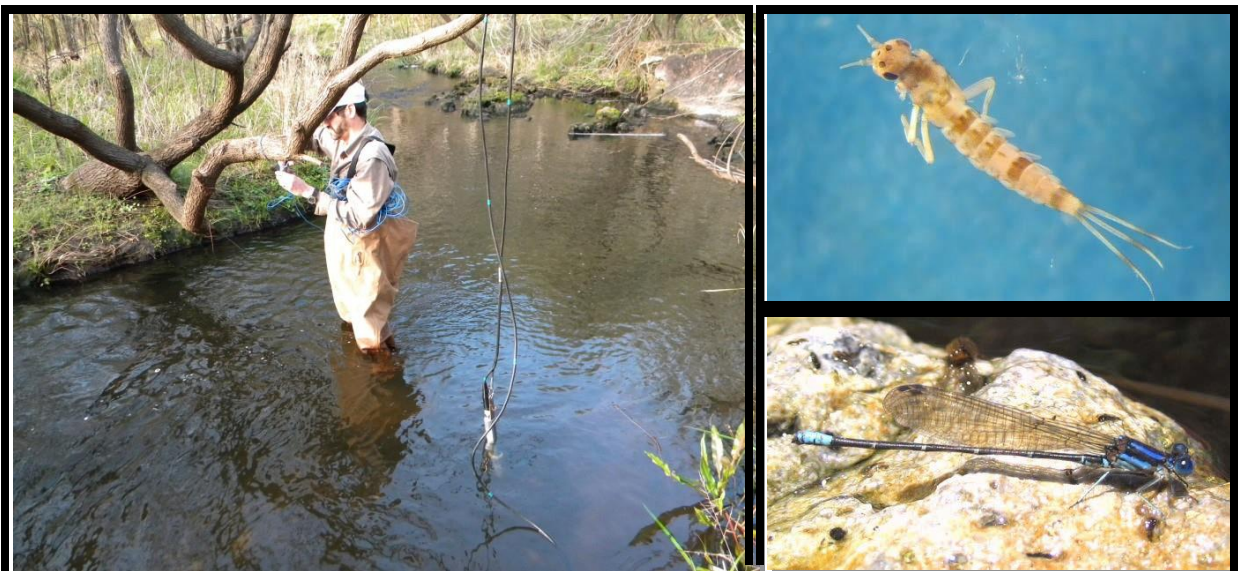




Stream Bioassessment Report

Alachua County, Florida

2012-2014



Prepared for:
The Florida Department of Transportation and
Alachua County Environmental Protection Department
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List of Acronyms

ACEPD – Alachua County Environmental Protection Department

BioRecon – Biological Reconnaissance

BMAP – Basin Management Action Plan

DO – Dissolved Oxygen

FDEP – Florida Department of Environmental Protection

FDOT – Florida Department of Transportation

GRU – Gainesville Regional Utilities

LVS – Linear Vegetation Survey

MS4 – Municipal Separate Storm Sewer System

NPDES – National Pollutant Discharge Elimination System

NPS – Non-point Source OCB –

Orange Creek Basin RPS -

Rapid Periphyton Survey SCI –

Stream Condition Index

SJRWMD – St. Johns River Water Management District

SOP – Standard Operating Procedure

Sp C – Specific Conductivity

SRWMD – Suwannee River Water Management District

SWDI – Shannon-Weaver Diversity Index

TMDL – Total Maximum Daily Load

VOB – Visible on the bottom

WRF – Water Reclamation Facility

Acknowledgments

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Executive Summary

In-stream bioassessments were conducted at 23 locations in Gainesville and Alachua County from 2012 to 2014 by Water and Air Research, Inc. The majority of the assessments were conducted in the Gainesville urban area creeks in the Hogtown Creek and Tumblin Creek watersheds. Sweetwater Branch was not assessed in the field as part of this project; however, data for Sweetwater Branch was provided by the Florida Department of Environmental Protection (FDEP) and is included in this report. Bioassessments were also conducted on three tributaries to Newnans Lake (Hatchet, Little Hatchet, and Lake Forest Creeks), the outflow from the lake in Prairie Creek, and the main stem of Lochloosa Creek and a tributary. In addition, three sites were selected within the greater Santa Fe Basin (Turkey, Cellon, and Mill Creeks).

The Stream Condition Index (SCI) and Biological Reconnaissance (BioRecon) methods included a physical/chemical characterization and habitat assessment of each 100-meter station selected for evaluation. SCI and BioRecon methodology use scoring metrics to evaluate the in-stream biological health based on macroinvertebrate assemblages. Hester-Dendy sampling was also conducted at five locations in 2013, four of which were coincident with SCI sites. Hester-Dendy sampling uses an artificial substrate that organisms colonize and are later identified and enumerated.

The habitat assessments at all of the stations resulted in optimal or suboptimal scores. The lowest scores were at Sweetwater Branch at SE 4th Street (90 points) and Possum Creek at NW 16th Avenue (98 points) and the highest was at Hogtown Creek at Haile Sink (149 points). Higher habitat assessment scores indicate that the conditions at the station are favorable for healthy macroinvertebrate communities. The highest primary habitat scores (above 60) were reported for Blues Creek, Boulware Spring Run, Hogtown Creek (NW 45th Avenue and Haile Sink), Mill Creek, Possum Creek (NW 53rd Avenue and NW 16th Avenue), and Three Lakes Creek. Four sites were found to have perfect secondary habitat component scores, Hatchet Creek at Buck Bay, Hogtown Creek at Haile Sink, Lochloosa Creek, and Possum Creek at NW 53rd Avenue.

Most of the creeks scored in the healthy range of 35 – 67 points in the SCI assessment. The SCI score interpretations included two impaired results (34 and below), 19 healthy results (35 to 67), and three exceptional results (68 and above). The SCI scores ranged from 19 (impaired) at Prairie Creek south of SR 20 to 77 (exceptional) at Mill Creek at Old Bellamy Road. Prairie Creek is a canal which conveys water from Newnans Lake; the poor water quality in the lake likely has a negative impact on the macroinvertebrate community. Sweetwater Branch was the other stream found to be impaired in one of the two sampling events conducted by FDEP in 2012. Mill Creek had an exceptional macroinvertebrate population, with a diverse total taxa count (35 to 41). Hatchet Creek at Buck Bay and Monterey Creek, a tributary to Hogtown Creek, also scored in the exceptional range. The remaining creeks scored in the healthy range based on SCI results.

The results of in-stream bioassessments were consistent with previous sampling events for most of the stations sampled; however, improvements in the macroinvertebrate communities were observed at several locations. Two sites attained an exceptional rating, Mill Creek and

Monterrey Creek, and three sites achieved a healthy score, Boulware Spring Run and Tumblin Creek at SW 14th Avenue and in the wooded area. The wet spring of 2014 and later summer rain contributed to the excellent hydrologic conditions and exceptional macroinvertebrate community in Mill Creek. Results for Monterrey Creek may have been affected by the change in sampling locations and weather conditions. Previous BioRecon results showed improvement at three sites (Springstead Creek, Three Lakes Creek, and Turkey Creek). These healthy results were confirmed with the SCI assessments. The benthic community at the Sweetwater Branch site varies, but is generally not very healthy. Without changes in stormwater retention upstream and improvements to the riparian zone along the banks, it will be difficult to make lasting improvements in the benthic community.

The Hester-Dendy sampling showed a wide range of results for the differing metrics. Florida Index scores ranged from 11 at the North Branch of Little Hatchet Creek near the Airport Industrial Park to 37 at Hatchet Creek at the sink. Hatchet Creek also had high numbers of sensitive taxa and suspension-feeding organisms. Hogtown Creek at Haile Sink had the highest densities of organisms and the highest numbers of unique species, although some of those were pollution tolerant taxa. Tumblin Creek in the wooded area west of US 441 had a high number of very tolerant taxa and no sensitive taxa, but otherwise a fairly balanced distribution of organisms.

Introduction

Alachua County is located in north central Florida. Water drains from a central ridge north and west toward the Suwannee River and south and east toward the St. Johns River. Several creeks carry the water through a variety of ecological communities and land use types that are influenced by differences in topography and geology. The Alachua County Environmental Protection Department (ACEPD) has collected water quality data on many creeks since the early 1970's and began collecting in-stream biological data in 1996.



Hogtown Creek upstream of Haile Sink

The organisms in stream bioassessment studies are called benthic macroinvertebrates. These are organisms without backbones that are large enough to see without magnification that live all or part of their lives in the water and sediments. Examples of freshwater benthic macroinvertebrates include the immature and adult stages of many different types of invertebrates. A freshwater benthic community may consist of the immature stages of many flies, beetles (adult and immature), mayflies, caddisflies, stoneflies, dragonflies, in addition to aquatic worms, clams, snails, leeches and numerous other organisms. The diversity and richness of the macroinvertebrate community composition in a waterbody can be used to provide an estimate of waterbody health. These organisms live in a number of different in-stream habitats and may be collected in a variety of methods. Dip nets and other devices may be used to collect organisms living in leaf packs, on submerged finely divided roots, on shell or rock rubble, or in or on submerged snags (dead trees and branches). Grab or dredge methods collect the organisms in the bottom sediments. Artificial substrates may be used to mimic natural habitat such as logs, and are left in the water for a period of time allowing aquatic organisms to populate them.

The artificial substrate method was used for the first biological assessment conducted by ACEPD in 1996. The Florida Department of Environmental Protection (FDEP) Biological Reconnaissance or BioRecon method (Barbour & Stribling, 1994; FDEP, 2002) was used to assess the county's creeks in 2000-2003 by the ACEPD (Water & Air Research, Inc., 2004) and in 2008-2010 by ACEPD and the Gainesville Clean Water Partnership, a partnership between the City of Gainesville, Alachua County, and the Florida Department of Transportation (FDOT) for implementation of the Phase II Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination (NPDES) Permit (Water & Air Research, Inc., 2011). In 2012-2014, the FDEP Stream Condition Index (SCI) method was utilized. The SCI is most commonly used for permit requirements; it is a quantitative method and was developed using rigorous statistical studies, which have demonstrated its reliability as an indicator of ecosystem health. SCI data is collected by the FDEP making it a more useful tool for comparison to other studies. The artificial substrate method was utilized at five locations in 2013. Two stations were re-sampled in 2014 using the FDEP BioRecon method to verify SCI and artificial substrate results. In 2015, one BioRecon was conducted on Turkey Creek to evaluate macroinvertebrate communities in Alachua County Forever's recently acquired Turkey Creek Hammock Preserve.

Many benthic macroinvertebrates prefer specific types of water quality and habitat characteristics. For instance, many of the mayfly and caddisfly species require clear and steadily flowing water, while other organisms are tolerant of contamination by sewage, and turbid, flashy flows caused by high volumes of stormwater or other human disturbances. Some are found in shady streams among rocks or logs. Others prefer open waters with submerged aquatic vegetation.



Jewel Wing Damselfly (*Calopteryx mauclata*)
Monterey Creek

By looking at the communities of benthic macroinvertebrates in each stream or creek, we gain information about the water environment and the effects of the surrounding habitat. If a community is unbalanced, with very few types of organisms or tolerant species present, it is an indicator that the environment is unhealthy.

Purpose

The ACEPD began biological assessment studies of creeks in the county in 1996 to better understand their environmental health. Baseline data was collected which could be used in the future to determine if the health of the creeks was improving, declining, or remaining stable. The current project provides additional in-stream biological monitoring for continued assessment of the Gainesville urban creeks and comparison to earlier bioassessment data.

This project was funded by ACEPD and FDOT for compliance with the Phase II MS4 NPDES Permit for the Gainesville urban area and as a project in support of the Orange Creek Basin (OCB) Basin Management Action Plan (BMAP). Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment using the Florida Department of Environmental Protection (FDEP) Stream Condition Index (SCI) method. Biological assessments were not conducted on Sweetwater Branch as part of this project. However during this same time frame, bioassessments on Sweetwater Branch were conducted by FDEP and are included in this report for one station, Sweetwater Branch at SE 4th Street, which was sampled twice in 2012. Additional data collected by FDEP on Sweetwater Branch for Linear Vegetation Surveys (LVS) and Rapid Periphyton Surveys (RPS) are also included.

Planners, scientists, and engineers may use the information from this report when making decisions in regard to improving impaired waters and protecting and preserving healthy waterbodies. Bioassessments may be used to comply with Total Maximum Daily Load (TMDL) and BMAP requirements. Results may help water quality experts and engineers decide where action is needed in the surrounding watersheds to improve water quality and protect aquatic life. Bioassessment data may also raise questions that can be used to guide future research.

Sampling Locations

Stream Condition Index (SCI) assessments were conducted at 22 locations in Gainesville and eastern Alachua County as part of this project. Sweetwater Branch was not assessed; however, SCI data was provided by the Florida Department of Environmental Protection (FDEP) and integrated into this report. Hester-Dendy sampling was conducted at five locations; four of which were coincident with SCIs and one on Hatchet Creek at a separate location. Two stations were re-sampled using the FDEP BioRecon method to verify SCI and artificial substrate. In 2015, one BioRecon was conducted on Turkey Creek to evaluate macroinvertebrate communities in Alachua County Forever's recently acquired Turkey Creek Hammock Preserve. Table 1 lists the bioassessment sampling locations with station ID, location, and sample dates, including previous sample dates. Figure 1 shows the station locations in Gainesville and Alachua County.

