH
Location: Saufly Field Ditch above WWTP
Field ID: #2
Collected: 22-APR-1991 10:45 By: G. Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

18302/91-APR-26-10-02 Continued on Page 3

18302/91-APR-26-10-02 Continued from Page 2

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 29-MAY-1991 By: Kate Brackett
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	91 J	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	15 U	ug/L
01007	Barium	11	ug/L
01012	Beryllium	1 T	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	10.4 J	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	3 U	ug/L
01042	Copper	5 U	ug/L
01045	Iron	24	ug/L
01051	Lead	15 U	ug/L
00927	Magnesium	0.8	mg/L
01055	Manganese	3 T	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	0.7	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	3 U	ug/L
00929	Sodium	1.5	mg/L
01082	Strontium	49	ug/L
01059	Thallium	50 U	ug/L
01087	Vanadium	3 U	ug/L
01092	Zinc	5 U	ug/L
Comment	NONE		

Sample ID: 18303/91-APR-26-10-03 Matrix: W-EFFLUENT
Location: Saufly Field Ditch 100yds below WWTP
Field ID: #3
Collected: 22-APR-1991 11:15 By: G. Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

18303/91-APR-26-10-03 Continued on Page 4

18303/91-APR-26-10-03 Continued from Page 3

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 29-MAY-1991 By: Kate Brackett
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	162 J	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	15 U	ug/L
01007	Barium	9	ug/L
01012	Beryllium	1 T	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	8.7 J	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	3 U	ug/L
01042	Copper	13	ug/L
01045	Iron	252	ug/L
01051	Lead	15 U	ug/L
00927	Magnesium	1.3	mg/L
01055	Manganese	8 T	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	3.8	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	3 U	ug/L
00929	Sodium	35.8	mg/L
01082	Strontium	22	ug/L
01059	Thallium	50 U	ug/L
01087	Vanadium	3 U	ug/L
01092	Zinc	11	ug/L
Comment	NONE		

Sample ID: 18304/91-APR-26-10-04 Matrix: W-FIELD-BK
Location: Saufly Field Blank
Field ID: Blank
Collected: 22-APR-1991 00:00 By: G. Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

18304/91-APR-26-10-04 Continued on Page 5

18304/91-APR-26-10-04 Continued from Page 4

Analysis ID: W-ICP-23
ICP multielement analysis for water samples
Analyzed: 29-MAY-1991 By: Kate Brackett
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
01106	Aluminum	28 T	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	15 U	ug/L
01007	Barium	1 U	ug/L
01012	Beryllium	1 T	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	0.02 T	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	3 U	ug/L
01042	Copper	5 U	ug/L
01045	Iron	5 T	ug/L
01051	Lead	16 T	ug/L
00927	Magnesium	0.02 U	mg/L
01055	Manganese	1 U	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	0.1 U	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	3 U	ug/L
00929	Sodium	0.05 T	mg/L
01082	Strontium	3 U	ug/L
01059	Thallium	50 U	ug/L
01087	Vanadium	3 U	ug/L
01092	Zinc	5 U	ug/L
Comment	NONE		

********** END OF REPORT **********

Sample ID: 17827/91-APR-23-10-01 Matrix: W-EFFLUENT
Location: Saufley Field WWTP
Field ID: #1
Collected: 22-APR-1991 10:00 By: Glenn Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 15-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	0.22	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 20-MAY-1991 By: Tim Fitzpatrick
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	14 A	mg N/L

Analysis ID: W-TKN
TKN for water sample
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	2.53	mg N/L

Analysis ID: W-TOC
Total organic carbon
Analyzed: 9-MAY-1991 By: Vijaya Reddy
Authorized: 30-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00680	TOC	3	mg C/L

