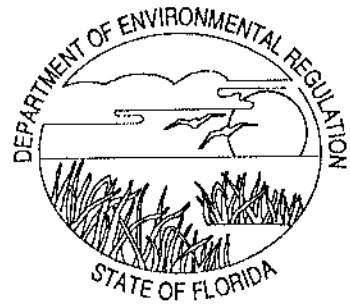


Biological Assessment of

City of Perry WWTP

Taylor County

NPDES #FL0026387

Sampled October 22, 1990

April 1991

Biology Section
Division of Administrative and Technical Services

Department of Environmental Regulation

Results of Fifth Year Inspections

Discharger:	City of Perry Wastewater Treatment Plant
County:	Taylor
NPDES Number:	FL0026387
State Permit Expiration Date:	March,1991 ?

Toxics Sampling Inspection (XSI)	
Date Sampled:	October 22, 1990
Results:	No deleterious levels of priority pollutants found.

Compliance Biomonitoring Inspection (CBI)	
Date Sampled:	October 22, 1990
Results:	Not toxic to *Ceriodaphnia dubia* or *Notropis leedsi*

Impact Bioassessment Inspection (IBI)	
Date Sampled:	October 22, 1990
Results:	Benthic macroinvertebrate and periphyton communities were healthy.

Water Quality Inspection (WQI)	
Date Sampled:	October 22, 1990
Results:	Slightly elevated nutrient concentrations did not cause problems in receiving water biota.

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

Introduction

Biological, chemical and toxicological data concerning the City of Perry Wastewater Treatment Plant were collected October 22, 1990, and analyzed. This information will be used to evaluate the facility's permit criteria. The plant is located in Perry, Taylor County, Florida. Effluent from the Perry facility is discharged into Spring Creek, which eventually flows into the Fenholloway River. This extended aeration wastewater treatment process utilizes a 1.25 MGD primary treatment facility followed by an oxidation pond in parallel with a 0.50 MGD secondary treatment and subsequent post-aeration with chlorination. All effluent is dechlorinated prior to discharge into Spring Creek. Sludge is treated by aerobic and anaerobic digestion and is de-watered using sludge drying beds. Permit limits are as follows: BOD 15 mg/l, TSS 30 mg/l, and TKN 10 mg/l.

There has been a history of problems in the past with increased BOD levels, inadequate flow rate monitoring, and presence of suspended solids. Subsequent major renovations in 1981 and 1985 seem to have solved these problems.

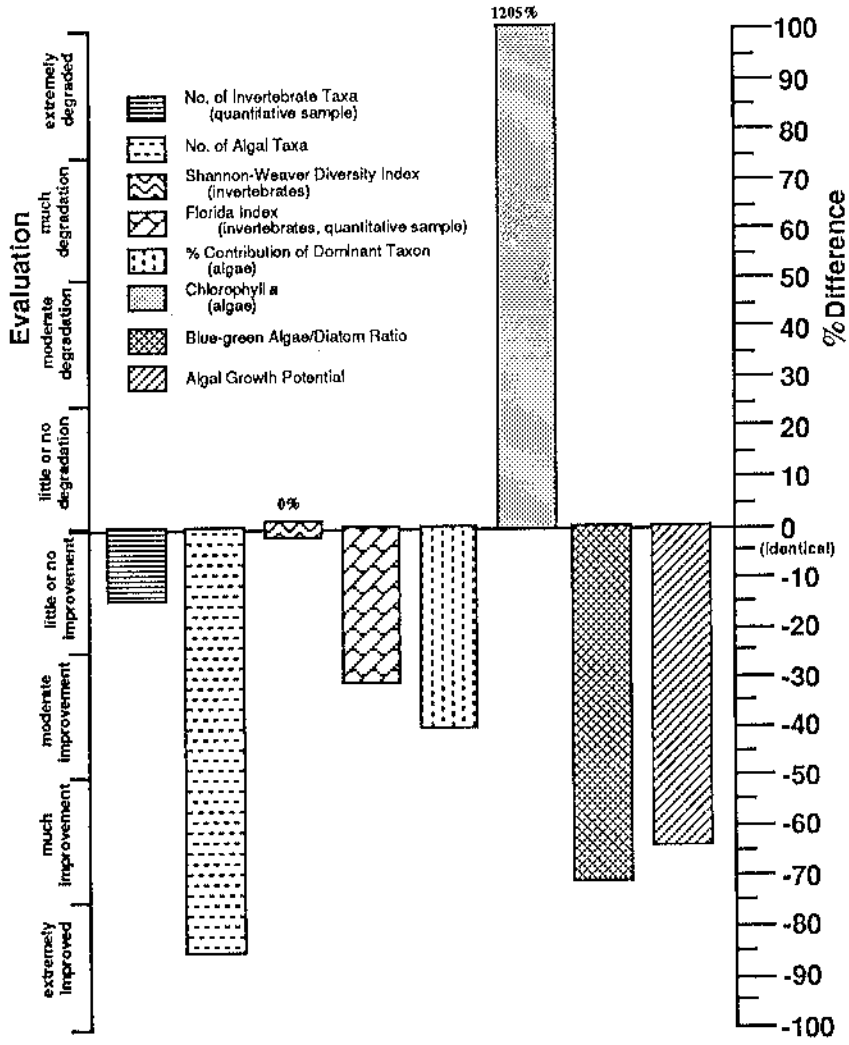
A March, 1990, inspection revealed that the plant appeared to be operating within all permit parameters.

Methods

The focus of this investigation was to determine the discharger's

Major characteristics of community structure of control and test sites.

	Control Site	Test Site
Macroinvertebrate Qualitative		
Number of Taxa	30	48
Florida Index	19	25
% Contribution of Dominant Taxon	13.2	12.2
% Ephemeroptera	13.2	12.9
% Gastropoda	19.0	10.7
% Odonata	12.4	19.0
% Coleoptera	3.3	6.8
% Diptera	17.4	43.8
% Pelecypoda	13.2	2.4
% Other	21.5	4.4
% Predators	27.0	33.4
% Collector-Gatherers	30.0	32.8
% Collector-Filterers	14.5	5.7
% Scrapers	26.9	20.6
% Shredders	1.1	5.8
% Parasites	0	.09
Macroinvertebrate Hester-Dendy		
Number of Taxa	34	39
Florida Index	20	26
Shannon-Weaver Diversity	3.3	3.3
% Diptera	74.3	93.5
%Ephemeroptera	17.7	1.7
% Trichoptera	1.2	1.2
% Odonata	2.0	1.0
% Gastropoda	1.6	.75
% Malacostraca	1.2	.75
% Other	2.0	.50
% Predators	26.5	23.8
% Collector-Gatherers	37.5	45.7
% Collector-Filterers	4.5	14.3
% Scrapers	10.4	1.9
% Shredders	17.5	14.1
% Parasites	0	0
Periphyton Algae		
Number of Taxa	21	39
% Contribution of Dominant Taxon	61.8	36.6
Chlorophyll *a* (mg/mm^2)	0.38	4.96
Blue-green/Diatom Abundance Ratio	2.4	0.7
% Blue-green	70.7	39.1
% Green	0	6.9
% Diatoms	29.3	52.9
% Other	0	1.1
Algal Growth Potential (mg dry wt/l)	0.39	0.14



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

effects on the receiving waters. A comparison of biological community health was made between a control site (located in Spring Creek upstream of the Perry outfall) and a test site (the area down gradient of the discharge). A habitat assessment was performed *in situ* to establish comparability between sites (Appendix). Supplemental physical/chemical data were also collected on the effluent and study sites. Acute screening toxicity bioassays, using *Ceriodaphnia dubia* and *Notropis leeds* 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 control and test sites. Methods used for all chemical analyses are on file at the Tallahassee DER Chemistry Laboratory.