Methodology

Stream ecosystem health was evaluated by three techniques for macroinvertebrate assessment: Stream Condition Index (SCI), Biological Reconnaissance (BioRecon), and artificial substrate or Hester-Dendy sampling. A physical/chemical characterization and habitat assessment were conducted as part of each SCI and BioRecon sampling event. Water quality field measurements were recorded with artificial substrate samples. The Florida Department of Environmental Protection (FDEP) has Standard Operating Procedures (SOPs) for field sampling, organism identification, and index determination that were followed in the field as well as during the laboratory processing of the macroinvertebrate samples. All sample collection and assessment procedures were performed in accordance with the FDEP SOP for Field Activities, DEP-SOP-001/01 (FDEP, 2008a; FDEP, 2014a), SOP for Laboratory Activities DEP-SOP-002/01 (FDEP, 2008b; FDEP, 2014b), and Combined SOPs for Bioassessment Procedures, DEP-SOP-003/11 (FDEP, 2011a; FDEP, 2014c) listed below. All organism identification followed FDEP protocols and the requirements set forth in applicable Florida Administrative Code (FAC) Chapters 63-160, 62-302, and 62-303.

FDEP SOPs and Field Forms for Sampling and Identification

FDEP Standard Operating Procedures (SOPs)	
Aquatic Habitat Characterization	FT 3000
Physical/Chemical Characterization	FT 3001
Stream Habitat Assessment	FT 3100
SCI Sampling	SCI 1000
SCI Determination	SCI 2100
Biological Reconnaissance Methods	BRN 1000
BioRecon Determination	BRN 2100
Hester-Dendy Sampling	FS 7430
Determination of Biological Indices	LT 7000
Taxonomic Effort for Freshwater Macroinvertebrates	LT 7900
Field Forms	
BioRecon Field Sheet	FD 9000-1
Physical/Chemical Characterization Field Sheet	FD 9000-3
Stream/River Habitat Sketch Sheet	FD 9000-4
Stream/River Habitat Assessment Field Sheet	FD 9000-5

Physical/Chemical Characterization and Habitat Assessment

The physical and chemical characterizations were performed using FDEP Standard Operating Procedures DEP-SOP-001/01, FT 3001 Physical/Chemical Characterization (FDEP, 2008a; FDEP, 2014a). For each creek, a 100-meter section of the creek was identified as representative of that creek. A Physical/Chemical Characterization Field Sheet (FD 9000-3) was completed which included pH, dissolved oxygen, specific conductivity, temperature, and estimated water velocity. Land use in the watershed upstream of the site was estimated from digitized water management district GIS maps and aerial photography (FDEP, 2012; SJRWMD, 2011). The relative amount of natural, silvicultural (tree plantations), agricultural, residential, commercial, and industrial land uses were estimated and noted as a percentage of land area. Observations were also noted on the canopy cover, erosion, high water marks, presence or absence of oils, odors, fish, iron or sulfur bacteria, and periphyton, (algae living on surfaces such as rocks). A map of the creek bottom was drawn to show the width of the creek and the location and amount of various habitat types for benthic macroinvertebrates, recorded on a Stream/River Habitat Sketch Sheet (FD 9000-4). These habitats included roots, leaf packs, submerged logs, rocks, and submerged plants.

The habitat assessments were performed using FDEP Standard Operating Procedures DEP-SOP-001/01, FT 3100 Stream and River Habitat Assessment (FDEP, 2008a; FDEP, 2014a). The mapping and habitat assessment involved measuring type and amount of habitat throughout the selected 100-meter section of the creek. Observations of water velocity, habitat smothering by silt or sand, channelization, bank stability, and the amount and quality of the vegetation on each side of the creek were noted. A final score, ranging between 0 and 160, was determined using a Stream/River Habitat Assessment Field Sheet (FD 9000-5). Habitat assessment scores were interpreted as poor (0 to 40), marginal (41 to 80), suboptimal (81 to 120), or optimal (121 to 160) (FDEP, 2011b; FDEP, 2014c).

Stream Condition Index (SCI) Methodology

The Stream Condition Index (SCI) assessments were performed using FDEP Standard Operating Procedures DEP-SOP-003/11, SCI 1000 Stream Condition Index Methods (FDEP, 2011a; FDEP, 2014a). The most productive habitats (leaf packs, snags, roots, rocks, and aquatic vegetation) and one less productive habitat such as sand were divided among 20 sweeps and samples were collected using a d-frame dipnet. The debris containing the organisms was placed in 2-liter containers and preserved with 10% buffered formalin.



The samples were processed in the Water & Air benthic lab according to DEP-SOP-003-11, SCI 2100 SCI Determination (FDEP, 2011a; FDEP, 2014c). Approximately 300 organisms were identified for each sample, 150 for each aliquot, and entered into the Water & Air database to determine scores for the 10 SCI metrics (methods of measuring the effects of human disturbance) based on the assemblages of macroinvertebrates. The FDEP developed these

metrics using a Human Disturbance Gradient approach to objectively select metrics that respond to human influences in a predictable manner (Fore et al., 2007). Metric score formulas were applied to each metric value to arrive at a total score. The two separate aliquots were scored and their final scores were averaged to arrive at a final average SCI score for each station. The 10 metrics include total number of taxa (of differing taxonomic category, as a species or genus), the number of Ephemeroptera (mayfly) taxa, the number of Trichoptera (caddisfly) taxa, the number of long-lived taxa (organisms that have a life cycle greater than one year), the number of clinger taxa (organisms that need steady water velocity), the number of taxa sensitive to human disturbances, the percent of organisms that are filter feeders, percent *Tanytarsini* (midge larvae that are sensitive to disturbance), the percent dominance (percent of the single most abundant taxa or species) and the percent of very tolerant taxa (those organisms that can tolerate human disturbance).

Stream Condition Index Scoring Metrics

Metric ¹	Metric Score Formula ²	Description ³
Total Number of Taxa	$10 * (X-16)/25$	Taxa richness - total number of unique organisms or taxa
Number of Ephemeroptera Taxa	$10 * X / 5$	Mayfly larvae - generally sensitive to pollution, particularly metals, although this is not always true, as in the case of <i>Caenis</i> sp.
Number of Trichoptera Taxa	$10 * X / 7$	Net or case-building caddisfly larvae - generally sensitive to disturbances especially flow disruption, although some are able to withstand drought ⁴
Number of Long-lived Taxa	$10 * X / 4$	Organisms that require more than one year to complete their life cycle
Number of Clinger Taxa	$10 * X / 8$	Organisms that require steady water velocity or wave-swept littoral zone and decline with human disturbances such as channelization
Number of Sensitive Taxa	$10 * X / 9$	Sensitive to human disturbances
Percent Filter Feeders	$10 * (X-1)/39$	% organisms in the sample that feed by filtering their food, requiring fine particulate organic matter. Primarily mayfly, caddisfly, and fly larvae, and all clams and mussels. Filter feeders correspond best with human disturbance of all functional feeding groups.
Percent <i>Tanytarsini</i>	$10 * [\ln(X + 1) / 3.3]$	% organisms in the sample that are midge larvae in the group <i>Tanytarsini</i> , which are sensitive to disturbance and selected as the best measure of the <i>Chironomid</i> assemblage – an important component of the stream community
Percent Dominance	$10 - (10 * [(X-10)/44])$	% of the single most frequently occurring species or taxa in the sample, tends to increase in pollution tolerant taxa with the exclusion of other taxa
Percent Very Tolerant Taxa	$10 - (10 * [\ln(X + 1)/4.1])$	% of organisms in the sample tolerant to human disturbances

1. The first eight metrics listed are positive indicators; a higher value indicates better conditions. Percent dominance and very tolerant taxa are negative indicators; a higher value indicates poorer conditions.
2. Table SCI 2100 -1 SCI Metric Scoring Formula for Converting Metric Values to a Metric Score Ranging from 0 to 10, Peninsula Region, "X" = Raw Metric Value; "ln" = natural log (FDEP, 2011a)
3. FDEP, 2011c
4. Wiggins et al., 1980; Resh, 1993

Macroinvertebrate organisms were identified, counted, and recorded according to the taxa lists found in DEP-SOP-003/11, SCI 1000 SCI Stream Condition Index Methods (FDEP, 2011a; FDEP, 2014c). Each of the 10 metrics was calculated using the appropriate equation in the table above. Any of the resulting individual SCI metric scores that were >10 were changed to 10 and any that were <0 were changed to 0. For each aliquot, the 10 metric scores were added together then divided by 0.9; the two aliquot scores were averaged and rounded to the nearest integer to determine the final SCI score. The scores were interpreted as exceptional (68 to 100), healthy (35 to 67), or impaired (0 to 34) (FDEP, 2008b; FDEP, 2014b). FDEP uses SCIs for their routine monitoring and 5th year studies; it is now their standard and it is used in assessing impacts of not meeting the newly adopted numeric nutrient criteria (NNC) for flowing water.

Biological Reconnaissance (BioRecon) Methodology

The BioRecon assessments were performed using FDEP Standard Operating Procedures DEP-SOP-003/11, BRN 1000 Biological Reconnaissance Methods (FDEP, 2011a; FDEP, 2014c). The four most productive habitats (e.g., leaf packs, snags, roots, rocks, and aquatic vegetation) were sampled using four separate 1/2-meter sweeps using a d-frame dipnet. The debris containing the organisms was placed in 2-liter containers with creek water. A minimum of 100 organisms for each station were picked on site, field sorted, identified, and recorded on a BioRecon Field Sheet (FD 9000-1).

The identified organisms were verified in the Water & Air benthic lab and entered into the Water & Air database to determine scores for the BioRecon metrics (methods of measuring the effects of human disturbance). The FDEP selected the following six metrics found to be correlated with human disturbance (Brown & Vivas, 2004; Fore, 2004; Fore et al., 2007):

BioRecon Scoring Metrics

Metric	Metric Score Formula¹	Description²
Total Number of Taxa	$(X-11)/25$	Taxa richness - total number of unique organisms or taxa
Number of Ephemeroptera Taxa	$X / 5$	Mayfly larvae - generally sensitive to pollution, particularly metals, although this is not always true, as in the case of <i>Caenis</i> sp.
Number of Trichoptera Taxa	$X / 7$	Net or case-building caddisfly larvae - generally sensitive to disturbances especially flow disruption, although some are able to withstand drought ³
Number of Long-lived Taxa	$X / 7$	Organisms that require more than one year to complete their life cycle
Number of Clinger Taxa	$X / 8$	Organisms that require steady water velocity or wave-swept littoral zone and decline with human disturbances such as channelization
Number of Sensitive Taxa	$X / 9$	Sensitive to human disturbances

1. Table BRN 2100 -2 BioRecon Metric Scoring Formula for Converting Metric Values to a Metric Score Ranging from 0 to 1, Peninsula Region, "X" = Raw Metric Value (FDEP, 2011a)
2. FDEP, 2011c
3. Wiggins et al., 1980; Resh, 1993

Macroinvertebrate organisms were identified, counted, and recorded according to the taxa lists found in DEP-SOP-003/11, BRN 1000 Biological Reconnaissance Methods (FDEP, 2011a; FDEP, 2014c). Each of the six metrics was calculated using the appropriate equation in the table above. Any of the resulting individual metric scores that were >1 were changed to 1 and any that were <0 were changed to 0. For each station, the six metric scores were added together, divided by 0.6, and rounded to the nearest integer to determine the final BioRecon score. The scores are interpreted as exceptional = [7-10], healthy = [4-7), or impaired [0-4). A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded (FDEP, 2008b; FDEP, 2014b).

Artificial Substrate/Hester-Dendy Methodology

Artificial substrates (Hester-Dendy samplers) are used to measure biodiversity by providing a quantitative method of analysis for Biological Integrity Criterion. Hester-Dendy samplers were deployed in Alachua County Creeks in 1996, 2000, and 2008-2009. The 2013 study was repeated at five locations. Three samplers were attached to a concrete block for each location. Guidelines found in DEP-SOP-001/01 FS 7430 (FDEP, 2008a; FDEP, 2014a) were used for all of the sampling events. The samplers were left in the creeks for 28 days. During this time, benthic macroinvertebrates climbed onto the samplers and lived between the plates, some forming cases, filtering food debris passing by, and scraping and eating periphyton and other algae and diatoms that may grow on the sampler. Predatory insects find this an opportunity to get a meal, as well. The following indices were used to evaluate the macroinvertebrate data collected.



Hester-Dendy Sampler

Hester-Dendy Scoring Indices

Index	Index Score Formula	Interpretation
Shannon-Weaver Diversity Index (SWDI) ¹	$-\sum (\text{proportion of } i^{\text{th}} \text{ taxa}) \cdot (\log_2 \text{ proportion of } i^{\text{th}} \text{ taxa})$	3 to 5 = clean water conditions 0 to 2 = stressed waters
Pielou's Evenness ²	$\frac{SWDI}{\log^2 S}$	1 = equal distribution of taxa 0 = unbalanced distribution of taxa
Florida Index ³	$2 * (\text{number of Class I Organisms}) + (\text{number of Class II Organisms})$	0 - 2 = gross pollution 3 - 5 = moderate pollution 6 - 9 = clean but poor habitat 10 and above = clean

1. Shannon & Weaver, 1949

2. S = Total Number of Taxa (Pielou, 1966)

3. Class I = Sensitive Organisms; Class 2 = Tolerant Organisms (Beck 1954, 1965)

The Shannon-Weaver Diversity Index (SWDI) is determined by two components, the degree of evenness in the distribution between species and the total number of species (Shannon & Weaver, 1949). Values generally range from 0 to 5, where the highest values indicate greater diversity and a healthy environment. The index can be skewed by naturally occurring patchy distribution. The presence (or absence) of sensitive species is important in assessing the significance of SWDI as a water quality indicator (Clesceri et al, 1995; Barbour et al. 1996). Pielou's Evenness is calculated using the number of taxa per sample, abundance (total number of organisms/sample), and SWDI (Pielou, 1966). Values range between 0 and 1. A value of 1 denotes all taxa are represented by an equal number of individuals. The Florida Index, or Beck's Index, was specifically designed for use in Florida freshwater streams and rivers, especially with reference to the impact of organic pollution on community composition (Beck 1954, 1965). Class 1 organisms are sensitive or intolerant of pollution; Class 2 organisms are facultative and, thus, can tolerate varied conditions, perhaps including moderate levels of pollution. A high Florida Index value indicates the presence of a large number of pollution sensitive organisms and a healthy environment.