17827/91-APR-23-10-01 Continued from Page 2

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00665	Total-P	0.91 A	mg P/L

Sample ID: 17828/91-APR-23-10-02 Matrix: W-SURF-FRH
Location: Saufley Field Ditch above STP (Background)
Field ID: #2
Collected: 22-APR-1991 10:45 By: Glenn Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 15-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	0.05	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 20-MAY-1991 By: Tim Fitzpatrick
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	1.0 A	mg N/L

17828/91-APR-23-10-02 Continued on Page 4

17828/91-APR-23-10-02 Continued from Page 3

Analysis ID: W-TKN
TKN for water sample
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	0.20 U	mg N/L

Analysis ID: W-TOC
Total organic carbon
Analyzed: 9-MAY-1991 By: Vijaya Reddy
Authorized: 30-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00680	TOC	1 K	mg C/L

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00665	Total-P	0.2 U	mg P/L

Sample ID: 17829/91-APR-23-10-03 Matrix: W-SURF-FRH
Location: Saufley Field Ditch 100yds Downstream
Field ID: #3
Collected: 22-APR-1991 11:15 By: Glenn Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

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Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 15-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	0.08	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 20-MAY-1991 By: Tim Fitzpatrick
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	4.6 A	mg N/L

Analysis ID: W-TKN
TKN for water sample
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	0.75	mg N/L

Analysis ID: W-TOC
Total organic carbon
Analyzed: 9-MAY-1991 By: Vijaya Reddy
Authorized: 30-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00680	TOC	1	mg C/L

17829/91-APR-23-10-03 Continued on Page 6

17829/91-APR-23-10-03 Continued from Page 5

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 24-MAY-1991 By: John Montana
Authorized: 6-JUN-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00665	Total-P	0.4 U	mg P/L

Sample ID: 17830/91-APR-23-10-04 Matrix: W-SURF-FRH
Location: Saufley Field Ditch at Dam,near Perdido Bay
Field ID: #4
Collected: 22-APR-1991 11:35 By: Glenn Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 15-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	0.08	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 20-MAY-1991 By: Tim Fitzpatrick
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	2.4 A	mg N/L

17830/91-APR-23-10-04 Continued on Page 7

17830/91-APR-23-10-04 Continued from Page 6

Analysis ID: W-TKN
TKN for water sample
Analyzed: 10-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	0.51	mg N/L

Analysis ID: W-TOC
Total organic carbon
Analyzed: 9-MAY-1991 By: Vijaya Reddy
Authorized: 30-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00680	TOC	2	mg C/L

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 24-MAY-1991 By: John Montana
Authorized: 6-JUN-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00665	Total-P	0.4 U	mg P/L

Sample ID: 17831/91-APR-23-10-05 Matrix: W-SURF-SLT
Location: Perdido Bay at Saufley Field Ditch Discharge
Field ID: #5
Collected: 22-APR-1991 12:00 By: Glenn Butts
Authorized: 18-JUN-1991 By: Tim Fitzpatrick
Type: Grab Sample
Lab Comments:
Field Comments:

17831/91-APR-23-10-05 Continued on Page 8

17831/91-APR-23-10-05 Continued from Page 7

Analysis ID: W-NH3
Analysis for ammonia in water
Analyzed: 15-MAY-1991 By: John Montana
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00610	Ammonia-N	0.18	mg N/L

Analysis ID: W-NO2NO3
Analysis for nitrite+nitrate in water
Analyzed: 20-MAY-1991 By: Tim Fitzpatrick
Authorized: 18-JUN-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00630	NO2NO3-N	0.052 T	mg N/L

Analysis ID: W-TKN
TKN for water sample
Analyzed: 27-MAY-1991 By: John Montana
Authorized: 6-JUN-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00625	N_KJEL_TOT	0.2 U	mg N/L

Analysis ID: W-TOC
Total organic carbon
Analyzed: 9-MAY-1991 By: Vijaya Reddy
Authorized: 30-MAY-1991 By: Tim Fitzpatrick

Storet#	Analyte	Value	Units
00680	TOC	2	mg C/L

17831/91-APR-23-10-05 Continued on Page 9

17831/91-APR-23-10-05 Continued from Page 8

Analysis ID: W-TP
Analysis for total phosphorus in water
Analyzed: 27-MAY-1991 By: John Montana
Authorized: 6-JUN-1991 By: Tim Fitzpatrick
Sample exceeded holding time prior to analysis.