Benthic macroinvertebrate communities were evaluated at control and test sites. Collection methods consisted of a timed (one hour per site) multi-substrate (*e.g.*, snags, vegetation, sediment) semi-quantitative effort. Additional invertebrate collections were accomplished using Hester-Dendy multiplate samplers which were incubated for 28 days (Ross 1990). Periphyton was sampled at both control and test sites by incubating glass microscope slides in a standard periphytometer for 28 days (Ross 1990). Chlorophyll *a* was also determined for periphyton communities (Ross 1990). Bacterial populations were analyzed for total and fecal coliforms following the methods of APHA (1989). Algal Growth Potential tests, using *Selenastrum capricornutum* as the test organism, followed Miller *et al.* (1978). Sediment from control and test sites was analyzed for grain size and percent organic matter (Ross 1990).

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. 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 (*i.e.*, many clean-water organisms are present). Excessive numerical dominance of a single type of organism (a high % contribution of dominant taxon) is usually associated with disturbance. An elevated blue-green algae to diatom ratio (calculated by dividing the number of individuals in the Cyanophyta by the number of individuals in the Bacillariophyta) is often indicative of nutrient enriched conditions. Czekanowski's Similarity Index is a multivariate ordination procedure which compares organism abundance and taxonomic structure between sites.

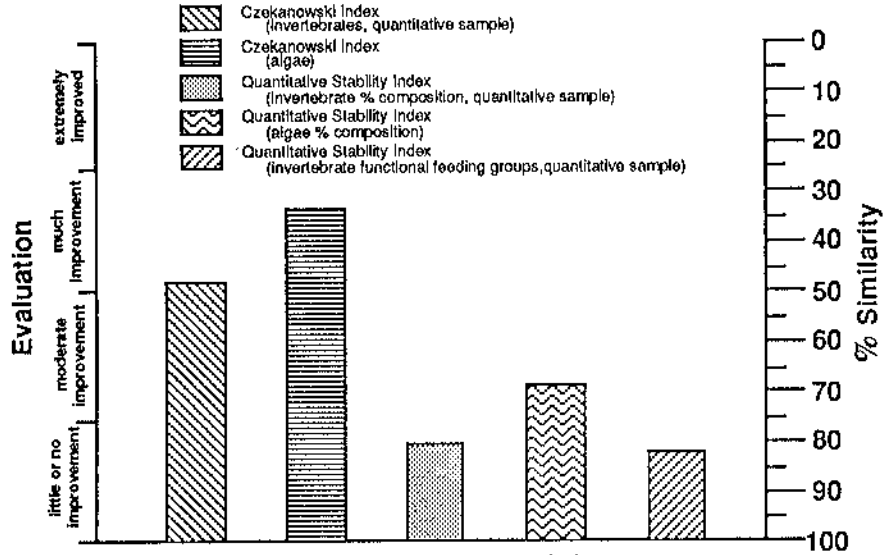
The determination of the Quantitative Stability Index (for taxonomic % composition) is a two step process. First, the relative proportions of major taxonomic groups are calculated for each site. Then, the lesser of the two percentages for each discrete taxonomic group is totaled. A QSI (% composition) 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 control and test sites involving the number of taxa, the diversity index, and the Florida Index are measured as the control site minus test site divided by the control site. The percent differences between sites involving the percent contribution of dominant taxon, chlorophyll *a*, blue-green algae to diatom ratio, and algal growth potential are measured as the test site minus control site divided by the control site.

The following personnel were involved in this investigation: Lyn Burton, Russel Frydenborg, Kathleen Lurding, and Sandra McClure (Tallahassee Biology Laboratory).

Results and Discussion

Habitat quality at the control site (Habitat Score = 52) was comparable to that of the test site (Habitat Score = 46) (Appendix). A large Floridan Aquifer spring discharges into Spring Creek about 400 meters upstream of the Perry WWTP outfall. At the time of sampling, this spring appeared to be the only source of water to the creek until the effluent entered. The pH was 7.8 and 7.7 at the upstream and downstream sites, respectively, which is typical of a deep aquifer fed system. Dissolved oxygen was below 4.0 mg/l at both sites, which is probably related to the close proximity of the spring input. The DO was 0.8 mg/l higher below the WWTP discharge. Conductivity was slightly higher downstream of the effluent (340 µmho/cm^2 at the test site, 290 µmho/cm^2 at the control site). Differences between study sites included: a greater availability of snag habitat at the control, and much higher sunlight penetration at the test site. The two areas were very similar in all other habitat assessment factors.



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

No organic priority pollutants were detected in the discharge. Aluminum (64 µg/l), iron (160 µg/l), and zinc (18 µg/l) were the only metals found in the effluent, and these concentrations are well below problem levels. The effluent did not cause mortality to either the fish, *Notropis leedsi*, or the invertebrate, *Ceriodaphnia dubia*, in 48 hour static toxicity tests.

Ortho-phosphate concentrations were elevated downstream of the outfall (from 0.14 mg/l above the discharge to 1.0 mg/l below the outfall) (Appendix). Nitrate-nitrite levels were also higher at the test site (from 0.12 mg/l to 1.4 mg/l). However, algal growth potential decreased slightly at the test site (from 0.39 mg algal dry weight/l at the control site to 0.14 mg/l downstream of the effluent). This suggests either the presence of growth inhibiting substance(s) or a lack of trace elements for algal growth at the test site. Total and fecal coliforms were low at both the control and test sites (Appendix).

Virtually all measures of benthic macroinvertebrate community health indicated that the test site was the same as or better than the control site. The upper left figure on page 2 indicates the degree of difference between the control 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 control. The lower right figure on this page summarizes similarities between the sites. Smaller similarities (lower percentages) generally correspond with greater degradation.

Hester-Dendy derived taxa richness and Florida Index values improved by 15% and 30%, respectively, when comparing the test site to the control. The Shannon-Weaver

diversity index was identical at the two sampling stations.

Most measures of periphyton community structure indicated that the test site was improved when compared to the control. There was an 85% increase in the number of taxa downstream of the discharge. Diatoms dominated the test site whereas blue green algae were most abundant upstream. Algal biomass, measured as chlorophyll *a*, increased from 0.4 mg/m^2 at the control site to 5.0 mg/m^2 downstream. By comparison, the average chlorophyll level at a low nutrient control station in the Suwannee River was 7 mg/m^2 (FDER 1985). As previously mentioned, an increased light level was a major factor influencing the algal community below the Perry WWTP discharge. Since the periphytic assemblage below the effluent was taxonomically rich and dominated by diatoms, this increase in chorophyll is not thought to be a problem.

Conclusions

Macroinvertebrate and periphyton communities were healthy downstream of the Perry WWTP discharge. Bioassay tests indicated no toxicity. Results of priority pollutant chemical analyses indicated that no toxic substances were present in the effluent. Although nutrients were somewhat elevated downstream of the discharge, no imbalances in biota occurred.

Literature Cited

American Public Health Assoc., American Water Works Assoc., and Water Pollution Control Federation. 1989. Standard Methods for the Examination of Water and Wastewater, 17th ed. New York, N.Y. 1268 p.