Results and Discussion

Land Use Data

The land use in the watershed draining to each sampling station is listed in Table 2. The land use data available from the water management districts was used to assess general land use upstream or draining to the sampling sites (FDEP, 2012; SJRWMD, 2011). Land use varies greatly among the stations. The table does not distinguish between high intensity residential and low intensity residential. It also does not take into account older neighborhoods with no or few stormwater retention or detention ponds in place, and newly developed land with stormwater ponds and low-impact development. However, in general the forested/natural and silvicultural land uses tend to have less impact on streams than residential, commercial and industrial land uses, particularly in older developments. Tumblin Creek has the smallest percent of natural and the largest amount of commercial land use (53-54%) of all creeks in the study. Hatchet Creek at Buck Bay has the highest percentage of natural plus silvicultural land uses (95%).

Physical and Chemical Data

Physical and chemical data are included in Table 3. The data were derived from the Physical/Chemical Characterization Field Sheets (FD 9000-3) included in Appendix A. The readings were taken with a YSI QS multi-parameter meter which had been calibrated and checked the morning of each sampling event. Water velocity measurements were determined using a ruled dip net handle, watch/stop watch and a floating leaf or other object; three measurements were taken and the results averaged for reporting an estimated velocity.

Cold water can retain more dissolved oxygen (DO) than warmer water. Therefore, if temperatures are very high, DO drops, while the need for DO increases causing fish and aquatic insects that are sensitive to low DO to die off during the hot summer months. Good water velocity helps to oxygenate the water by creating more contact with the oxygen in the air. In creeks where the velocity is very low, the water is more likely to have low DO levels. Velocity was quite low at Hatchet Creek at Buck Bay, Tumblin Creek at NW 14th Avenue, and Little

Lochloosa Creek. Low DO also occurs naturally in blackwater streams bordered by swamps. Bee Tree Creek, Hatchet Creek at Buck Bay, Prairie Creek, and Little Lochloosa Creek had very dark tannic water, and all had low DO levels, ranging from 1.12 to 3.05 mg/L.

Specific conductivity (Sp C) measures the amount of ions in the water available to conduct an electric current. Groundwater in Florida from deep limestone aquifers have relatively high Sp C values (300 - 500 $\mu\text{S}/\text{cm}$) due to dissolved calcium and magnesium ions in the water; the surficial and intermediate aquifers typically have lower concentrations of ions and Sp C values (50 - 100 $\mu\text{S}/\text{cm}$ and 90 - 200 $\mu\text{S}/\text{cm}$ respectively). Shallow groundwater from the surficial and intermediate aquifers provides baseflow for the

Gainesville Creeks; however, in the urban environment, Sp C values may be higher due to non-point source pollution or illicit discharges. Mill Creek, Bee Tree Creek, Hatchet Creek at Buck Bay, Little Lochloosa and Lochloosa Creeks all had low Sp C levels, ranging from 56 to 89 $\mu\text{S}/\text{cm}$. Their water sources are mainly from rainwater and the surficial aquifer. Boulware Spring Run in Robinson Heights Subdivision had the highest Sp C value (537 $\mu\text{S}/\text{cm}$) followed by Sweetwater Branch at SE 4th Street on 9/11/2012 (471 $\mu\text{S}/\text{cm}$) and Tumblin Creek at 14th Avenue (424 $\mu\text{S}/\text{cm}$). Their water sources are mainly from surficial and deeper intermediate aquifer; however, the elevated Sp C at these stations is likely due to anthropogenic inputs within each of the watersheds.



A sampler records data from the meter

The pH, reported in terms of standard units or SU, indicates the acidity or alkalinity of the water. Pure water has a pH of 7.0 SU and is neutral. The lower the number is below 7.0 SU, the more acidic it is, while the higher the number is above 7.0 SU, the more alkaline it is. Rainwater tends to have a lower pH, sometimes very low when air pollutants produce "acid rain". Groundwater tends to have a neutral or higher pH in Florida, due to the dissolved limestone underground which buffers acid in the water; however, surficial aquifer systems naturally have low pH due to the absence of limestone and other carbonate rocks. Hatchet Creek at Buck Bay and Lochloosa Creek near Fishcamp Road had the lowest pH of all stations (4.96 and 5.19 SU) while Tumblin Creek in the wooded area west of US 441 had an unusually high pH of 8.28 SU, likely due to the algal growth (primary productivity) in the concrete channel near US 441.

Table 3 also includes an estimated amount of erosion, non-point source (NPS) pollution (from stormwater runoff rather than from an industrial discharge), canopy cover and habitat smothering by silt or sand. Erosion and local NPS pollution were noted as heavy at Sweetwater Branch. Heavy NPS pollution, primarily sediment from in-stream erosion and deposition under storm event conditions and roadway runoff, was also noted at Hogtown Creek at NW 16th Avenue, Springstead Creek at US 441, and Tumblin Creek in the wooded area west of US 441. The canopy cover determines the amount of sunlight reaching the creek; an important factor in aquatic plant coverage. Most sites were noted as light to moderate canopy cover. Sand smothering was noted to be severe at the North Branch of Little Hatchet Creek near the Airport Industrial Park and Tumblin Creek in the wooded area west of US 441; silt smothering was

noted as severe at Lake Forest Creek at University Avenue (CR 329B). All of the stations except for Little Lochloosa and Prairie Creek were either shallow or clear and the Secchi depth (measure of water clarity) was recorded as visible on the bottom (VOB). The Secchi depth at Little Lochloosa Creek was near the bottom, due to the highly tannic nature of the water. Prairie Creek was turbid and the Secchi disk could only be seen 0.55 to 0.6 meters down from the surface before it disappeared from view. Newnans Lake, the source of Prairie Creek, has high levels of plankton algae and organic matter particulates, which may be carried into the creek.

Table 4 shows the abundance of periphyton (attached algae), fish, and aquatic macrophytes (vascular plants). In shady streams, it is common to see little periphyton or plants living in the water, but they can be abundant in streams that receive adequate sunlight. The presence of these plants influences the community of macroinvertebrates encountered. Plants provide food and oxygenated retreats for invertebrates and fish. All streams sampled contained fish. The substrate types and percent cover in Table 4 are derived from the map drawn of the creek bottom. It describes the amount of habitat available for the macroinvertebrates to find food and shelter. This information was the basis for determining where to conduct the sweeps with the dipnet for macroinvertebrate sample collection. Woody debris, roots, leaf packs, submerged aquatic vegetation, and rock are the major habitats sampled. The sand was sampled as a minor habitat; muck and silt were avoided.

Habitat Assessment Data

Habitat assessment results are included in Table 5. If a creek has a suboptimal or optimal score it is likely to have an environment favorable for benthic macroinvertebrates depending on the water quality. The 23 stations evaluated fell into those two categories, 11 scored in the suboptimal range (81-120) and 12 were in the optimal (121-160) range.

Boulware Spring Run in Robinson Heights Subdivision scored the highest of all the stations in the Primary Habitat Components, receiving all 20 points for substrate diversity and availability; points were deducted for water velocity and habitat smothering. The overall habitat assessment score at this site was at the low end of the optimal range (126 points) primarily due to a small riparian zone buffer and lack of riparian vegetation. Hatchet Creek at Buck Bay, Hogtown Creek at Haile Sink, Lochloosa Creek near Fishcamp Road, and Possum Creek at NW 53rd Avenue received all 80 points for the Secondary Habitat Components relating to channelization, bank stability, and the riparian zone width and vegetation. The highest total habitat assessment scores were found at Hogtown Creek at Haile Sink (149 points) and Possum Creek at NW 53rd Avenue (145 points). Hogtown Creek at Haile Sink received all 20 points for substrate availability; however, Possum Creek at NW 53rd Avenue only scored 15 points in this category. The remaining points deducted at both stations were for habitat smothering, substrate diversity, and water velocity.

The station with the lowest habitat assessment score was the FDEP station at Sweetwater Branch at SE 4th Street (90 points) noted to have low substrate diversity and availability. Possum Creek at NW 16th Avenue received a low score of 98 points due to unstable banks, a small riparian zone buffer, and lack of riparian vegetation at this site. Tumblin Creek at SW 14th Avenue received a score of 105 points; also scoring low due to unstable banks and a lack of riparian vegetation.

Stream Condition Index (SCI) and BioRecon Data

The numeric scores for the individual metrics, the final score, and interpretations for the Stream Condition Index (SCI) and BioRecon results are listed in Table 6. The raw data listing the macroinvertebrates identified during sample events are included in Appendix B. The database results for the metrics and the organisms identified within those classes are included in Appendix C. For more detailed information about each of these stations, see the individual Station Summary reports.

The stations with the highest SCI scores and achieving the rating of exceptional were Mill Creek at Old Bellamy Road (77 points), Hatchet Creek at Buck Bay (72 points) and Monterey Creek at NW 38th Drive (68 points). Previous BioRecons conducted on Mill Creek at Old Bellamy Road in 2002 and 2009 showed healthy results; however, higher numbers were observed in five of the six common metrics and an exceptional rating was achieved in the 2014 SCI assessment. Exceptional BioRecon results were observed in 2001 and 2009 at a station located downstream in Hatchet Creek at CR 225 in 2001



Mill Creek at Old Bellamy Road

and 2009. The exceptional result was confirmed with the 2013 SCI assessment at Buck Bay. In 2013, Monterey Creek at NW 38th Drive was found to have a greater number of total taxa and higher numbers of clinger and sensitive taxa, when compared with the two sites sampled upstream in 2002 and 2008 that had impaired BioRecon scores. The lowest SCI metric scores for Mill Creek and Hatchet Creek were for the number of Ephemeroptera (mayfly) taxa and the percent *Tanytarsini*, both sensitive groups of organisms. Monterey Creek at NW 38th Drive scored the lowest in the number of Trichoptera (caddisfly) taxa (sensitive organisms) and the number of long-lived taxa metrics, indicating previous disturbances at this station.

Three Lakes Creek upstream of Glen Springs Road (67 points), Boulware Spring Run in Robinson Heights Subdivision and Cellon Creek (66 points each), and Possum Creek at NW 53rd Avenue (65 points) scored nearly as high, but the score interpretation is listed as healthy. Cellon Creek results from previous BioRecons also indicated a healthy macroinvertebrate community; however, a greater number of total taxa was observed during the 2014 SCI assessment. In 2013, Three Lakes Creek was found to have a diverse macroinvertebrate community, including a greater number of total taxa and more clinger and sensitive taxa than observed in the previous assessments. The 2001 BioRecon results indicated this station was impaired; however, the 2008 BioRecon and 2012 SCI assessments showed healthy results. Boulware Spring Run is also showing a similar increase in these taxa and results from the 2013 SCI assessment show a healthy environment, compared to impaired results in the 2002 and 2009 BioRecons. Habitat assessment scores have also improved at these stations from suboptimal in 2008 to optimal in 2012. Springstead Creek also appears to be showing improvement with a more diverse macroinvertebrate population; 2001 BioRecon results indicated this station was impaired. Results from the 2010 BioRecon and 2013 SCI assessments showed healthy results and this site continues to have good index results for

artificial substrate/Hester-Dendy samples. Turkey Creek has shown similar improvement from impaired results in 2003 to consistently healthy results in subsequent BioRecon and SCI assessments. All recorded habitat assessment scores for Springstead Creek and Turkey Creek are in the suboptimal range.

Possum Creek at NW 53rd Avenue was evaluated in 2000 and 2008 using the BioRecon method and in 2012 using the SCI method. All bioassessment results were within healthy ranges and habitat assessment results continue to indicate an optimal environment at this station. Bee Tree Creek, Blues Creek, Hogtown Creek (NW 45th Avenue, NW 16th Avenue, and Haile Sink), Lake Forest Creek, Lochloosa Creek, and Possum Creek (NW 53rd Avenue and NW 16th Avenue) also continue to receive healthy BioRecon and SCI ratings for all bioassessments recorded. Habitat assessment scores for these stations are within the suboptimal or optimal ranges. Little Lochloosa Creek was evaluated for the first time in 2014 and received an optimal habitat assessment score and a healthy rating for the macroinvertebrate community.

The results from artificial substrate/Hester-Dendy metrics at the North Branch of Little Hatchet Creek near the Airport Industrial Park suggested conflicting assessments. The primary habitat condition was sand smothered and may have caused the imbalance in the macroinvertebrate samples. A large rain event previous to sampling could have smothered organisms and/or washed them downstream. Because of the low artificial substrate index scores at Little Hatchet Creek, this site was re-sampled using the BioRecon method in 2014. The BioRecon confirmed the healthy results from the SCI conducted in 2013 and previous BioRecons in 2003 and 2009.

The only creek that attained the impaired interpretation was Prairie Creek south of SR 20 (19 points). This creek is actually a canal that carries water from Newnans Lake to Paynes Prairie and the River Styx, which flows to Lake Lochloosa. The SCI is not the best method for evaluating canals and the FDEP is in the process of developing an SCI assessment which is modified for canal evaluation. The condition of the macroinvertebrate community in Prairie Creek is likely attributed to the water quality in Newnans Lake, known to be high in nutrients and turbid. The particulates in turbid water can clog the feeding mechanisms of filter feeding invertebrates. Prairie Creek had the lowest percentage of filter feeders in the study and no sensitive organisms were found. Because of the low SCI score and the abundance of the amphipod *Hyalella azteca* complex (average 54.28%), this site was re-sampled using the BioRecon method in 2014. The BioRecon score is not influenced by a single abundant organism. The BioRecon results showed a higher number of taxa (28 compared to 23 in the SCI), higher number of Trichoptera taxa (3 compared to 1) and more long-lived taxa (3 compared to 1). However, no sensitive taxa were found and the resulting score was still classified as impaired. In spite of the Prairie Creek macroinvertebrate community, the riparian zone is beautiful with habitat assessment scores in the suboptimal range (113 – 118 points).