Storet#	Analyte	Value	Units
00665	Total-P	0.20 A	mg P/L

********** END OF REPORT **********

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: SAUFLEY FIELD NAS STP
Address/City:
County: ESCAMBIA
Contact/District: GLEN BUTTS / NW
NPDES Permit #: FL0FE43087 Outfall #: 001

Sample Collection: Date 4-22-91 Time 1000
Test Beginning: Date 4-23-91 Time 1110
Test Ending: Date 4-25-91 Time 0830
Test Organism: C. DUBIA
Life Stage/Age: < 24 HRS

Test Number: 1 of 2
Test Type: (Screening) Definitive
(Static) Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7@7.969	8.7@23	12914@24.3@1389	21.9@23.9
24 hr	7@7.969	8.7@23	1401@24.3	20@24.1
48 hr	7@7.969	8.9@21.5	1386@24	21@23.8

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL	A	5	5	5	9.0	8.4	10.9	6.6	8.2	7.4	21.0	22.3	21.5	156	162	164
CONTROL	B	5	5	5												
CONTROL	C	5	5	5												
CONTROL	D	5	5	5												
100%	A	5	4	1	9.0	8.5	11.0	6.9	7.8	7.8	21.0	21.8	21.5	467	484	476
100%	B	5	5	4												
100%	C	5	4	2												
100%	D	5	4	3												
Measured/Loaded by:		MF	MF	MF	KP	MF	KP	KP	MF	KP	KP	MF	KP	KP	MF	MF
Recorded by:		MF	MF	MF	LB	MF	MF	LB	MF	MF	LB	MF	MF	LB	MF	MF

Investigators' Signatures

Kim Pearce
Maribeth Fairchild
Lisa Burton

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl:					
Lab Tot. Resid. Cl:			0.0	Hach	MF
Alkalinity:	127	62	28	Hach	MF
Hardness:	128	70	20	Hach	MF
Total Ammonia:	0.0	0.0	0.24	Hach	MF

Ammonia meter slope:

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: SAUFLEY FIELD NAS STP
Address/City:
County: ESCAMBIA
Contact/District: GLEN BUTTS / NW
NPDES Permit #: 1017F43037 Outfall #: 001

Sample Collection: Date 4-22-91 Time 1000
Test Beginning: Date 4-23-91 Time 1110
Test Ending: Date 4-25-91 Time 0830
Test Organism: KP ~~N. LECDS~~ P. PROMEL
Life Stage/Age: 13 DAYS

Test Number: 2 of 2 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7@7;9@9	8.7@23	1394 @ 24.3@1339	21.9@23.9
24 hr	7@7;9@9	8.7@23	1401@24.3	20@24.1
48 hr	7@7;9@9	8.9@21.5	1386@24.0	21@23.8

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL	76	5	5	5	8.7	8.1	10.3	7.6	7.9	8.2	20.5	21.4	20.5			
CONTROL	7	5	5	5	8.9	8.2	10.1	7.7	7.9	8.2				239	229	244
100%	77	5	5	5	8.6	7.9	10.0	6.8	7.3	7.5	23.0	21.3	20.5			
100%	8	5	5	5	8.6	7.9	10.2	6.8	7.3	7.5				447	440	437
Measured/Loaded by		MF	MF	MF	KP	MF	KP	KP	MF	KP	KP	MF	KP	KP	MF	KP
Recorded by		MF	MF	MF	LB	MF	MF	LB	MF	MF	LB	MF	MF	LB	MF	KP

Investigators' Signatures

Kim Pearce
Mendel Hamblin
Lynn Bunker

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:	122	62	21	Nol	MF
Hardness:	128	70	20	14.4	MF
Total Ammonia:	0.0	0.0	0.24	Hach	MF

Ammonia meter slope:

Benthic macroinvertebrate taxa identified and abundance/m^2 collected via Ponar dredge from Station 5 in Perdido Bay, near the Saufley Field STP outfall (1991), and from Station 6, an ambient monitoring site in Perdido Bay (numbers for Station 6 are means from samplings in 1981 and 1982).