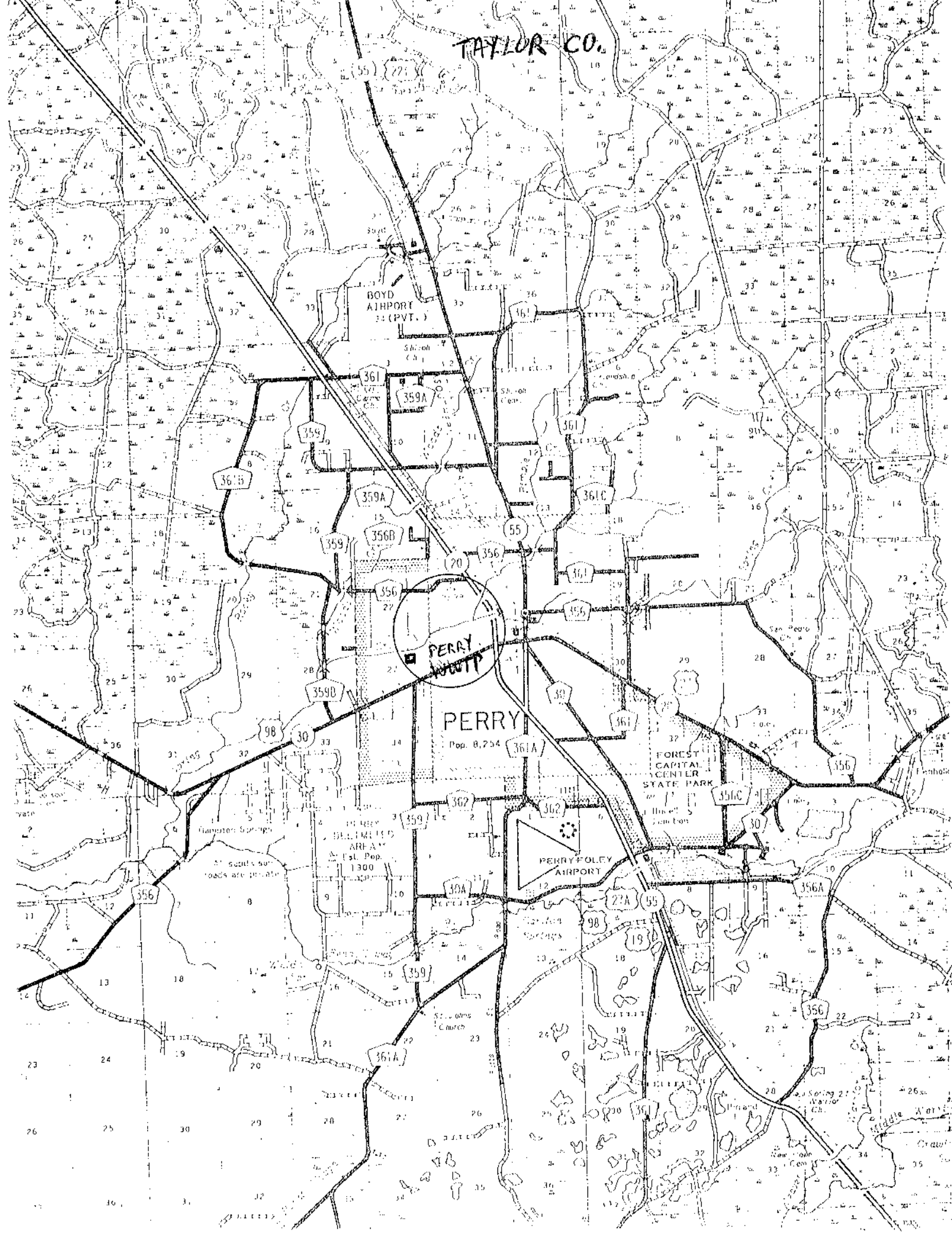
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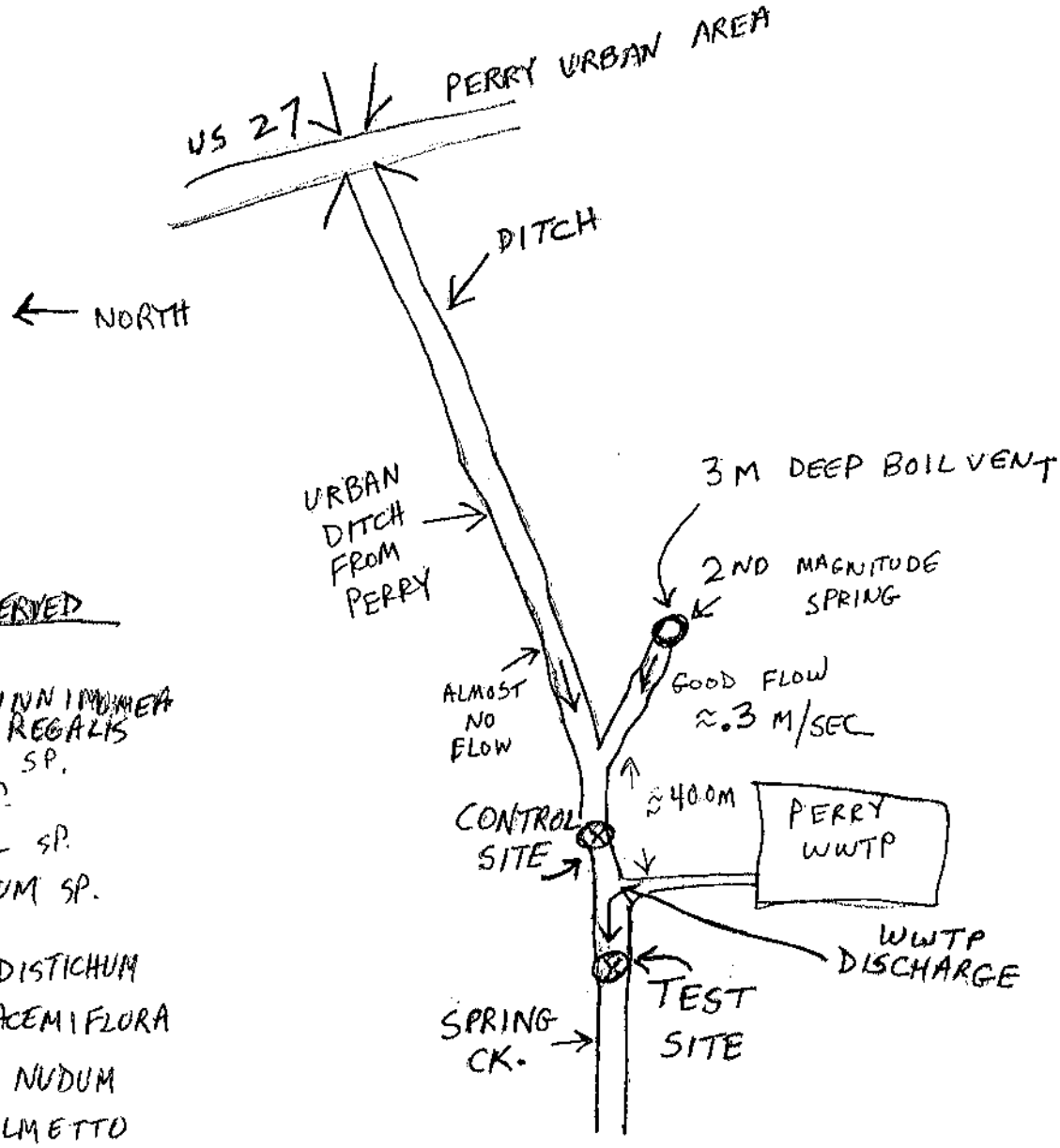
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Ross, L. T. 1990. Methods for aquatic biology. Fla. Dept. Environ. Reg. Tech. Ser. 10(1): 1-47.


TAYLOR CO.
BOYD AIRPORT (PVT.)
PERRY
Pop. 8,254
PERRY-FOLEY AIRPORT
FOREST CAPITAL CENTER STATE PARK
361
359A
359
361B
356B
361C
356
55
20
359D
98
30
361A
362
359
356C
356A
22A
19

PERRY WWTP MAP & PLANT LIST



PLANTS OBSERVED

OSMUNDA CINNAMOMEA
O. REGALIS
EICHHORNIA SP.
LUDWIGIA SP.
HYDROCOTYL SP.
MYRIOPHYLLUM SP.