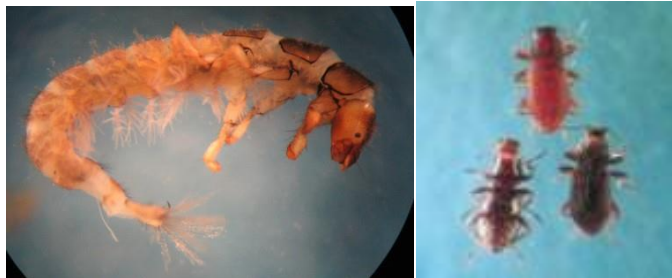


Prairie Creek south of SR20
Paynes Prairie Preserve State Park

The other stations which scored very low were Tumblin Creek at SW 14th Avenue (35 points) and Tumblin Creek in the wooded area west of US 441 (38 points). The SCI scores are within the healthy range and show some increase compared to the impaired results from the BioRecons conducted in the wooded area in 2000 and 2009 and at SW 14th Avenue in 2010. Metric results from artificial substrate samples in the wooded area were lower than the four other stations with no sensitive taxa and nine very tolerant taxa present, indicating it is likely still impaired. The Tumblin Creek watershed has limited stormwater treatment infrastructure; one large stormwater pond at SW 5th Avenue and SW 6th Street helps to treat some of the runoff from the downtown area. The City of Gainesville has designs for a regional stormwater treatment facility (sediment and trash trap) for this area (to be located downstream of US441 and upstream of the wooded area) and construction is expected to begin in late 2015.

The most common benthic macroinvertebrate was the caddisfly, *Cheumatopsyche*, which was found at 18 of the stations with 646 specimens recorded including the data from Sweetwater Branch at SE 4th Street. The midge larvae *Polypedilum flavum* occurred at 17 stations with a

count of 416. The black fly *Simulium* was recorded at 16 stations with 787 specimens counted. The tiny riffle beetle *Microcyloepus pusillus* was found at 16 stations with a count of 413 specimens. The mayfly *Maccaffertium smithae* was also very common (12 stations) and was sometimes found in high densities (380 total) even though it is classified as a sensitive organism.



Cheumatopsyche (caddisfly larva) and
Microcyloepus pusillus (riffle beetle)

Artificial Substrate/Hester-Dendy Data

The creeks assessed with artificial substrate/Hester-Dendy samplers were concentrated in the Gainesville urban area within the Orange Creek Basin. The sample locations include Springstead Creek at US 441, Hogtown Creek at Haile Sink, Tumblin Creek in the wooded area, and the North Branch of Little Hatchet Creek. Hatchet Creek was sampled at the sink on Alachua County Forever land (Newnans Lake Conservation Area - Hatchet Creek Addition) where the creek partially flows underground (and under low water conditions the sink may capture all of the flow). The Hester-Dendy samplers were collected in good condition at all locations. However, at Tumblin Creek they were partially sand-smothered but still well-populated. The samplers were redeployed at Hogtown Creek due to removal by the landowner. Before redeployment, the owner was advised of their purpose. The samples were collected and processed by Water & Air Research, Inc. The results are also presented separately in the *Quantitative Bioassessment Report of Five Alachua County Creeks: Hester-Dendy Sampling and Analysis 2013*, Water & Air Research, Inc. (Appendix D).



Tumblin Creek Deployment Site

Table 7 shows the physical and chemical data collected during the Hester-Dendy sampling events. During 2013, the parameters of temperature, dissolved oxygen, specific conductivity and pH were all within expected ranges; this data was not collected for Hatchet Creek at the sink. Because of the many variables that affect a water sample, using biological metrics to evaluate the macroinvertebrate population helps to give another perspective on the quality of the water environment. The Shannon-Weaver Diversity Index, Pielou's Evenness, Florida Index, total density, and total number of taxa values are also included in Table 7.



Springstead Creek west of US 441
Hester-Dendy samplers placed in a sheltered
area near the bank

The Shannon-Weaver Diversity Index values fell into the range indicating clean water conditions for all stations during 2013, except for the North Branch of Little Hatchet Creek near the Airport Industrial Park. The highest score was for Springstead Creek at US 441. The Pielou's Evenness scores had roughly the same results with most values closer to 1 than to 0, showing a good distribution of species. Again, the lowest score was for the North Branch of Little Hatchet Creek and the highest score was for Springstead Creek. Hatchet Creek at the sink scored highest for the Florida Index (37 points). Hogtown Creek at Haile Sink and Springstead Creek at US 441 also had

high Florida Index scores (29 points each). Tumblin Creek in the wooded area west of US 441, which historically had low Florida Index scores, has improved over the years. The lowest score was found again at the North Branch of Little Hatchet Creek.

Total density measures the number of organisms per square meter, calculated by using the surface area of the Hester-Dendy samplers. The density is influenced by how much food, such as periphyton or food filtered from the water, is available to the organisms populating the samplers. Predators may also come onto the sampler and eat the organisms populating it. The highest density and number of unique species was found at Hogtown Creek at Haile Sink. This station has an open canopy, which given enough nutrients allows for abundant growth of plants and periphyton, providing a rich food source. Additionally, Hogtown Creek has a swift current and natural riparian zone which makes a healthy environment for a variety of macroinvertebrates. The lowest density was found at Tumblin Creek in the wooded area west of US 441 and the lowest number of species was found at the North Branch of Little Hatchet Creek.



Hester-Dendy sampler deployment
Hogtown Creek at Haile Sink

Additional metrics such as sensitive taxa, clinger taxa and very tolerant taxa are also listed in Table 7. The North Branch of Little Hatchet Creek, which scored poorly in all of the metrics discussed, had no very tolerant taxa. The greatest percent abundance was of the mayflies family *Heptageniidae* (69%), which are sensitive and clinger taxa, and the caddisfly *Cheumatopsyche* (18%), which is also a clinger taxon. Even though the total number of taxa was low (13 taxa), the dominant organisms were indicative of healthier conditions. The primary habitat condition was sand smothered at the North Branch of Little Hatchet Creek and may have caused the imbalance in the macroinvertebrate samples. A large rain event previous to sampling could have smothered organisms and/or washed them downstream. Because of the low index scores at the North Branch of Little Hatchet Creek, this site was re-sampled using the BioRecon method in 2014. The BioRecon confirmed the healthy results from the SCI conducted in 2013 and previous BioRecons in 2003 and 2009.

Hatchet Creek at the sink is located in a former silviculture area but is now land preserved by the Alachua County Forever program. This station had the only long-lived organism of all stations. It had the highest number of sensitive taxa matched by Hogtown Creek at Haile Sink, with a high number of clinger taxa and suspension feeders. There were no very tolerant taxa present at Hatchet Creek and seven identified at Hogtown Creek. Considering this information, Hatchet Creek at the sink is a very healthy station in terms of organisms requiring good environmental conditions. The same number of species was present at Tumblin Creek in the wooded area west of US 441 and Hatchet Creek at the sink; however, no sensitive taxa and nine very tolerant taxa were present at Tumblin Creek, indicating it is impaired compared to the other stations sampled. The Shannon-Weaver Diversity Index and other index values do not provide sufficient data regarding the macroinvertebrate community. The SCI metrics and individual taxa data should be considered, as well as the habitat and water quality.

Station Summaries

The Station Summaries contain more detailed information about each station, past and present, including physical and chemical data, habitat assessment results, bioassessment results (including BioRecon, SCI, and Hester-Dendy sampling) and photographs of the creeks and macroinvertebrates. SCI assessments were conducted at Sweetwater Branch at SE 4th Street by FDEP on February 21, 2012 and September 11, 2012, resulting in healthy (51 points) and impaired scores (30 points) respectively. The Station Summary also includes additional data collected by FDEP for Linear Vegetation Surveys and Rapid Periphyton Surveys (Appendix E).

Summary

The Alachua County Creeks are characterized by geological formations, land use and stormwater treatment in the watershed, stream morphology, water chemistry, types of vegetation in the water and the land along the sides of the stream. The creeks in the study, with the exception of Sweetwater Branch and Little Hatchet Creek, received no permitted discharges; but most received untreated stormwater from roads, roofs and parking lots in the older urban areas. Many of the creeks received stormwater that had been treated by retention or wet detention ponds. Sweetwater Branch receives reclaimed water (treated wastewater effluent) from the Gainesville Regional Utilities (GRU) Main Street Water Reclamation Facility and non-contact cooling water from the GRU J.R. Kelly (electrical) Generating Station; however, only the Kelly generating station was upstream of the sample location at SWBSE4. Reclaimed water from the domestic wastewater treatment facility at Brittany Estates Mobile Home Park is discharged to Little Hatchet Creek upstream of the sample site.

Water chemistry was variable and is influenced by the groundwater from different aquifers feeding the creeks, and non-point source pollution (e.g., sediment from roadways, runoff from yards containing nutrients and bacteria, and wildlife or pet waste washed into the creeks during storm events). The urban creeks tended to have a higher pH and conductivity, with more stable temperatures. The creeks in the outlying areas tend to be blackwater streams with lower dissolved oxygen, pH, and conductivity typical of the surficial aquifer fed more recently by rainwater, and lying in natural areas with large, swampy floodplains. The temperatures in these areas tend to fluctuate more with weather changes in these systems. Water velocity was also variable and dependent on rainfall, geology, and stormwater management.

The habitat assessments at all of the stations resulted in optimal or suboptimal scores. The lowest score was at Possum Creek at NW 16th Avenue (98 points) and the highest was at Hogtown Creek at Haile Sink (149 points). Higher habitat assessment scores indicate that the conditions at the station are favorable for healthy macroinvertebrate communities. The highest primary habitat scores (for substrate diversity and availability, water velocity, and habitat smothering) were reported for Blues Creek, Boulware Spring Run, Hogtown Creek (NW 45th Avenue and Haile Sink), Mill Creek, Possum Creek (NW 53rd Avenue and NW 16th Avenue) and Three Lakes Creek, which all had at least 60 points. Four sites were found to have perfect secondary habitat component scores (80 points) which measure human disturbance to the stream channel and riparian zone. Those were Hatchet Creek at Buck Bay, Hogtown Creek at Haile Sink, Lochloosa Creek and Possum Creek at NW 53rd Avenue.

The Stream Condition Index (SCI) scores ranged from 19 (impaired) at Prairie Creek south of SR 20 to 77 (exceptional) at Mill Creek at Old Bellamy Road. Prairie Creek is a canal which carries water from Newnans Lake; the poor water quality in the lake likely has a negative impact at this station. Prairie Creek south of SR 20 was re-sampled a year later using the BioRecon method and scored higher but remained classified as impaired. Most of the creeks scored in the healthy range of 35 – 67 points. Another sampling event at these stations would help verify the results, particularly for the low-scoring creeks which could get a higher score depending on seasonal weather conditions. For example, Tumblin Creek scored 35 points at SW 14th Avenue and 38 points in the wooded area west of US 441. Two SCI assessments resulting in an average score of 40 or higher would indicate a balanced faunal community (FDEP, 2011c).

The Shannon-Weaver Diversity Index results (from Hester-Dendy sampling) ranged from 1.632 (indicating a stressed aquatic community) at the North Branch of Little Hatchet Creek to 4.048 (indicating a healthy aquatic community) at Springstead Creek at US 441. The Pielou's Evenness index showed similar results. Florida Index scores ranged from 11 at the North Branch of Little Hatchet Creek to 37 at Hatchet Creek at the sink. Hatchet Creek also had high numbers of sensitive taxa and suspension-feeding organisms and had no species listed as very tolerant of pollution. Hogtown Creek at Haile Sink had the highest densities of organisms and the highest numbers of unique species, although some of those were very tolerant taxa. Tumblin Creek in the wooded area west of US 441 had a high number of very tolerant taxa and no sensitive taxa, but otherwise had a surprising number of Florida Index species, and a fairly balanced distribution of organisms. The North Branch of Little Hatchet Creek scores may have been affected by sand smothering. It was re-sampled using the BioRecon method due to the low artificial substrate index scores. The BioRecon scores were similar to the SCI in that they indicated a healthy community.

The results of in-stream bioassessments were consistent with previous results for most of the stations sampled; however, improvements in the macroinvertebrate communities were observed at several locations. The summary below shows the macroinvertebrate community improvement based on BioRecon or SCI sampling for the most recent three sampling events.

Summary of Improvement in Macroinvertebrate Communities

Location	2000 - 2003 BioRecon	2008 - 2010 BioRecon	2012 - 2014 SCI
Boulware Spring Run	Impaired	Impaired	Healthy
Mill Creek at Old Bellamy Road	Healthy	Healthy	Exceptional
Monterey Creek	Impaired	Impaired	Exceptional
Springstead Creek	Impaired	Healthy	Healthy
Three Lakes Creek	Impaired	Healthy	Healthy
Tumblin Creek ¹	Impaired	Impaired	Healthy
Turkey Creek	Impaired	Healthy	Healthy

1. The 2000-2003 results for Tumblin Creek are for the wooded area only. All following results are for both the wooded area and SW 14th Avenue.

Continued monitoring of the Alachua County creeks using bioassessments may help to document the effectiveness of best management practices and to guide future scientists, planners, and engineers toward solutions. Hester-Dendy sampling for individual sites can assist in targeting restoration activities. A regular schedule of monitoring and reporting, such as every five years, will keep local governments informed about the conditions in their waterways. More frequent sampling may be justified for some low-scoring creeks, or those which may be affected by construction or land use changes. Creeks and streams have the ability to recover from disturbance, and these data may help local governments take the necessary steps to help Alachua County's impaired creeks to recover and to protect healthy creeks for future generations of residents and wildlife.