	Station 5	Station 6
Cumacea		
Oxurostylis smithi	–	12
Diptera		
Chironomus decorus grp.	462	–
Cryptochironomus sp.	25	–
Polypedilum illinoense	25	–
Tanytarsus sp.	62	–
Unknown Chironomidae sp.	–	37
Gastropoda		
Neretina reclivata	462	12
Pyramidella fusca	62	835
Hirudinea		
Unknown Hirudinea sp.	–	25
Malacostraca		
Corophium louisianum	–	12
Edotea montosa	12	100
Gammarus macromucronatus	62	–
Grandidierella bonnieroides	175	461
Leptochelia rapax	–	137
Nemertea		
Carinoma tremaphoros	100	125
Oligochaeta		
Undetermined oligochaete sp.	12	75
Pelecypoda		
Rangia cuneata	212	1285
Polychaeta		
Capitella capitata	12	12
Eteone heteropoda	–	50
Hobsonia florida	75	–
Laeonereis culveri	187	224
Neanthes succinea	12	–
Nereis succinea	–	12
Polydora ligni	–	12
Polydora websteri	75	–

Benthic macroinvertebrate taxa identified and number collected via timed qualitative (dip net) sample from Station 5 in Perdido Bay, near the Saufley Field STP outfall. Relative proportions of the taxa were maintained.

	Station 5
Diptera	
Chironomus decorus grp.	44
Dicrotendipes modestus	9
Dicrotendipes neomodestus	1
Polypedilum illinoense	13
Tanytarsus sp.	30
Gastropoda	
Neretina reclivata	13
Malacostraca	
Edotea montosa	2
Gammarus macromucronatus	7
Gammarus sp.	2
Grandidierella bonnieroides	2
Palaemonetes pugio	1
Nemertea	
Carinoma tremaphoros	2
Malacobdella grossa	1
Oligochaeta	
Undetermined oligochaete sp.	3
Pelecypoda	
Rangia cuneata	3
Polychaeta	
Hobsonia florida	1
Laeonereis culveri	5

Periphyton taxa found upstream and 100 yards downstream of Saufley Field STP. Relative proportions of the taxa were maintained.

	Station 2	Station 3
Diatoms		
Achnanthes hustedtii	–	3
Achnanthes linearis	–	1
Achnanthes microcephala	1	–
Achnanthes minutissima	9	2
Anomoeoneis serians	10	–
Anomoeoneis vitrea	11	–
Cymbella minuta	16	–
Gomphonema angustatum	–	13
Gomphonema parvulum	1	–
Navicula radiosa	1	–
Navicula sp.	–	4
Nitzschia amphibia	–	1
Nitzschia palea	–	8
Chlorophyta		
Characium sp.	1	–
Cosmarium sp.	4	–
Euastrum sp.	2	–
Gloeocystis sp.	11	18
Mougeotia sp.	102	–
Oedogonium sp.	16	–
Scenedesmus sp.	–	109
Tetraedron sp.	–	1
Cyanophyta		
Chroococcus sp.	13	10
Lyngbya sp.	1	–
Oscillatoria sp.	2	–

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 FL0021041 11	12 910422 17	18 X	19 S	20 4

Remarks

COPPER-31MG, UNDETERMINED AROMATICS

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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 FL0021041 11	12 910422 17	18 B	19 S	20 4

Remarks

TOXIC TO C. DUBIA

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