TAXODIUM DISTICHUM
CYRILLA RACEMIFLORA
VIBURNUM NUDUM
SABAL PALMETTO
ULMUS FLORIDANA
ACER RUBRUM
LIQUIDAMBAR STYRACIFLUA
CORNUS FOEMINA
QUERCUS LAURIFOLIA
Q. NIGRA
CRATEGUS SP.
MYRICA CERIFERA
GELDESTIA AQUATICA

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

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:

REMARKS:	LOCATION:	FIELD ID/NAME:

Habitat Parameter score	Excellent	Good	Fair	Poor
Bottom Substrate/ Available Cover 16	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs, undercut banks, rubble, or other stable habitat. **23-30 points**	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. **16-22 points**	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat. **8-15 points**	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious. **0-7 points**
Water Velocity 20	Max. observed; >0.3 m/sec. **23-30 points**	Max. observed; 0.1 to 0.3 m/sec **16-22 points**	Max. observed; 0.05 to 0.1 m/sec **8-15 points**	Max. observed; <0.05 m/sec **0-7 points**
Artificial Channel/ Flow Alteration 3	No artificial channelization. Little activity (impervious surface) in watershed which would cause scouring during spates. **12-15 points**	—	—	Artificially channelized, or scouring present during spates because of excess impervious surface in watershed. **0-3 points**
Bank Stability 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. **9-10 points**	Moderately stable. Infrequent or small areas of erosion, mostly healed over. **6-8 points**	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **3-5 points**	Unstable. Many raw, eroded areas. Obvious bank sloughing. **0-2 points**
Riparian Zone Vegetation Quality 10	Over 80% of streambank surfaces consist of native plants, classified as: bottomland hardwoods, understory shrubs, or non-woody macrophytes. **9-10 points**	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. **6-8 points**	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. **3-5 points**	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture) present. **0-2 points**

Adjustments		TOTAL SCORE
0	Add 5 **points** if cross-sectional area of flow is estimated to be greater than one square meter during periods of normal flow.	52

COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE:

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

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:

REMARKS:	LOCATION:	FIELD ID/NAME:

Habitat Parameter score	Excellent	Good	Fair	Poor
Bottom Substrate/ Available Cover 10	Greater than 40% snags, logs, tree roots, emergent vegetation, leaf packs, undercut banks, rubble, or other stable habitat. **23-30 points**	20% to 40% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Adequate habitat. **16-22 points**	5% to 20% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Less than desirable habitat. **8-15 points**	Less than 5% snags, logs, tree roots, emergent vegetation, leaf packs, etc. Lack of habitat is obvious. **0-7 points**
Water Velocity [illegible]	Max. observed; >0.3 m/sec. **23-30 points**	Max. observed; 0.1 to 0.3 m/sec **16-22 points**	Max. observed; 0.05 to 0.1 m/sec **8-15 points**	Max. observed; <0.05 m/sec **0-7 points**
Artificial Channel/ Flow Alteration [illegible]	No artificial channelization. Little activity (impervious surface) in watershed which would cause scouring during spates. **12-15 points**	—	—	Artificially channelized, or scouring present during spates because of excess impervious surface in watershed. **0-3 points**
Bank Stability 9	Stable. No evidence of erosion or bank failure. Little potential for future problems. **9-10 points**	Moderately stable. Infrequent or small areas of erosion, mostly healed over. **6-8 points**	Moderately unstable. Moderate areas of erosion, high erosion potential during floods. **3-5 points**	Unstable. Many raw, eroded areas. Obvious bank sloughing. **0-2 points**
Riparian Zone Vegetation Quality 10	Over 80% of streambank surfaces consist of native plants, classified as: bottomland hardwoods, understory shrubs, or non-woody macrophytes. **9-10 points**	50% to 80% of riparian zone is vegetated, but one class of plants is not represented. **6-8 points**	25% to 50% of riparian zone is vegetated, but one or two classes of plants are not represented. **3-5 points**	Less than 25% of streambank surfaces are vegetated. Poor plant community (e.g. grass monoculture) present. **0-2 points**

Adjustments		TOTAL SCORE
[illegible]	Add 5 **points** if cross-sectional area of flow is estimated to be greater than one square meter during periods of normal flow.	46

COMMENTS:
[illegible]

ANALYSIS DATE:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		10-22-90	SPRING CK ⇒ FENHOLLOWAY

REMARKS:	LOCATION:	FIELD ID/NAME:
	PERRY WWTP	001 - UPSTREAM

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
90						

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):

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

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		Coarse Organic Debris:	
Sand:		Mud/Muck (organic):	

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
Top	11.5	5.1	Secchi Depth (m):	.2 - .4
Mid-depth	—		pH (SU):	7.2
Bottom	—		Conductivity (µmho/cm):	310
			Other Parameters:	

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

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

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:	ANALYST:	SIGNATURE:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD DATA SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (M/D/Y):	RECEIVING BODY OF WATER:
		10-22-90	SPRING CK → FENHOLLOWAY

REMARKS:	LOCATION:	FIELD ID/NAME:
	PERRY WWTP	002 - DOWNSTREAM

RIPARIAN ZONE/INSTREAM FEATURES

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

Forest	Field/Pasture	Agricultural	Residential	Commercial	Industrial	Other
95 V				1		

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):

Estimated Stream Width (range, m): 11	Estimated Stream Depth (range, m): .2 - .4	yes Impounded ☐ Channelized ☑
High Water Mark (m above bed): .7	Velocity (range, m/s):	

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: ☐ thin layer

Substrate Types (estimated % surface coverage):

Limestone:		Sand/Silt/Clay Mix:	
Consolidated Clay:		Clay/Silt (inorganic):	
Gravel/Shell		Coarse Organic Debris:	1
Sand:	1 90%	Mud/Muck (organic):	1 10%

WATER QUALITY

	Temp. (°C):	D.O. (mg/l):		
Top	13.5	7.2	Secchi Depth (m):	.4
Mid-depth			pH (SU):	7.7
Bottom			Conductivity (µmho/cm):	410
			Other Parameters:	

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

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

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: Sunny Cloudy

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

ANALYSIS DATE:	ANALYST:	SIGNATURE:

LAB ID: 8b

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY SEDIMENT BENCH SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DER Biol.	STORET STATION NUMBER:	DATE (M/D/Y): 10/22/90	RECEIVING BODY OF WATER:	DEPTH, FEET:
REMARKS:	LOCATION: Peary WWTP, 001 upstream		FIELD ID/NAME:	

Aliquot #1

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (a) _____

Sediment Dry Weight (105°C): (for 1 aliquot method of wet or dry sieving, or for calculating dry wt. of aliquot #2) (b) 26.51

Aliquot #2

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (c) _____

Aliquot #3 (for % organics)

Crucible Weight: (d) 53.50

Crucible + Dry Sediment (105°C) Wt.: (e) 95.60

Crucible + Ashed Sediment (550°C) Wt.: (f) 91.74

Percent Organics Calculation:

Sediment Dry (105°C) Weight: (e) - (d) = 95.60 − 53.50 = (g) 42.10

Sediment Ash (550°C) Weight: (f) - (d) = 91.74 − 53.50 = (h) 38.24

Percent Organics: $\frac{((g) - (h)) \times 100}{(g)} = \frac{(42.10 - 38.24) \times 100}{42.10} =$ **9.17%**

Size Fraction Determination:

Dry Weight Calculation: (for 2 aliquot method of wet sieving)

$\frac{(b)}{(a)} \times (c) = \frac{\quad}{\quad} \times \quad =$ (i) _____

% composition (divide 1st column by (n) [dry sieve] or by (b) [wet sieve; 1 aliquot] or by (i) [wet sieve; 2 aliquot], and multiply by 100)

weight (gms.) of material retained by:

#10 sieve	(>2.0 mm)	(j) LB 1.61 3.51	13.24
#35 sieve	(0.5-2.0 mm)	(k) 1.61	6.07
#60 sieve	(0.25-0.5 mm)	(l) 7.01	26.44
#120 sieve	(0.125-0.25 mm)	(m) 9.36	35.31
#230 sieve	(0.063-0.125 mm)	(n) 3.21	12.11
Pan (dry sieve only)	(<0.063 mm)	(o) _____	
Total (dry sieve) ((j) + (k)...+ (o))		(p) _____	
Total Retained (wet sieve) ((j) + (k)...+ (n))		(q) 24.70	
Wet sieve fines ((b) - (q)) [1 aliquot method], or ((i) - (q)) [2 aliquots]	(<0.063 mm)	1.81	6.83
Wet sieve coarse fraction (after fines removal)	(>0.063 mm)	25.89	