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Glossary

Basin Management Action Plan (BMAP) – the "blueprint" for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a Total Maximum Daily Load (TMDL). It represents a comprehensive set of strategies--permit limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance, and revenue generating activities. These broad-based plans are developed with local stakeholders, they rely on local input and local commitment, and they are adopted by Secretarial Order to be enforceable.

Benthic Macroinvertebrates – organisms evaluated in stream bioassessment studies. These are organisms without backbones that are large enough to see without magnification that live all or part of their lives in the water and sediments; includes the immature and adult stages of many different types of invertebrates. Examples of freshwater benthic macroinvertebrates include immature stages of many flies, beetles (adult and immature), mayflies, caddisflies, stoneflies, dragonflies, in addition to aquatic worms, clams, snails, leeches and numerous other organisms.

Bioassessment or Biological Assessment – benthic macroinvertebrate assessment, methods included in this report are Biological Reconnaissance (BioRecon), Stream Condition Index (SCI), and artificial substrate (Hester-Dendy) sampling.

Biological Health – the diversity and richness of the macroinvertebrate community composition in a waterbody, can be used to provide an estimate of waterbody health.

Biological Metric or Index – method of using the assemblages of macroinvertebrates to measure the effects of human disturbances using parameters that respond to human influences in a predictable manner.

Biological Reconnaissance (BioRecon) – Biological assessment method that includes collecting samples from the four most productive habitats (leaf packs, snags, roots, rocks, and aquatic vegetation) using a d-frame dipnet; organisms are sorted, identified, counted, and used to assess the biological health of sampling locations. The scores are interpreted as exceptional = [7-10], healthy = [4-7), or impaired [0-4). A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Biological Sampling – Dip nets and other devices may be used to collect organisms living in leaf packs, on submerged finely divided roots, on shell or rock rubble, or in or on submerged snags (dead trees and branches). Grab or dredge methods collect the organisms in the bottom sediments. Artificial substrates may be used to mimic natural habitat such as logs, and are left in the water for a period of time allowing aquatic organisms to populate them.

Braided Channel – A lack of a single stream channel resulting in numerous smaller intertwined channels typically observed as a stream flows through a low-lying wetland area.

Clinger Taxa – organisms that require steady water velocity or a wave-swept littoral zone and decline with human disturbances such as channelization. Clingers typically have behavioral (e.g., fixed retreat construction including rock ballasts, silk production) or morphological (e.g., modified gill structures, long curved claws, hooks) adaptations for attachment to the tops of rocks or wood surfaces.

Dissolved Oxygen (DO) – The amount of oxygen in water which varies according to temperature, weather, and salinity. Sources of oxygen in waterbodies include the atmosphere and aquatic plants (as a result of photosynthesis).

Ephemeroptera (mayfly larvae) – generally sensitive to pollution, particularly metals; although this is not always true, as in the case of the *Caenis* sp. The larvae occur in many aquatic habitats, adults have short adult life cycle, primarily mating and egg laying. Larvae go through many life stages, most are collectors or scrapers feeding on a variety of detritus and algae. Larvae commonly have three distinct caudal appendages.

Filter Feeders – organisms that feed by filtering their food, requiring fine particulate organic matter. Primarily mayfly, caddisfly, and fly larvae, and all clams and mussels. Filter feeders correspond best with human disturbance of all functional feeding groups.

Florida Index (or Beck's Index) – Designed for use in Florida freshwater streams and rivers, especially with reference to the impact of organic pollution on community composition. Class 1 organisms are sensitive or intolerant of pollution; Class 2 organisms are facultative and, thus, can tolerate varied conditions, perhaps including moderate levels of pollution. A high Florida Index value indicates the presence of a large number of pollution sensitive organisms and a healthy environment.

Habitat Assessment – includes a map of the creek bottom drawn to show the width of the creek and the location and amount of various habitat types for benthic macroinvertebrates, including roots, leaf packs, submerged logs, rocks, and submerged plants. Water velocity and observations of habitat smothering, channelization, bank stability, and the amount and quality of the vegetation on each side of the creek are noted. Habitat assessment scores are interpreted as poor (0 to 39), marginal (40 to 79), suboptimal (81 to 123), or optimal (124 to 160).

Habitat Smothering – Excessive deposition of sand or silt on stream beds, leaf packs, root mats, and snags resulting accelerated erosion upstream, thereby reducing available aquatic macroinvertebrate habitat.

Hester-Dendy (artificial substrate) Sampling – Artificial substrate samplers are deployed at sampling locations; for this study, the samplers were left in the creeks for 28 days. During this time, benthic macroinvertebrates climb onto the samplers and live between the plates, some form cases, filter food debris passing by, and scrape and eat periphyton and other algae and diatoms that may grow on the sampler. Predatory insects find this an opportunity to get a meal, as well. Biological indices used to evaluate the macroinvertebrate data include the Shannon-Weaver Diversity Index, Pielou's Evenness, and the Florida Index.

Land Use – For this study, land use was estimated from digitized water management district GIS maps and aerial photography. The relative amount of natural, silvicultural (tree plantations); agricultural, residential, commercial, and industrial land uses were estimated and noted as a percentage of land area.

Leaf Packs – An accumulation of dead, partially decayed leaves located within a waterbody that provides good habitat for aquatic macroinvertebrates.

Long-lived Taxa – organisms that have a life cycle greater than one year. Macroinvertebrates with such protracted life cycles are considered good biological indicators since their presence indicates the maintenance of certain water quality or habitat conditions; the number of long-lived taxa typically decreases in response to degraded water quality of physical conditions.

National Pollutant Discharge Elimination System (NPDES) Program – stormwater permitting program. Phase I includes large and medium Municipal Separate Storm Sewer Systems (MS4) and 11 categories of industrial activity, including large construction activity that disturbs 5 or more acres of land. Phase II includes MS4s not regulated by Phase I and small construction activity disturbing between 1 and 5 acres.

Percent Dominance – percent of the single most frequently occurring taxa or species in a sample, tends to increase in pollution tolerant taxa with the exclusion of other taxa. Metrics used to characterize the absolute or proportional abundance of individual taxa within a sampled assemblage. An assemblage largely dominated (>50%) by a single taxon or several taxa from the same family suggests environmental stress.

Pielou's Evenness – A measure of the distribution of taxa within a community. Calculated using the number of taxa per sample, abundance (total number of organisms/sample), and SWDI. Values range between 0 and 1. A value of 1 denotes all taxa are represented by an equal number of individuals and approach zero as a single taxa becomes more dominant.

pH – The measure of how acidic or basic a fluid is.

Physical/Chemical Characterization – includes water velocity, pH, dissolved oxygen, specific conductivity, temperature, land use, canopy cover, erosion, high water marks, presence or absence of oils, odors, fish, iron or sulfur bacteria, and periphyton, (algae living on surfaces such as rocks).

Riparian Zone – Pertaining to anything connected with or immediately adjacent to the banks of a stream or other body of water. Riparian buffers can be natural or manmade. Naturally vegetated riparian buffers provide bank stabilization, nutrient regulation, filtering of sediments, shade, and the primary source of woody debris and lead that provide in-stream biological habitat.

Secchi – Measurement of water clarity. The measurement is made using an opaque disk, typically white (or white and black), used to gauge the transparency of water by measuring the depth (Secchi depth) at which the disk ceases to be visible from the surface.

Sensitive Taxa – organisms sensitive to human disturbances. Those macroinvertebrates that can only exist when habitat conditions are have not been degraded and water quality is good.

Shannon-Weaver Diversity Index (SWDI) – The Shannon-Weaver Diversity Index is a measure of community structure and heterogeneity defined by the relationship between the number of distinct taxa and their relative abundances. Determined by two components, the degree of evenness in the distribution between species and the total number of species. Values generally range from 0 to 5, where the highest values indicate greater diversity and a healthy environment. The index can be skewed by naturally occurring patchy distribution. The presence (or absence) of sensitive species is important in assessing the significance of SWDI as a water quality indicator.

Specific Conductance (or Conductivity) – The measurement of a solution's ability to conduct an electrical current. The amount of inorganic dissolved minerals (salts) in water which can be naturally occurring.

Stream Condition Index (SCI) – Biological assessment method that includes collecting samples from the most productive habitats (leaf packs, snags, roots, rocks, and aquatic vegetation) and one less productive habitat such as sand. Samples are collected with 20 sweeps of a d-frame dipnet; organisms are sorted, identified, counted, and used to assess the biological health of sampling locations. The scores are interpreted as exceptional (68 to 100), healthy (35 to 67), or impaired (0 to 34).

Tannin – An organic acid derived from the decay of plants that stains water resulting in a tea color. Tannic is used to describe tea-colored surface water.

Tanytarsini – organisms that are midge larvae in the group *Tanytarsini*, which are sensitive to disturbance and selected as the best measure of the Chironomid assemblage – an important component of the stream community. Chironomids are a large family often occurring in high densities and diversity feeding on a variety of organic substrates.

Taxa – organism of a unique taxonomic category, as a species or genus.

Total Density (of Macroinvertebrates) - The abundance, density, or number of aquatic macroinvertebrates of the indicated group per unit area. Invertebrate abundance is presented as the number of individuals per square meter for quantitative samples and the number of individuals collected in each sample for qualitative samples. Abundance is an indicator of habitat availability and fish food abundance. Abundance may be reduced or increased depending on the type of impact or pollutant. Increased organic enrichment typically causes large increases in abundance of pollution tolerant taxa. High flows, increases in fine sediment, or the presence of toxic substances normally cause a decrease in invertebrate abundance.

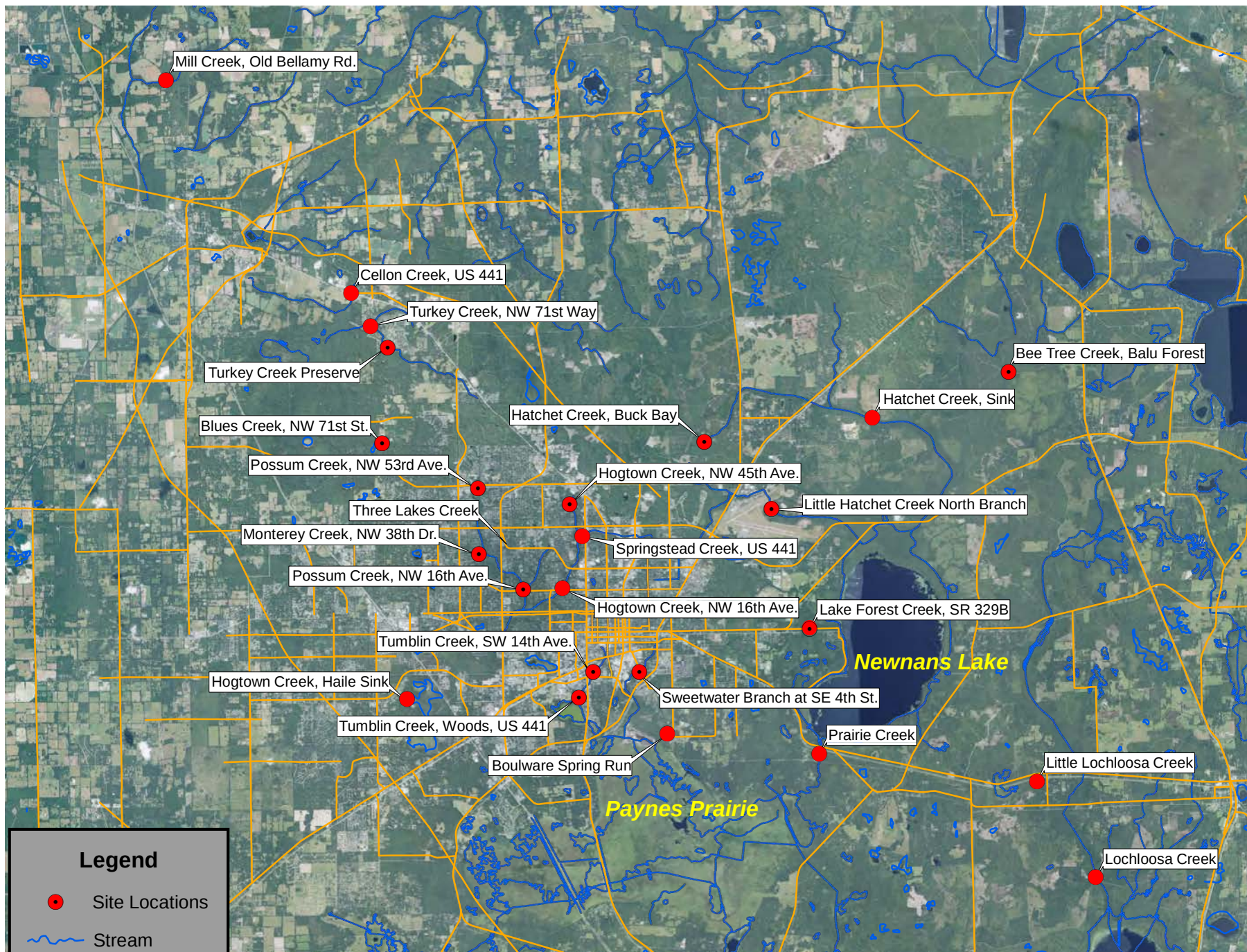
Total Number of Taxa - The total taxa is the richness (count of unique taxa) within each specified group.

Total Maximum Daily Load (TMDL) – a scientific determination of the maximum amount of a given pollutant that a surface water can absorb and still meet water quality standards that protect human health and aquatic life. Water bodies that do not meet water quality standards are identified as "impaired" for the particular pollutants of concern--nutrients, bacteria, mercury, etc.--and TMDLs must be developed, adopted and implemented for the waterbody.

Trichoptera (Net or case-building caddisfly larvae) – generally sensitive to disturbances especially flow disruption, although some are able to withstand drought. The Trichoptera, or caddisflies, are one of the largest groups of aquatic insects. The adults are typically winged and the larvae aquatic, eating plant material (e.g., diatoms, decaying vascular plant tissue, etc.). Some forms are free-living; those that build nets, retreats, and portable cases do so with silk. Cases are made of natural materials such as a sand, shell or plant material.

Velocity – The speed of flowing water in a stream, usually reported in units of meter or feet per second (m/s or ft/s).

Very Tolerant Taxa – organisms that can tolerate human disturbances. Those macroinvertebrates that can exist where habitat conditions are degraded, e.g., low DO, elevated specific conductance, sand/silt smothering, etc.



0 1 2 4
Miles

FIGURE
STREAM BIOASSESSMENT STUDY SITE LOCATIONS
ORANGE CREEK BASIN, ALACHUA COUNTY, FLORIDA
Source: USDA/FSA - Aerial Photography Field Office, 2013; Water & Air Research, Inc., 2015.



Table 1. Station Locations and Sample Dates

Stream Bioassessment Report, Alachua County, 2012-2014

Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station Name	Station ID	Latitude	Longitude	Watershed	Sample Dates by Method		
					BioRecon	SCI	Hester-Dendy ***
Bee Tree Creek, Balu Forest	BTCBalu	29.70870	-82.19038	Hatchet Creek	--	9/9/2013	--
Blues Creek at NW 71st St.	Blues71	29.71837	-82.41859	Blues Creek	2/13/2003, 4/9/2009	1/25/2013	--
Boulware Spring Run in Robinson Height Subdivision	Boulwr	29.61648	-82.30787	Paynes Prairie	3/2/2002, 4/17/2009	1/30/2013	--
Cellon Creek at US 441	Cellon	29.77026	-82.42971	Sante Fe Basin	9/18/2003, 4/24/2009	12/16/2014	--
Hatchet Creek at Buck Bay	HatBBay	29.71677	-82.29112	Hatchet Creek	--	9/19/2013	--
Hatchet Creek at the Sink	HatSink	29.72389	-82.22500	Hatchet Creek	12/7/2010	--	1/15/2013
Hogtown Creek at NW 45th Ave.	Hog45	29.69608	-82.34496	Hogtown Creek	1/12/2001, 12/6/2008	12/14/2012	--
Hogtown Creek at NW 16th Ave.	Hog16	29.66725	-82.34846	Hogtown Creek	--	2/4/2013	--
Hogtown Creek at Haile Sink	HogSink	29.62990	-82.41120	Hogtown Creek	3/12/2002, 3/10/2009	1/25/2013	3/25/2013
Lake Forest Creek at CR 329B	LFC329B	29.65176	-82.25130	Lake Forest Creek	3/17/2009	1/30/2013	--
Little Hatchet Creek, North Branch, Airport Industrial Park	LHTNB	29.69330	-82.26540	Little Hatchet Creek	2/6/2003, 2/17/2009, 5/29/2014	1/15/2013	10/28/2008, 2/13/2013
Little Lochloosa Creek	LtLchCrk	29.59750	-82.16281	Lake Lochloosa	--	8/22/2014	--
Lochloosa Creek near Fishcamp Rd.	LchCrk	29.56398	-82.14044	Lake Lochloosa	9/14/2009	9/9/2013	--
Mill Creek at Old Bellamy Rd.	MillOldB	29.84483	-82.50139	Sante Fe Basin	10/28/2002, 9/14/2009	8/12/2014	September 1996
Monterey Creek at NW 38th Dr.	Mntry38	29.68446	-82.39081	Possum Creek	--	3/1/2013	--
Possum Creek at NW 53rd Ave.	Pos53	29.70233	-82.38188	Possum Creek	11/12/2000, 6/26/2008	12/14/2012	--
Possum Creek at NW 16th Ave.	Pos16	29.66702	-82.36391	Possum Creek	--	2/4/2013	June 2000, 3/17/2009
Prairie Creek south of SR 20	PrrCrk	29.60856	-82.24843	Newmans Lake	5/29/2014	5/20/2013	--
Springstead Creek at US 441	Sprstd441	29.68509	-82.34023	Hogtown Creek	1/15/2010	2/7/2013	September 1996, 4/16/2009, 2/7/2013
Sweetwater Branch at SE 4th St.*	SWBSE4	29.63775	-82.31958	Paynes Prairie	2/21/2001, 2/1/2009	2/21/2012, 9/11/2012	--
Three Lakes Creek upstream of Glen Springs Rd.	ThreeLk	29.68298	-82.37021	Possum Creek	5/31/2001, 5/29/2008	12/14/2012	--
Tumblin Creek at SW 14th Ave.	Tum14	29.63809	-82.33825	Tumblin Creek	2/16/2010	1/10/2013	--
Tumblin Creek, wooded area west of US 441	TumWd	29.62955	-82.34349	Tumblin Creek	4/7/2000, 5/12/2009	2/7/2013	June 2000, 10/28/2008, 2/17/2013
Turkey Creek Hammock Preserve**	TrkPrsrv	29.75121	-82.41651	Sante Fe Basin	3/3/2003, 4/23/2009, 1/21/2015	--	1/9/1996, 6/1/2000
Turkey Creek near NW 71st Way	TrkCrk71	29.75879	-82.42310	Sante Fe Basin	--	12/16/2014	--

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** Bioassessments conducted on Turkey Creek between 1996 and 2009 were in a separate location; however it was located near the new location on Alachua County Forever's property.

*** The date listed for Hester-Dendy sampling is the day the artificial substrate samplers were collected. The September 1996 sampling event on Mill Creek was at a separate location.

Table 2. Land Use Data for SJRWMD (2009) & SRWMD (2010-2011)

Stream Bioassessment Report, Alachua County, 2012-2014

Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Percent Land Use (by Category) in Basin Draining to Sample Site								
Station ID	Watershed	Forest/ Natural	Silviculture	Field/ Pasture	Agricultural	Residential	Commerical	Industrial
BTCBalu *	Hatchet Creek	37	52	3	3	4	0	1
Blues71	Blues Creek	58	4	0	0	36	1	1
Boulwr	Paynes Prairie	28	0	10	0	33	29	0
Cellon	Santa Fe Basin	33	3	23	12	11	9	9
HatBBay *	Hatchet Creek	39	56	1	0	4	0	1
HatSink *	Hatchet Creek	35	50	4	1	6	2	1
Hog45	Hogtown Creek	26	10	0	0	27	18	19
Hog16	Hogtown Creek	17	3	0	0	47	23	11
HogSink	Hogtown Creek	22	1	1	0	58	13	5
LFC329B *	Lake Forest Creek	40	1	2	0	37	15	5
LHTNB *	Little Hatchet Creek	46	12	0	0	12	9	21
LtLchCrk	Lake Lochloosa	31	54	4	1	7	3	0
LchCrk	Lake Lochloosa	29	49	10	6	5	0	1
MillOldB	Santa Fe Basin	25	5	40	25	3	2	0
Mntry38	Possum Creek	10	0	0	0	72	14	4
Pos53	Possum Creek	21	2	0	0	56	13	8
Pos16	Possum Creek	12	2	1	0	73	9	3
PrrCrk*	Newnans Lake	87		8	2	5	5	
Sprstd441	Hogtown Creek	17	1	0	0	40	30	12
SWBSE4	Paynes Prairie	3	0	0	0	60	33	4
ThreeLk	Possum Creek	8	0	0	0	82	8	2
Tum14	Tumblin Creek	2	0	0	0	41	53	4
TumWd	Tumblin Creek	5	0	0	0	36	54	5
TrkPrsrv	Santa Fe Basin	42	16	9	5	13	6	9
TrkCrk71	Santa Fe Basin	42	16	9	5	13	6	9

Source data: FDEP, 2012; SJRWMD 2011.

* Data was estimated based on Table 2, Land Use in the Orange Creek Basin and Basins of Newnans, Lochloosa, and Orange Lakes based on 2003-2004 aerial photographs from Lippincott, CL, 2011. "Orange Creek Basin Surface Water Improvement and Management Plan", St. Johns River Water Management District. The land use values for Prairie Creek include the entire Newnans Lake sub-basin of 73,472 acres.

Table 3. Stream Features and Water Quality Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog45	Hog16	HogSink	LFC329B	LHTNB	LHTNB	LtLchCrk	LchCrk	MillOldB
Sample Date	9/9/2013	1/25/2013	1/30/2013	12/16/2014	9/19/2013	12/14/2012	2/4/2013	1/25/2013	1/30/2013	1/15/2013	5/29/2014	8/21/2014	9/9/2013	8/12/2014
Local Watershed Erosion	None	None	None	Moderate	Slight	Slight	Slight	None	None	Moderate	Moderate	None	None	Slight
Local NPS Pollution	Slight	No evidence	Moderate	Slight	No evidence	Moderate	Heavy	No evidence	Slight	Slight	Slight	Slight	No evidence	Slight
Canopy Cover/Shade	Moderate	Moderate	Moderate	Heavy	Moderate	Moderate	Light	None	Moderate	Light	Moderate	Moderate	Moderate	Heavy
Sand Smothering	None	Slight	Slight	Slight	None	Slight	Moderate	Slight	None	Severe	Severe	None	Slight	Moderate
Silt Smothering	Slight	Moderate	Slight	Moderate	Slight	None	Moderate	None	Severe	None	None	None	Slight	Slight
Secchi (m)	VOB	VOB	VOB	VOB	VOB	VOB	VOB	VOB	VOB	VOB	VOB	0.35	VOB	VOB
Temperature (C°)	22.99	14.52	22.5	12.41	23.28	15.17	12.89	12.86	18.46	18.99	25.52	26.19	24.7	25.17
pH (SU)	7.21	6.58	7.68	6.73	4.96	7.59	7.88	7.59	7.19	6.8	7.26	6.65	5.19	7.36
Dissolved Oxygen (mg/L)	2.11	9.54	7.26	9.55	1.64	9.19	10.63	10.20	7.22	9.05	8.34	1.4	5.52	7.64
Specific Conductance (µS/cm)	86	135	537	343	89	359	123	293	179	230	224	56	63	84
Salinity (ppt)	0.04	0.08	0.26	NA	0.04	0.17	0.08	0.14	0.1	0.11	0.11	0.02	0.03	0.04
Max. velocity at typical transect (m/s)	0.14	0.25	0.33	0.11	0.05	0.25	0.2	0.33	0.13	0.66	0.33	0.11	0.25	0.5
Average width of water in channel (m)	3.0	2.0	1.0	2.3	0.3	2.0	3.5	3.5	2.0	2.0	2.0	2.5	5.0	2.6
Average depth at typical transect (m)	0.4	0.1	0.15	0.08	0.1	0.2	0.1	0.4	0.2	0.15	0.1	0.3	0.4	0.2

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

NA = Not Analyzed

VOB = Visible on the Bottom

Table 3. Stream Features and Water Quality Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	Mntry38	Pos53	Pos16	PrrCrk	PrrCrk	Sprstd441	SWBSE4*	SWBSE4*	ThreeLk	Tum14	TumWd	TrkPrsrv	TrkCrk71
Sample Date	3/1/2013	12/14/2012	2/4/2013	5/20/2013	5/29/2014	2/7/2013	2/21/2012	9/11/2012	12/14/2012	1/10/2013	2/7/2013	1/21/2015	12/16/2014
Local Watershed Erosion	Moderate	None	Slight	None	None	Moderate	Heavy	Heavy	Slight	Slight	Moderate	Moderate	Slight
Local NPS Pollution	Moderate	Slight	Moderate	Slight	Moderate	Heavy	Heavy	Heavy	No evidence	Moderate	Heavy	Slight	Moderate
Canopy Cover/Shade	Light	Moderate	None	Moderate	Heavy	Light	Moderate	Moderate	Moderate	Light	Moderate	Light	Light
Sand Smothering	Moderate	Slight	Moderate	None	None	Slight	Moderate	Moderate	Slight	Moderate	Severe	Slight	Moderate
Silt Smothering	None	Slight	Moderate	Slight	Moderate periphyton	Slight	Moderate algae	Moderate	Slight	Slight	Slight	Moderate	Slight
Secchi (m)	VOB	VOB	VOB	0.55	0.6	VOB	NA	NA	VOB	VOB	VOB	VOB	VOB
Temperature (C°)	14.56	15.55	10.28	28.16	28.12	17.09	16.1	26.05	15.54	19.8	20.24	14.16	15.48
pH (SU)	7.28	7.22	7.77	6.8	7.06	7.29	8.2	7.78	7.29	7.71	8.28	6.81	6.91
Dissolved Oxygen (mg/L)	8.55	7.78	11.98	1.12	3.05	8.03	9.56	7.36	8.49	8.32	10.74	10.80	9.77
Specific Conductance (µS/cm)	171	120	256	111	87	250	344	471	319	424	367	286	262
Salinity (ppt)	0.1	0.07	0.17	0.05	0.04	0.14	NA	NA	0.15	0.2	0.19	0.14	NA
Max. velocity at typical transect (m/s)	0.17	0.17	0.33	0.25	0.4	0.25	0.1	0.14	0.2	0.08	0.17	0.25	0.28
Average width of water in channel (m)	1.7	1.8	1.0	8.0	12.0	2.5	3.0	3.0	1.5	2.0	2.0	2.0	2.4
Average depth at typical transect (m)	0.1	0.15	0.1	0.75	1.3	0.1	0.02	0.3	0.05	0.15	0.1	0.3	0.08