ANALYSIS DATE:	ANALYST:	SIGNATURE:
/ / 90		

LAB ID: 7b

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BIOLOGY LABORATORY SEDIMENT BENCH SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME: DER Biol.	STORET STATION NUMBER:	DATE (M/D/Y): 10/22/90	RECEIVING BODY OF WATER:	DEPTH, FEET:

REMARKS:	LOCATION: Perry WWTP, 002 downstream	FIELD ID/NAME:

Aliquot #1

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (a) _____

Sediment Dry Weight (105°C): (for 1 aliquot method of wet or dry sieving, or for calculating dry wt. of aliquot #2) (b) 29.42

Aliquot #2

Sediment Wet Weight: (for 2 aliquot method of wet sieving) (c) _____

Aliquot #3 (for % organics)

Crucible Weight: (d) 56.29

Crucible + Dry Sediment (105°C) Wt.: (e) 96.30

Crucible + Ashed Sediment (550°C) Wt.: (f) 95.61

Percent Organics Calculation:

Sediment Dry (105°C) Weight: (e) - (d) = 96.30 − 56.29 = (g) 40.01

Sediment Ash (550°C) Weight: (f) - (d) = 95.61 − 56.29 = (h) ~~43.32~~ 39.32

Percent Organics: $\frac{((g) - (h)) \times 100}{(g)} = \frac{(40.01 - 39.32) \times 100}{40.01} =$ 1.72%

Size Fraction Determination:

Dry Weight Calculation:
(for 2 aliquot method of wet sieving)

$\frac{(b)}{(a)} \times (c) = \frac{\quad}{\quad} \times \quad =$ (i) _____

weight (gms.) of material retained by:

% composition (divide 1st column by (n) [dry sieve] or by (b) [wet sieve; 1 aliquot] or by (i) [wet sieve; 2 aliquot], and multiply by 100)

#10 sieve	(>2.0 mm)	(j) .149 - .15	.51
#35 sieve	(0.5-2.0 mm)	(k) 7.183 - 7.18	24.41
#60 sieve	(0.25-0.5 mm)	(l) 5.123 - 5.12	17.40
#120 sieve	(0.125-0.25 mm)	(m) 16.091 - 16.09	54.69
#230 sieve	(0.063-0.125 mm)	(n) 3.814 - 3.81	12.95
Pan (dry sieve only)	(<0.063 mm)	(o) _____	
Total (dry sieve) ((j) + (k)...+ (o))		(p) _____	
Total Retained (wet sieve) ((j) + (k)...+ (n))		(q) 31.35	
Wet sieve fines ((b) - (q)) [1 aliquot method], or ((i) - (q)) [2 aliquots]	(<0.063 mm)	_____	
Wet sieve coarse fraction (after fines removal)	(>0.063 mm)	29.17	

ANALYSIS DATE:	ANALYST:	SIGNATURE:

Unpublished Trees q > b

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: City of Perry
Address/City:
County:
Contact/District:
NPDES Permit #: **Outfall #:**

Sample Collection: Date 10-22-90 Time 1000
Test Beginning: Date 10-24-90 Time 930
Test Ending: Date 10-26-90 Time 1000
Test Organism: Ceriodaphnia lucasi
Life Stage/Age: 19 days

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

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	Number Live 24	Number Live 48	DO (mg/l) 0	DO (mg/l) 24	DO (mg/l) 48	pH 0	pH 24	pH 48	Temp. (°C) 0	Temp. (°C) 24	Temp. (°C) 48	Cond. (µmhos/cm) 0	Cond. (µmhos/cm) 24	Cond. (µmhos/cm) 48
Control		X	—	—				X						—	—	
Control	15	5	5	5	7.4	7.9	7.6	7.8	8.1	7.9	22.1	22.1	21.6	235	234	254
100%	16	5	5	5	7.2	7.7	7.7	7.8	8.5	8.2	25.0	22.0	21.5	648	611	634
100%	198	5	5	X	7.1	7.7	7.7	7.8	8.3	8.3	25.1	22.1	21.5	654	611	631
Measured/Loaded by		MF	ME	AF	SMC	SMC	SMC	SMC	SMC	SMC	MF	SMC	SMC	MF	SMC	SMC
Recorded by:		SMC	SMC	MF	CB	MF	SMC	CB	MF	SMC	CB	MF	SMC	CB	MF	SMC

Investigators' Signatures

Sandy McCann
Rachel Hewitt
Lyn Burton

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

Ammonia motor slope:

Acute Bioassay Bench Sheet

Sample Source: City of Perry
Address/City: GA CC Rd
County: Taylor
Contact/District: U.F. Pritchett - Don Lundy - Sup
NPDES Permit #: FL0026387 Outfall #: 001

Sample Collection: Date 10-22-90 Time 1000
Test Beginning: Date 10-24-90 Time 930
Test Ending: Date 10-26-90 Time 1000
Test Organism: Ceriodaphnia dubia
Life Stage/Age: neonate

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

Remarks: DO meter malfunction - switched meters

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	10.1 / 4.01	9.8 @ 22.0°	1345 @ 23.5°	21.2 @ 23.2°
24 hr	10.1 / 4.01	3.6 @ 22.8°	1334 @ 23.0	22.0° @ 22.7°
48 hr	10.1 / 4.01	3.6 @ 23.0°	1317 @ 22.5	20.8° @ 23.1

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		5	5	5												
control		5	5	5												
control		5	5	5												
control		5	5	5												
100%		5	5	5												
100%		5	5	4												
100%		5	5	3												
100%		5	5	5												
					7.7						22.9					
control	(recorded				7.7	7.7	8.1	8.2	8.4	8.3	23.5	23.6	21.6	319	326	346
100%	vials)				6.9	7.5	7.9	7.8	8.7	8.6	23.5	23.7	21.7	538	556	595
					7.5						23.0					
Measured/Loaded by:		MF	CB	LB	SMF	SMF	SMF	SMF	SMF	SMF	SMF	SMF	SMF	SMF	SMF	SMF
Recorded by:		SMF	MF	LB	LB	MF	LB	LB	MF	LB	LB	MF	LB	LB	MF	LB

Investigators' Signatures

Sandy McClure
Mitchell Faircloth
Lucas Mayfield
Lynn Burton

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:			C.C	HACH	MF
Alkalinity:			215	"	MF
Hardness:			320	"	MF
Total Ammonia:			0.02	PRISM	MF

Ammonia meter slo: 57.3

Sample Number: 90-OCT-22-02-01 Sample Status: Authorized by Liang T. Lin
Sample Location: Perry WWTP discharge - Taylor Co. Matrix: Effluent
Field ID: Organics Storet Station Number:
Date/Time Collected: 22-OCT-1990 09:30:03.83
Comments:

Sample Number: 90-OCT-22-02-01 Test status: Authorized by Laura Harrison
Analysis Id: W-BNA Analysis Description: base-neutral-acid water analysis