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

NA = Not Analyzed

VOB = Visible on the Bottom

Table 4. Substrate Types and Abundance of Biota

Stream Bioassessment Report, Alachua County, 2012-2014

Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog45	Hog16	HogSink	LFC329B	LHTNB	LHTNB	LtLchCrk	LchCrk	MillOldB
Sample Date	9/9/2013	1/25/2013	1/30/2013	12/16/2014	9/19/2013	12/14/2012	2/4/2013	1/25/2013	1/30/2013	1/15/2013	5/29/2014	8/21/2014	9/9/2013	8/12/2014
Organism Abundance														
Periphyton	Absent	Absent	Rare	Rare	Absent	Absent	Absent	Abundant	Common	Absent	Absent	Absent	Absent	Rare
Fish	Rare	Rare	Common	Rare	Rare	Common	Common	Common	Common	Rare	Common	Common	Common	Rare
Aquatic Macrophytes	Absent	Absent	Abundant	Absent**	Absent	Rare	Absent	Common	Common	Absent	Rare	Absent	Absent	Rare
Substrate (% Cover)														
Woody Debris	7.3	5.0	12.0	1.0	10.0	6.5	6.3	1.0	7.6	1.5	2.1	6.0	3.8	7.1
Undercut Banks/Roots	0.0	1.0	12.0	2.0	23.0	4.0	1.4	1.5	3.5	1.5	3.5	7.2	5.4	8.6
Leaf Packs/Mats	5.7	10.5	11.0	38.0	4.6	7.0	6.0	0.3	7.0	1.8	0.5	0.4	0.4	1.8
Aquatic Vegetation	0.0	0.0	10.0	0.0	0.0	1.5	0.0	3.0	4.5	0.0	0.0	0.0	0.2	0.3
Rock or Shell Rubble	0.0	7.0	1.0	4.0	1.5	3.5	0.3	58.5	0.0	0.0	0.5	3.8	0.0	0
Sand	40.0	60.0	44.0	35.0	60.9	62.5	70.0	10.0	38.7	95.3	93.4	82.6	70.2	80
Mud/Muck/Silt	0.0	17.5	10.0	0.0	0.0	15.0	16.0	0.0	38.7	0.0	0.0	0.0	20.0	0.2
Other	--	--	--	20.0 clay	--	--	--	25.75 periphyton	--	--	--	--	--	2.0 clay

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** Some attached filamentous green algae were present on the bottom.

Table 4. Substrate Types and Abundance of Biota

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	Mntry38	Pos53	Pos16	PrrCrk	PrrCrk	Sprstd441	SWBSE4*	SWBSE4*	ThreeLk	Tum14	TumWd	TrkPrsrv	TrkCrk71
Sample Date	3/1/2013	12/14/2012	2/4/2013	5/20/2013	5/29/2014	2/7/2013	2/21/2012	9/11/2012	12/14/2012	1/10/2013	2/7/2013	1/21/2015	12/16/2014
Organism Abundance													
Periphyton	Common	Absent	Abundant	Rare	Abundant	Abundant	Abundant	Common	Absent	Absent	Rare	Absent	Common
Fish	Common	Rare	Common	Abundant	Common	Common	Common	Common	Common	Rare	Abundant	Rare	Rare
Aquatic Macrophytes	Absent	Rare	Common	Common	Rare	Rare	Rare	Absent	Absent	Absent	Absent	Absent	Rare
Substrate (% Cover)													
Woody Debris	2.0	7.0	2.0	6.9	16.2	2.0	<1.0	2.8	5.0	2.5	6.0	1.5	3.6
Undercut Banks/Roots	4.5	2.5	5.0	1.2	0.4	1.6	1.0	6.3	12.0	5.2	11.0	6.0	4.0
Leaf Packs/Mats	4.5	12.0	9.0	0.0	0.3	7.6	3.0	0.7	8.0	5.6	15.0	3.5	12.0
Aquatic Vegetation	0.0	1.5	4.0	2.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rock or Shell Rubble	4.0	0.0	4.0	0.0	0.0	5.2	2.0	7.3	5.0	8.4	1.0	0.0	<1
Sand	0.0	77.0	38.0	20.0	20.0	80.0	90.0	80.0	69.0	7.8	57.0	80.0	0.0
Mud/Muck/Silt	0.0	0.0	38.0	70.0	63.0	3.4	3.0	3.0	1.0	0.0	10.0	9.0	82.0
Other	--	--	--	--	--	--	--	--	--	--	--	--	<1 periphyton

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** Some attached filamentous green algae were present on the bottom.

Table 5. Habitat Assessment Results

Stream Bioassessment Report, Alachua County, 2012-2014

Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog45	Hog16	HogSink	LFC329B	LHTNB	LHTNB	LtLchCrk	LchCrk	MIIIOldB
Sample Date	9/9/2013	1/25/2013	1/30/2013	12/16/2014	9/19/2013	12/14/2012	2/4/2013	1/25/2013	1/30/2013	1/15/2013	5/29/2014	8/21/2014	9/9/2013	8/12/2014
Primary Habitat Components														
Substrate Diversity	8	15	20	18	14	19	13	17	17	14	8	13	10	14
Substrate Availability	8	14	20	17	20	13	10	20	14	4	6	16	8	12
Water Velocity	12	15	16	11	3	15	14	18	11	19	20	11	17	18
Habitat Smothering	17	16	16	11	10	18	13	14	12	11	9	17	18	18
Primary Score	45	60	72	57	47	65	50	69	54	48	43	57	53	62
Secondary Habitat Components														
Artificial Channelization	20	20	19	12	20	20	18	20	20	16	17	15	20	20
Bank Stability (Right)	8	8	10	4	10	6	8	10	10	8	7	10	10	9
Bank Stability (Left)	8	8	10	4	10	6	8	10	10	8	7	10	10	8
Riparian Buffer Zone Width (Right)	10	10	5	9	10	10	5	10	10	10	10	10	10	10
Riparian Buffer Zone Width (Left)	10	9	4	9	10	10	5	10	10	10	9	10	10	10
Riparian Zone Vegetation (Right)	10	9	3	9	10	9	9	10	8	8	8	10	10	10
Riparian Zone Vegetation (Left)	10	9	3	9	10	9	9	10	8	8	8	10	10	10
Secondary Score	76	73	54	57	80	70	62	80	76	68	66	75	80	77
Habitat Assesment Score	121	133	126	113	127	135	112	149	130	116	109	132	133	139
Habitat Assesment Interpretation**	Optimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Optimal	Optimal	Suboptimal	Suboptimal	Optimal	Optimal	Optimal

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** Habitat Assessment Scores: 1 -40 = Poor; 41 -80 = Marginal; 81 -120 = Suboptimal; 121 -160 = Optimal

Table 5. Habitat Assessment Results

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

Station	Mntry38	Pos53	Pos16	PrrCrk	PrrCrk	Sprstd441	SWBSE4*	SWBSE4*	ThreeLk	Tum14	TumWd	TrkPrsrv	TrkCrk71
Sample Date	3/1/2013	12/14/2012	2/4/2013	5/20/2013	5/29/2014	2/7/2013	2/21/2012	9/11/2012	12/14/2012	1/10/2013	2/7/2013	1/21/2015	12/16/2014
Primary Habitat Components													
Substrate Diversity	16	18	18	12	5	18	11	8	18	18	13	13	10
Substrate Availability	10	15	13	8	11	11	6	8	15	12	18	8	11
Water Velocity	13	14	16	15	20	16	10	12	14	9	13	16	17
Habitat Smothering	13	18	16	13	13	13	13	14	19	17	10	14	18
Primary Score	52	65	63	48	49	58	40	42	66	56	54	51	51
Secondary Habitat Components													
Artificial Channelization	19	20	13	8	11	19	15	13	20	18	17	14	20
Bank Stability (Right)	7	10	5	10	10	3	5	5	5	5	7	5	7
Bank Stability (Left)	7	10	5	10	10	5	5	5	5	5	7	5	7
Riparian Buffer Zone Width (Right)	5	10	1	10	10	2	7	7	10	5	10	10	9
Riparian Buffer Zone Width (Left)	8	10	1	10	10	10	5	5	8	10	10	10	9
Riparian Zone Vegetation (Right)	5	10	5	8	9	4	7	7	9	3	5	10	7
Riparian Zone Vegetation (Left)	8	10	5	9	9	7	6	6	10	3	5	10	7
Secondary Score	59	80	35	65	69	50	50	48	67	49	61	64	66
Habitat Assesment Score	111	145	98	113	118	108	90	90	133	105	115	115	117
Habitat Assesment Interpretation**	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Suboptimal

* Source Data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** Habitat Assessment Scores: 1 -40 = Poor; 41 -80 = Marginal; 81 -120 = Suboptimal; 121 -160 = Optimal