Storet Number	Analyte	Result	Units
34205	Acenaphthene	10 U	ug/L
34200	Acenaphthylene	10 U	ug/L
39330	Aldrin	10 U	ug/L
34220	Anthracene	10 U	ug/L
34526	Benzo(a)anthracene	10 U	ug/L
34230	Benzo(b)fluoranthene	10 U	ug/L
34242	Benzo(k)fluoranthene	10 U	ug/L
34247	Benzo(a)pyrene	10 U	ug/L
34521	Benzo(g,h,i)perylene	15 U	ug/L
34292	Benzyl butyl phthalate	10 U	ug/L
	a-BHC	10 U	ug/L
39337	b-BHC	10 U	ug/L
39340	d-BHC	10 U	ug/L
	g-BHC	10 U	ug/L
39120	Benzidine	10 U	ug/L
34273	Bis(2-chloroethyl)ether	10 U	ug/L
34278	Bis(2-chloroethoxy)methane	15 U	ug/L
34283	Bis(2-chloroisopropyl)ether	15 U	ug/L
39100	Bis(2-ethylhexyl)phthalate	10 U	ug/L
34636	4-Bromophenyl phenyl ether	10 U	ug/L
34581	2-Chloronaphthalene	10 U	ug/L
34641	4-Chlorophenyl phenyl ether	10 U	ug/L
34320	Chrysene	10 U	ug/L
39310	4,4'-DDD	10 U	ug/L
39320	4,4'-DDE	10 U	ug/L
39300	4,4'-DDT	10 U	ug/L
34556	Dibenzo(a,h)anthracene	15 U	ug/L
39110	Di-n-butyl phthalate	10 U	ug/L
34536	1,2-Dichlorobenzene	10 U	ug/L
34566	1,3-Dichlorobenzene	10 U	ug/L
34571	1,4-Dichlorobenzene	10 U	ug/L
34631	3,3'-Dichlorobenzidine	10 U	ug/L
39380	Dieldrin	10 U	ug/L
34336	Diethylphthalate	10 U	ug/L
34341	Dimethylphthalate	10 U	ug/L
34611	2,4-Dinitrotoluene	10 U	ug/L
34626	2,6-Dinitrotoluene	10 U	ug/L
34596	Di-n-octyl phthalate	10 U	ug/L
34361	Endosulfan-I	10 U	ug/L

Continued

A - Value reported is the mean of two or more determinations
E - Scientific notation
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
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N/A - Not applicable NR - Not requested

Cont. from previous page for Sample Number: 90-OCT-22-02-01 Analysis_id: W-ENA

34356	Endosulfan-II	10 U	ug/L
34351	Endosulfan-sulfate	10 U	ug/L
39390	Endrin	10 U	ug/L
34366	Endrin-aldehyde	10 U	ug/L
34376	Fluoranthene	10 U	ug/L
34381	Fluorene	10 U	ug/L
39410	Heptachlor	10 U	ug/L
39420	Heptachlor-epoxide	10 U	ug/L
39700	Hexachlorobenzene	15 U	ug/L
34391	Hexachlorobutadiene	10 U	ug/L
34396	Hexachloroethane	60 U	ug/L
34386	Hexachlorocyclypentadiene	10 U	ug/L
34403	Indeno(1,2,3-cd)pyrene	10 U	ug/L
34408	Isophorone	10 U	ug/L
34696	Naphthalene	10 U	ug/L
34447	Nitrobenzene	10 U	ug/L
34438	N-Nitrosodimethylamine	50 U	ug/L
34428	N-Nitrosodi-n-propylamine	10 U	ug/L
34433	N-Nitrosodiphenylamine	15 U	ug/L
34671	PCB-1016	10 U	ug/L
39488	PCB-1221	10 U	ug/L
39492	PCB-1232	10 U	ug/L
39496	PCB-1242	10 U	ug/L
39500	PCB-1248	10 U	ug/L
39504	PCB-1254	10 U	ug/L
39508	PCB-1260	10 U	ug/L
	PCB-1262	10 U	ug/L
34461	Phenanthrene	10 U	ug/L
34469	Pyrene	10 U	ug/L
39400	Toxaphene	10 U	ug/L
34551	1,2,4-Trichlorobenzene	10 U	ug/L
34462	4-Chloro-3-methyl phenol	15 U	ug/L
34586	2-Chlorophenol	15 U	ug/L
34601	2,4-Dichlorophenol	15 U	ug/L
34606	2,4-Dimethylphenol	15 U	ug/L
34616	2,4-Dinitrophenol	30 U	ug/L
34657	2-Methyl-4,6-dinitrophenol	30 U	ug/L
34591	2-Nitrophenol	15 U	ug/L
34646	4-Nitrophenol	50 U	ug/L
39032	Pentachlorophenol	15 U	ug/L
34694	Phenol	15 U	ug/L
34621	2,4,6-Trichlorophenol	15 U	ug/L

Comments (1):
(2):
(3):
(4):
(5):
(6):

A - Value reported is the mean of two or more determinations
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T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the mimimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-OCT-22-05-01 Sample Status: Authorized by Tim Fitzpatrick
Sample Location: City of Perry WWTP discharge - Taylor Co. Matrix: Effluent
Field ID: Discharge - Metals Storet Station Number:
Date/Time Collected: 22-OCT-1990 09:30:30.63
Comments:

Sample Number: 90-OCT-22-05-01 Test status: Authorized by Jack Merritt
Analysis Id: HG-H-W Analysis Description: Mercury by cold vapor using hydride sys.-water

Storet Number	Analyte	Result	Units
71900	Mercury	0.1 U	ug/L

Sample Number: 90-OCT-22-05-01 Test status: Authorized by Tim Fitzpatrick
Analysis Id: W-ICP-23 Analysis Description: ICP multielement analysis for water samples

Storet Number	Analyte	Result	Units
01106	Aluminum	64	ug/L
01002	Arsenic	20 U	ug/L
01097	Antimony	NR	ug/L
01007	Barium	NR	ug/L
01012	Beryllium	NR	ug/L
01027	Cadmium	3 U	ug/L
00916	Calcium	NR	mg/L
01034	Chromium	10 U	ug/L
01037	Cobalt	NR	ug/L
01042	Copper	10 U	ug/L
01045	Iron	160	ug/L
01051	Lead	15 U	ug/L
00927	Magnesium	NR	mg/L
01055	Manganese	NR	ug/L
01067	Nickel	5 U	ug/L
00937	Potassium	NR	mg/L
01147	Selenium	30 U	ug/L
01077	Silver	NR	ug/L
00929	Sodium	NR	mg/L
01082	Strontium	NR	ug/L
01059	Thallium	NR	ug/L
01087	Vanadium	NR	ug/L
01092	Zinc	18	ug/L
	Comment	NONE	

A - Value reported is the mean of two or more determinations
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L - Actual value is known to be greater than value given
N - Not analyzed for this compound
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U - Material was analyzed for but not detected; The value reported is the mimimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-OCT-22-04-01 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: Perry WWTP, Taylor Co. Matrix: Fresh Surf Water
Field ID: 001-Upstream Storet Station Number:
Date/Time Collected: 22-OCT-1990 09:30:08.17
Comments:

Sample Number: 90-OCT-22-04-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NH3 Analysis Description: Analysis for ammonia in water

Storet Number	Analyte	Result	Units
00610	Ammonia-N	0.010 U	mg N/L

Sample Number: 90-OCT-22-04-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-NO2NO3 Analysis Description: Analysis for nitrite+nitrate in water

Storet Number	Analyte	Result	Units
00630	NO2NO3-N	0.12 A	mg N/L

Sample Number: 90-OCT-22-04-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TKN Analysis Description: TKN for water sample

Storet Number	Analyte	Result	Units
00625	N_KJEL_TOT	0.29 A	mg N/L

Sample Number: 90-OCT-22-04-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-TP Analysis Description: Analysis for total phosphorus in water

Storet Number	Analyte	Result	Units
00665	Total-P	0.19 A	mg P/L

End of Report

A - Value reported is the mean of two or more determinations
E - Scientific notation
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the minimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-OCT-22-03-01 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: City of Perry WWTP - Taylor Co. Matrix: Fresh Surf Water
Field ID: 001-Upstream Storet Station Number:
Date/Time Collected: 22-OCT-1990 09:30:59.61
Comments:

Sample Number: 90-OCT-22-03-01 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-PO4 Analysis Description: Orthophosphate analysis for water samples

Storet Number	Analyte	Result	Units
70507	O-Phosphate-P	0.14 A	mg P/L

Sample Number: 90-OCT-22-03-02 Sample Status: Authorized by Yuh-Hsu Pan
Sample Location: City of Perry WWTP - Taylor Co. Matrix: Fresh Surf Water
Field ID: 002-Downstream Storet Station Number:
Date/Time Collected: 22-OCT-1990 09:30:59.61
Comments:

Sample Number: 90-OCT-22-03-02 Test status: Authorized by Yuh-Hsu Pan
Analysis Id: W-PO4 Analysis Description: Orthophosphate analysis for water samples

Storet Number	Analyte	Result	Units
70507	O-Phosphate-P	1.0 A	mg P/L

End of Report

A - Value reported is the mean of two or more determinations
E - Scientific notation
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the minimum detection limit
N/A - Not applicable NR - Not requested

Sample Number: 90-OCT-22-04-02
Sample Location: Perry WWTP, Taylor Co.
Field ID: 002-Downstream
Date/Time Collected: 22-OCT-1990 09:30:08.17
Comments:

Sample Status: Authorized by Yuh-Hsu Pan
Matrix: Fresh Surf Water
Storet Station Number:

Sample Number: 90-OCT-22-04-02
Analysis Id: W-NH3

Test status: Authorized by Yuh-Hsu Pan
Analysis Description: Analysis for ammonia in water

Storet Number	Analyte	Result	Units
00610	Ammonia-N	0.015 T	mg N/L

Sample Number: 90-OCT-22-04-02
Analysis Id: W-NO2NO3

Test status: Authorized by Yuh-Hsu Pan
Analysis Description: Analysis for nitrite+nitrate in water

Storet Number	Analyte	Result	Units
00630	NO2NO3-N	1.4 A	mg N/L

Sample Number: 90-OCT-22-04-02
Analysis Id: W-TKN

Test status: Authorized by Yuh-Hsu Pan
Analysis Description: TKN for water sample

Storet Number	Analyte	Result	Units
00625	N_KJEL_TOT	0.37 A	mg N/L

Sample Number: 90-OCT-22-04-02
Analysis Id: W-TP

Test status: Authorized by Yuh-Hsu Pan
Analysis Description: Analysis for total phosphorus in water

Storet Number	Analyte	Result	Units
00665	Total-P	0.86 A	mg P/L

A - Value reported is the mean of two or more determinations
E - Scientific notation
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Not analyzed for this compound
T - Value reported is less than the practice quantiation limit
U - Material was analyzed for but not detected; The value reported is the mimimum detection limit
N/A - Not applicable NR - Not requested

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 2

✓	LAB PARAMETERS	UNITS	CODE	VALUE
	CHLOROPHYLL-a (CORRECTED)	µg/l	32223	
	CHLOROPHYLL-a (NON-CORRECTED)	µg/l	32210	
	CHLOROPHYLL-b	µg/l	32212	
	CHLOROPHYLL-c	µg/l	32214	
	PHAEOPHYTIN-a	µg/l	32218	
	BOD, 5-DAY CARBONACEOUS	mg/l	80082	
	BOD, 5-DAY N-INHIBITED	mg/l	00314	
✓	FECAL COLIFORMS, MEMBRANE	no./100 ml	31616	81
	FECAL COLIFORMS, TUBE	no./100 ml	31615	
✓	TOTAL COLIFORMS, MEMBRANE	no./100 ml	31501	200
	TOTAL COLIFORMS, TUBE	no./100 ml	31505	
	FECAL STREPTOCOCCI, MEMBRANE	no./100 ml	31673	
	HETEROTROPHIC PLATE COUNT	no./1 ml	31751	
	SEDIMENT PRTCL SIZE, >2.0mm	%	80256	
	SEDIMENT PRTCL SIZE, 0.5-2.0mm	%	80254	
	SEDIMENT PRTCL SIZE, 0.125-0.5mm	%	46531	
	SEDIMENT PRTCL SIZE, 0.063-0.125mm	%	80251	
	SEDIMENT PRTCL SIZE, <0.063mm	%	80250	
	SEDIMENT PRTCL SIZE, 0.25-0.5mm	%	80253	
	SEDIMENT PRTCL SIZE, 0.125-0.25mm	%	80252	
	SEDIMENT ORGANIC FRACTION	%	80090	
	ALGAL ASSAY, LIMITING NUTRIENT	—	—	REPORT

✓	LAB PARAMETERS	UNITS	CODE	VALUE
	ALGAL ASSAY, GROWTH POTENTIAL	mg/l	85209	
	INVERT, DIVERSITY INDX, ART SUBST	—	61455	
	INVERT, DI, AS, 95% CONF INT	—	61458	
	INVERT, DIVERSITY INDX, NAT SUBST	—	61453	
	INVERT, DI, NS, 95% CONF INT	—	61454	
	INVERT, ART SUBST, NO. SPP.	—	61457	
	INVERT, NAT SUBST, NO. SPP.	—	61456	
	INVERT, FLORIDA INDEX	—	—	
	INVERT, SPECIES ID/COUNT	—	—	REPORT
	PERIPHYTON, SPECIES ID/COUNT	—	—	REPORT
	PHYTOPLNKTN, SPECIES ID/COUNT	—	—	REPORT
	TOXICITY ASSAY, MICROTOX	—	—	REPORT
	TOXICITY ASSAY, ACUTE, SCRNG	—	—	REPORT
	TOXICITY ASSAY, ACUTE, DFNTV	—	—	REPORT
	TOXICITY ASSAY, FLOW-THROUGH	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, SCRNG	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, DFNTV	—	—	REPORT

REMARKS:

upstream

ANALYST(S): MB Campos DATE(S): 10/22/90

REVIEWED BY: AH Wolfe DATE: 10/31/90

PLEASE TYPE OR PRINT CLEARLY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CENTRAL LABORATORY SAMPLE SUBMITTAL FORM
PAGE 2

✓	LAB PARAMETERS	UNITS	CODE	VALUE
	CHLOROPHYLL-a (CORRECTED)	µg/l	32223	
	CHLOROPHYLL-a (NON-CORRECTED)	µg/l	32210	
	CHLOROPHYLL-b	µg/l	32212	
	CHLOROPHYLL-c	µg/l	32214	
	PHAEOPHYTIN-a	µg/l	32218	
	BOD, 5-DAY CARBONACEOUS	mg/l	80082	
	BOD, 5-DAY N-INHIBITED	mg/l	00314	
✓	FECAL COLIFORMS, MEMBRANE	no./100 ml	31616	78
	FECAL COLIFORMS, TUBE	no./100 ml	31615	
✓	TOTAL COLIFORMS, MEMBRANE	no./100 ml	31501	186
	TOTAL COLIFORMS, TUBE	no./100 ml	31505	
	FECAL STREPTOCOCCI, MEMBRANE	no./100 ml	31673	
	HETEROTROPHIC PLATE COUNT	no./1 ml	31751	
	SEDIMENT PRTCL SIZE, >2.0mm	%	80256	
	SEDIMENT PRTCL SIZE, 0.5-2.0mm	%	80254	
	SEDIMENT PRTCL SIZE, 0.125-0.5mm	%	46531	
	SEDIMENT PRTCL SIZE, 0.063-0.125mm	%	80251	
	SEDIMENT PRTCL SIZE, <0.063mm	%	80250	
	SEDIMENT PRTCL SIZE, 0.25-0.5mm	%	80253	
	SEDIMENT PRTCL SIZE, 0.125-0.25mm	%	80252	
	SEDIMENT ORGANIC FRACTION	%	80096	
	ALGAL ASSAY, LIMITING NUTRIENT	—	—	REPORT

✓	LAB PARAMETERS	UNITS	CODE	VALUE
	ALGAL ASSAY, GROWTH POTENTIAL	mg/l	85209	
	INVERT, DIVERSITY INDX, ART SUBST	—	81466	
	INVERT, DI, AS, 95% CONF INT	—	81466	
	INVERT, DIVERSITY INDX, NAT SUBST	—	81463	
	INVERT, DI, NS, 95% CONF INT	—	81464	
	INVERT, ART SUBST, NO. SPP.	—	81467	
	INVERT, NAT SUBST, NO. SPP.	—	81468	
	INVERT, FLORIDA INDEX	—	—	
	INVERT, SPECIES ID/COUNT	—	—	REPORT
	PERIPHYTON, SPECIES ID/COUNT	—	—	REPORT
	PHYTOPLNKTN, SPECIES ID/COUNT	—	—	REPORT
	TOXICITY ASSAY, MICROTOX	—	—	REPORT
	TOXICITY ASSAY, ACUTE, SCRNG	—	—	REPORT
	TOXICITY ASSAY, ACUTE, DFNTV	—	—	REPORT
	TOXICITY ASSAY, FLOW-THROUGH	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, SCRNG	—	—	REPORT
	TOXICITY ASSAY, CHRONIC, DFNTV	—	—	REPORT

REMARKS:

Downstream

ANALYST(S): NBS Campos DATE(S): 10/22/90

REVIEWED BY: AH Wolfe DATE: 10/31/90

PLEASE TYPE OR PRINT CLEARLY

Macroinvertebrate taxa list for Perry WWTP, Taylor County, Florida, collected via timed qualitative methods (dip net, etc.) above and below the discharge on October 22, 1990.

	Control Site	Test Site
Diptera		
Dubiraphia quadrinotata	–	+
Dubiraphia sp.	+	+
Gyrinus sp.	+	–
Ablabesmyia mallochi	+	+
Ablabesmyia parajanta grp.	–	+
Chironomus decorus grp.	–	+
Clinotanypus sp.	+	+
Cricotopus bicinctus	–	+
Cryptotendipes sp.	+	+
Dicrotendipes modestus	–	+
Dicrotendipes neomodestus	+	+
Einfeldia natchitocheae	–	+
Goeldichironomus holoprasinus	–	+
Hemerodromia sp.	+	+
Nanocladius alternantherae	–	+
Pagastiella sp.	–	+
Palpomyia grp. sp.	+	+
Pentaneura inconspicua	+	+
Polypedilum fallax grp.	+	–
Polypedilum halterale grp.	+	+
Polypedilum illinoense	–	+
Polypedilum scalaenum	–	+
Procladius bellus	–	+
Paratanytarsus sp.	–	+
Undetermined dipteran pupae	–	+
Rheocricotopus robacki	–	+
Stenochironomus hilaris	–	+
Tanytarsus sp.	–	+
Tanypus carinatus	–	+
Ephemeroptera		
Caenis hilaris	–	+
Callibaetis sp.	–	+
Stenonema exiguum	+	+
Gastropoda		
Gyraulus parvus	–	+
Hebetancyclus excentricus	–	+
Physella heterostropha pomila	–	+
Planorbella duryi	+	–
Pomacea paludosa	+	+
Spilochlamys conica	+	+
Viviparus georgianus	+	–

Hemiptera		
Metrobates hesperius	+	–
Ranatra buenoi	+	–
Trepobates pictus?	–	+
Hirudinea		
Helobdella fusca	–	+
Malacostraca		
Asellus sp.	+	–
Hyalella azteca	+	–
Palaemonetes paludosus	+	+
Procambarus sp.	–	+
Odonata		
Argia fumipennis	+	+
Calopteryx maculata	+	+
Dromogomphus spinosus	+	–
Enallagma sp.	–	+
Epitheca cynosura	+	+
Epitheca princeps	–	+
Erythrodiplax connata minuscula	+	–
Gomphus minutus	+	+
Ischnura sp.	+	–
Macromia taeniolata	+	+
Nehalennia integricallis	–	+
Pachydiplax longipennis	–	+
Oligochaeta		
Ilyodrilus templetoni	–	+
Quistadrilus multisetosus	+	–
Tubifex tubifex	+	–
undetermined tubificid w/o capilliform setae	+	+
Pelecypoda		
Elliptio sp.	+	–
Pisidium compressum	+	+
Trichoptera		
Cheumatopsyche sp.	+	+
Oecetis sp.	–	+
Polycentropus sp.	–	+
Total	**35**	**54**

Benthic macroinvertebrate taxa list for Perry WWTP, Taylor County, Florida, collected via Hester–Dendy samplers above and below the discharge on November 19, 1990.

	Control Site	Test Site
Diptera		
Ablabesmyia janta	+	+
Ablabesmyia mallochi	+	+
Ablabesmyia parajanta grp.	+	+
Chironomus decorus grp.	+	+
Cladotanytarsus vanderwulpi	–	+
Cryptotendipes sp.	–	+
Cryptochironomus sp.	–	+
Dicrotendipes modestus	–	+
Dicrotendipes neomodestus	+	+
Goeldichironomus holoprasinus	–	+
Hemerodromia sp.	+	+
Labrundinia becki	–	+
Labrundinia pilosella	+	–
Labrundinia sp.	–	+
Pagastiella sp.	+	–
Palpomyia grp. sp.	+	+
Pentaneura inconspicua	+	+
Paralauterborniella nigrohalteralis	+	–
Polypedilum fallax grp.	+	+
Polypedilum halterale grp.	+	+
Polypedilum illinoense	–	+
Polypedilum scalaenum	+	+
Procladius bellus	–	+
Paratanytarsus sp.	+	+
Undetermined dipteran pupae	+	+
Rheocricotopus robacki	+	+
Rheotanytarsus exiguus grp.	–	+
Tanytarsus sp.	+	+
Tribelos fuscicorne	+	+
Ephemeroptera		
Caenis diminuta	+	+
Caenis hilaris	+	+
Centroptilum sp.	+	–
Stenonema floridense	+	+
Gastropoda		
Hebetancyclus excentricus	+	–
Pomacea sp.	–	+
Viviparus georgianus	+	–
Malacostraca		
Asellus sp.	+	+
Hyalella azteca	+	+
Palaemonetes paludosus	–	+

Odonata		
Argia moesta	+	+
Argia sp.	+	+
Epitheca cynosura	–	+
Hetaerina americana	–	+
Oligochaeta		
Aulodrilus pigueti	+	–
Dero furcata	+	–
Dero lodeni?	–	+
Nais communis	–	+
Spirosperma ferox	+	–
Platyhelminthes		
Dugesia sp.	+	–
Trichoptera		
Oecetis sp.	+	–
Polycentropus sp.	+	+
Total	**35**	**40**

Periphyton taxa list collected above and below the Perry Sewage Treatment Plant, Taylor County, Florida, on 19 November 1990.

	Control Site	Test Site
Diatoms		
Achnanthes exigua	+	+
Achnanthes hauckiana	–	+
Achnanthes hungarica	+	+
Achnanthes hustedtii	–	+
Achnanthes linearis	+	–
Achnanthes lanceolata v. *apiculata*	–	+
Achnanthes lanceolata v. *dubia*	+	+
Bacillaria paradoxa	+	+
Cocconeis placentula	+	+
Cyclotella sp.	+	+
Eunotia monodon	–	+
Eunotia pectinalis	–	+
Fragilaria construens	–	+
Gomphonema gracile	–	+
Gomphonema parvulum	+	+
Melosira islandica	–	+
Melosira italica	+	–
Navicula capitata	–	+
Navicula elginensis	–	+
Navicula leptostriata	–	+
Navicula muticoides	–	+
Navicula notha	–	+
Navicula pupula v. *mutata*	+	–
Navicula pupula v. *rectangularis*	+	–
Navicula radiosa	+	+
Navicula rhynchocephala	+	+
Navicula tenera	–	+
Neidium binodis	+	+
Neidium sp.	–	+
Nitzschia amphibia	+	+
Nitzschia palea	–	+
Nitzschia subtilis	+	–
Pinnularia legumen	+	–
Stauroneis smithii	–	+
Synedra ulna	+	+
Chlorophyta		
Characium sp.	–	+
Protoderma sp.	–	+
Scenedesmus sp.	–	+
Chrysophyta		
Mallomonas sp.	–	+

Cyanophyta		
Anabaena sp.	–	+
Aphanothece sp.	+	–
Chroococcus sp.	–	+
Lyngbya sp. 1	+	+
Lyngbya sp. 2	+	+
Microcystis sp.	–	+
Euglenophyta		
Trachelomonas sp.	–	+
TOTAL	**21**	**39**