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	BTCBalu		Blues71		Boulwr		Cellon	
	Sample Date	9/9/2013		1/25/2013		1/30/2013		12/16/2014	
	Method	SCI		SCI		SCI		SCI	
	Replicate	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	17	25	26	23	36	34	37	34
	Metric Score	0.40	3.60	4.00	2.80	8.00	7.20	9.17	7.92
Number of Ephemeroptera Taxa	Raw Value	0	0	1	2	1	1	2	2
	Metric Score	0.00	0.00	2.00	4.00	2.00	2.00	4.00	4.00
Number of Trichoptera Taxa	Raw Value	1	1	2	1	2	2	1	2
	Metric Score	1.43	1.43	2.86	1.43	2.86	2.86	1.43	2.86
Number of Long-lived Taxa	Raw Value	1	0	0	0	2	1	0	1
	Metric Score	2.50	0.00	0.00	0.00	5.00	2.50	0.00	3.33
Number of Clinger Taxa	Raw Value	2	2	5	7	6	6	7	6
	Metric Score	2.50	2.50	6.25	8.75	7.50	7.50	10.00	8.57
Number of Sensitive Taxa	Raw Value	2	3	4	6	6	5	6	5
	Metric Score	2.22	3.33	4.44	6.67	6.67	5.56	8.57	7.14
% Filterer	Raw Value	48.08%	34.81%	60.69%	69.33%	48.04%	49.68%	26.56%	18.55%
	Metric Score	10.00	8.67	10.00	10.00	10.00	10.00	6.01	4.15
% Tanytarsini	Raw Value	64.10%	45.57%	2.76%	8.00%	35.29%	35.06%	17.50%	10.69%
	Metric Score	10.00	10.00	4.01	6.66	10.00	10.00	8.58	7.23
% Dominance	Raw Value	41.67%	29.75%	40.00%	39.33%	30.07%	31.17%	10.00%	11.95%
	Metric Score	2.80	5.51	3.18	3.33	5.44	5.19	10*	10*
% Very Tolerant Taxa	Raw Value	1.92%	4.43%	4.14%	2.67%	10.46%	9.09%	30.00%	28.93%
	Metric Score	7.38	5.87	6.01	6.83	4.05	4.36	3.17	3.25
Total of Individual Metrics		39.24	40.92	42.75	50.47	61.52	57.16	60.93	58.46
Final SCI Score		43.60	45.46	47.50	56.08	68.35	63.51	67.70	67.96
Mean SCI or BioRecon Score		45		52		66		66	
Score Interpretation **		Healthy		Healthy		Healthy		Healthy	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 - 10] = Exceptional; [4 - 7] = Healthy; [0 - 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	HatBBay		Hog45		Hog16		HogSink	
	Sample Date	9/19/2013		12/14/2012		2/4/2013		1/25/2013	
	Method	SCI		SCI		SCI		SCI	
	Replicate	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	41	37	27	32	28	22	21	27
	Metric Score	10.00	8.40	4.40	6.40	4.80	2.40	2.00	4.40
Number of Ephemeroptera Taxa	Raw Value	1	2	1	1	4	3	4	3
	Metric Score	2.00	4.00	2.00	2.00	8.00	6.00	8.00	6.00
Number of Trichoptera Taxa	Raw Value	5	7	2	1	3	2	3	3
	Metric Score	7.14	10.00	2.86	1.43	4.29	2.86	4.29	4.29
Number of Long-lived Taxa	Raw Value	2	2	3	2	1	0	1	1
	Metric Score	5.00	5.00	7.50	5.00	2.50	0.00	2.50	2.50
Number of Clinger Taxa	Raw Value	7	6	7	7	6	6	7	5
	Metric Score	8.75	7.50	8.75	8.75	7.50	7.50	8.75	6.25
Number of Sensitive Taxa	Raw Value	6	5	5	2	4	5	4	3
	Metric Score	6.67	5.56	5.56	2.22	4.44	5.56	4.44	3.33
% Filterer	Raw Value	23.68%	32.12%	10.88%	16.56%	43.67%	49.03%	31.33%	40.67%
	Metric Score	5.82	7.98	2.53	3.99	10.00	10.00	7.78	10.00
% Tanytarsini	Raw Value	0.66%	1.99%	3.40%	5.96%	12.00%	5.16%	2.67%	6.00%
	Metric Score	1.53	3.32	4.49	5.88	7.77	5.51	3.94	5.90
% Dominance	Raw Value	8.55%	11.26%	28.57%	23.18%	34.00%	43.23%	28.67%	27.33%
	Metric Score	10*	9.71	5.78	7.00	4.55	2.45	5.76	6.06
% Very Tolerant Taxa	Raw Value	5.92%	5.30%	9.52%	11.26%	0.67%	0.65%	2.00%	4.00%
	Metric Score	5.28	5.51	4.26	3.89	8.75	8.79	7.32	6.07
Total of Individual Metrics		62.19	66.98	48.13	46.56	62.60	51.06	54.77	54.80
Final SCI Score		69.10	74.42	53.47	51.73	69.56	56.73	60.86	60.89
Mean SCI or BioRecon Score		72		53		63		61	
Score Interpretation **		Exceptional		Healthy		Healthy		Healthy	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 - 10] = Exceptional; [4 - 7] = Healthy; [0 - 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	LFC329B		LHTNB		LHTNB	LtLchCrk		LchCrk	
	Sample Date	1/30/2013		1/15/2013		5/29/2014	8/21/2014		9/9/2013	
	Method	SCI		SCI		BioRecon	SCI		SCI	
	Replicate	Aliquot1	Aliquot 2	Aliquot 1	Aliquot 2	N/A	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	30	30	15	20	24	37	30	21	24
	Metric Score	5.60	5.60	0*	1.60	0.52	9.17	6.25	2.00	3.20
Number of Ephemeroptera Taxa	Raw Value	1	2	3	3	4	0	1	1	2
	Metric Score	2.00	4.00	6.00	6.00	0.80	0.00	2.00	2.00	4.00
Number of Trichoptera Taxa	Raw Value	1	1	3	3	3	1	1	2	3
	Metric Score	1.43	1.43	4.29	4.29	0.43	1.43	1.43	2.86	4.29
Number of Long-lived Taxa	Raw Value	0	0	0	1	4	1	1	0	0
	Metric Score	0.00	0.00	0.00	2.50	0.57	3.33	3.33	0.00	0.00
Number of Clinger Taxa	Raw Value	5	5	6	7	6	0	1	5	5
	Metric Score	6.25	6.25	7.50	8.75	0.75	0.00	1.43	6.25	6.25
Number of Sensitive Taxa	Raw Value	1	2	3	4	5	4	3	5	5
	Metric Score	1.11	2.22	3.33	4.44	0.56	5.71	4.29	5.56	5.56
% Filterer	Raw Value	23.43%	20.13%	43.33%	45.33%	NA	6.29%	5.81%	32.89%	27.45%
	Metric Score	5.75	4.91	10.00	10.00	N/A	1.30	1.19	8.18	6.78
% Tanytarsini	Raw Value	53.85%	55.70%	0.67%	0.67%	NA	8.18%	8.39%	12.08%	9.80%
	Metric Score	10.00	10.00	1.55	1.55	N/A	6.52	6.59	7.79	7.21
% Dominance	Raw Value	32.17%	40.27%	26.00%	30.00%	NA	15.72%	17.42%	40.94%	42.48%
	Metric Score	4.96	3.12	6.36	5.45	N/A	9.66	9.32	2.97	2.62
% Very Tolerant Taxa	Raw Value	4.20%	4.03%	2.67%	0.67%	NA	16.98%	16.13%	7.38%	3.27%
	Metric Score	5.98	6.06	6.83	8.75	N/A	4.53	4.65	4.81	6.46
Total of Individual Metrics		43.08	43.59	45.86	53.34	NA	41.64	40.46	42.41	46.36
Final SCI Score		47.87	48.43	50.96	59.26	N/A	46.27	44.96	47.12	51.51
Mean SCI or BioRecon Score		48		55		6	46		49	
Score Interpretation **		Healthy		Healthy		Healthy	Healthy		Healthy	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 – 10] = Exceptional; [4 – 7] = Healthy; [0 – 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	MillOldB		Mntry38		Pos53		Pos16	
	Sample Date	8/12/2014		3/1/2013		12/14/2012		2/4/2013	
	Method	SCI		SCI		SCI		SCI	
	Replicate	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	41	35	29	33	27	34	25	23
	Metric Score	10*	8.33	5.20	6.80	4.40	7.20	3.60	2.80
Number of Ephemeroptera Taxa	Raw Value	2	2	4	3	2	2	3	2
	Metric Score	4.00	4.00	8.00	6.00	4.00	4.00	6.00	4.00
Number of Trichoptera Taxa	Raw Value	6	4	1	2	1	2	1	1
	Metric Score	8.57	5.71	1.43	2.86	1.43	2.86	1.43	1.43
Number of Long-lived Taxa	Raw Value	2	4	1	0	1	1	2	1
	Metric Score	6.67	10*	2.50	0.00	2.50	2.50	5.00	2.50
Number of Clinger Taxa	Raw Value	8	7	6	6	7	7	6	5
	Metric Score	10*	10.00	7.50	7.50	8.75	8.75	7.50	6.25
Number of Sensitive Taxa	Raw Value	7	8	4	6	2	3	5	4
	Metric Score	10.00	10*	4.44	6.67	2.22	3.33	5.56	4.44
% Filterer	Raw Value	9.93%	11.38%	34.23%	35.29%	31.08%	30.69%	51.27%	59.40%
	Metric Score	2.15	2.48	8.52	8.79	7.71	7.61	10.00	10.00
% Tanytarsini	Raw Value	0.71%	2.07%	10.07%	11.11%	33.78%	41.38%	14.65%	9.40%
	Metric Score	1.58	3.30	7.28	7.56	10.00	10.00	8.33	7.10
% Dominance	Raw Value	13.48%	13.10%	18.12%	18.30%	14.86%	20.00%	37.58%	49.66%
	Metric Score	10*	10*	8.15	8.11	8.89	7.73	3.73	0.99
% Very Tolerant Taxa	Raw Value	7.80%	7.58%	4.03%	0.65%	2.70%	3.45%	3.18%	8.05%
	Metric Score	6.31	6.37	6.06	8.77	6.81	6.36	6.51	4.63
Total of Individual Metrics		69.27	70.20	59.09	63.06	56.72	60.34	57.66	44.13
Final SCI Score		76.97	78.00	65.66	70.07	63.02	67.04	64.07	49.03
Mean SCI or BioRecon Score		77		68		65		57	
Score Interpretation **		Exceptional		Exceptional		Healthy		Healthy	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 - 10] = Exceptional; [4 - 7] = Healthy; [0 - 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	PrrCrk		PrrCrk	Sprstd441		SWBSE4*		SWBSE4*	
	Sample Date	5/20/2013		5/29/2014	2/7/2013		2/21/2012		9/11/2012	
	Method	SCI		BioRecon	SCI		SCI		SCI	
	Replicate	Aliquot 1	Aliquot 2	N/A	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	23	18	28	27	25	24	20	14	12
	Metric Score	2.80	0.80	0.68	4.40	3.60	3.75	2.08	0.00	0.00
Number of Ephemeroptera Taxa	Raw Value	0	1	1	3	3	1	1	1	1
	Metric Score	0.00	2.00	0.20	6.00	6.00	2.00	2.00	2.00	2.00
Number of Trichoptera Taxa	Raw Value	1	0	3	1	2	2	2	2	1
	Metric Score	1.43	0.00	0.43	1.43	2.86	2.86	2.86	2.86	1.43
Number of Long-lived Taxa	Raw Value	1	1	3	1	0	1	0	1	1
	Metric Score	2.50	2.50	0.43	2.50	0.00	3.33	0.00	3.33	3.33
Number of Clinger Taxa	Raw Value	1	2	1	6	5	5	5	4	2
	Metric Score	1.25	2.50	0.13	7.50	6.25	7.14	7.14	5.71	2.86
Number of Sensitive Taxa	Raw Value	0	0	0	5	4	3	3	0	1
	Metric Score	0.00	0.00	0.00	5.56	4.44	4.29	4.29	0.00	1.43
% Filterer	Raw Value	6.91%	5.92%	NA	60.33%	41.72%	44.90%	35.76%	19.18%	17.69%
	Metric Score	1.51	1.26	N/A	10.00	10.00	10.00	8.15	4.30	3.95
% Tanytarsini	Raw Value	7.89%	5.26%	NA	2.67%	0.64%	4.08%	4.86%	2.74%	0.00%
	Metric Score	6.62	5.56	N/A	3.94	1.49	4.78	5.20	3.88	0.00
% Dominance	Raw Value	51.32%	57.24%	NA	51.33%	37.58%	33.33%	25.00%	33.56%	38.78%
	Metric Score	0.61	0*	N/A	0.61	3.73	6.13	7.80	6.09	5.04
% Very Tolerant Taxa	Raw Value	34.21%	26.97%	NA	2.67%	5.10%	22.45%	20.83%	36.30%	42.18%
	Metric Score	1.31	1.87	N/A	6.83	5.59	3.86	4.04	2.70	2.34
Total of Individual Metrics		18.04	16.50	NA	48.76	43.97	48.15	43.57	30.78	22.38
Final SCI Score		20.04	18.33	N/A	54.18	48.85	53.50	48.41	34.30	24.87
Mean SCI or BioRecon Score		19		3	52		51		30	
Score Interpretation **		Impaired		Impaired	Healthy		Healthy		Impaired	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 - 10] = Exceptional; [4 - 7] = Healthy; [0 - 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 6. Stream Condition Index and BioRecon Results

Stream Bioassessment Report, Alachua County, Florida, 2012-2014
Data Provided by Water and Air Research, Inc. - Gainesville, Florida

SCI and BioRecon Metrics	Station	ThreeLK		Tum14		TumWd		TrkPrsrv	TrkCrk71	
	Sample Date	12/14/2012		1/10/2013		2/7/2013		1/21/2015	12/16/2014	
	Method	SCI		SCI		SCI		BioRecon	SCI	
	Replicate	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	Raw Value	38	36	18	16	22	20	26	17	16
	Metric Score	8.80	8.00	0.80	0.00	2.40	1.60	0.60	1.83	0.42
Number of Ephemeroptera Taxa	Raw Value	2	3	0	0	1	0	2	3	3
	Metric Score	4.00	6.00	0.00	0.00	2.00	0.00	0.40	6.00	6.00
Number of Trichoptera Taxa	Raw Value	1	1	1	2	1	1	3	1	1
	Metric Score	1.43	1.43	1.43	2.86	1.43	1.43	0.43	1.43	1.43
Number of Long-lived Taxa	Raw Value	2	2	1	2	0	0	5	3	1
	Metric Score	5.00	5.00	2.50	5.00	0.00	0.00	0.71	10.00	3.33
Number of Clinger Taxa	Raw Value	6	7	3	4	4	4	7	4	4
	Metric Score	7.50	8.75	3.75	5.00	5.00	5.00	0.88	5.71	5.71
Number of Sensitive Taxa	Raw Value	6	5	1	1	2	2	4	3	4
	Metric Score	6.67	5.56	1.11	1.11	2.22	2.22	0.44	4.29	5.71
% Filterer	Raw Value	28.72%	37.50%	23.10%	27.88%	31.70%	27.48%	NA	63.06%	51.58%
	Metric Score	7.11	9.36	5.67	6.89	7.87	6.79	N/A	10*	10*
% Tanytarsini	Raw Value	8.51%	13.46%	6.96%	3.21%	15.69%	15.23%	NA	5.10%	4.43%
	Metric Score	6.83	8.10	6.29	4.35	8.53	8.45	N/A	5.32	4.98
% Dominance	Raw Value	20.57%	19.87%	23.42%	25.00%	37.91%	41.06%	NA	49.04%	41.14%
	Metric Score	7.60	7.76	6.95	6.59	3.66	2.94	N/A	2.99	4.57
% Very Tolerant Taxa	Raw Value	24.82%	9.62%	26.58%	33.97%	14.38%	13.25%	NA	1.27%	4.43%
	Metric Score	2.07	4.24	1.91	1.33	3.33	3.52	N/A	9.70	7.52
Total of Individual Metrics		57.00	64.18	30.40	33.14	36.44	31.95	NA	56.27	49.68
Final SCI Score		63.33	71.31	33.78	36.82	40.49	35.50	N/A	62.52	55.20
Mean SCI or BioRecon Score		67		35		38		6	59	
Score Interpretation **		Healthy		Healthy		Healthy		Healthy	Healthy	

N/A = Not Applicable

* Source data for Sweetwater Branch provided by Florida Department of Environmental Protection (FDEP, 2014d).

** SCI Scores: 68 and above = Exceptional; 35 - 67 = Healthy; 34 and below = Impaired

BioRecon Scores: [7 - 10] = Exceptional; [4 - 7] = Healthy; [0 - 4] = Impaired

A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.

Table 7. Artificial Substrate/Hester-Dendy Results, 2013**Stream Bioassessment Report, Alachua County, 2012-2014****Data Provided by Water and Air Research, Inc. - Gainesville, Florida**

Station	HatSink	HogSink	LHTNB	Sprngst	TumWd
Sample Date	1/15/2013	3/25/2013	2/13/2013	2/7/2013	2/17/2013
Physical & Chemical Parameters					
Temperature (C°)	NA	12.86	18.99	17.09	20.24
pH (SU)	NA	7.59	6.80	7.29	8.28
Dissolved Oxygen (mg/L)	NA	10.20	9.05	8.03	10.74
Specific Conductance (µS/cm)	NA	293	230	250	367
Biological Indices					
Shannon Diversity (Base 2)	3.220	3.444	1.632	4.048	3.123
Pielou's Evenness (H/Hmax)	0.656	0.613	0.429	0.872	0.643
Florida Index	37	29	11	29	17
Total Density (No./M ²)	777	2580	1821	846	564
Total Number of Taxa	24	42	13	21	24
Number of Sensitive Taxa	6	6	3	5	0
Number of Long-Lived Taxa	1	0	0	0	0
Number of Clinger Taxa	7	8	3	5	2
Number of Suspension Feeders	9	9	2	5	5
Number of Very Tolerant Taxa	0	7	0	1	9

NA = Not Analyzed

Shannon Diversity Index Values: 3 - 5 = clean water conditions; 0 - 2 = stressed waters

Pielou's Evenness Values range between 0 and 1; A value of 1 denotes all taxa are represented by an equal number of individuals

Florida Index Values: 0 - 2 = gross pollution; 3 - 5 = moderate pollution; 6 - 9 = clean but poor habitat; 10 and above = clean

Sensitive Taxa have been found to be generally sensitive to pollution

Long-Lived Taxa have a life span longer than one year

Clinger Taxa require good water velocity

Suspension Feeders collect their food from the water column

Very Tolerant Taxa are generally tolerant of pollution

Data have been up-collapsed so as not to inflate numbers

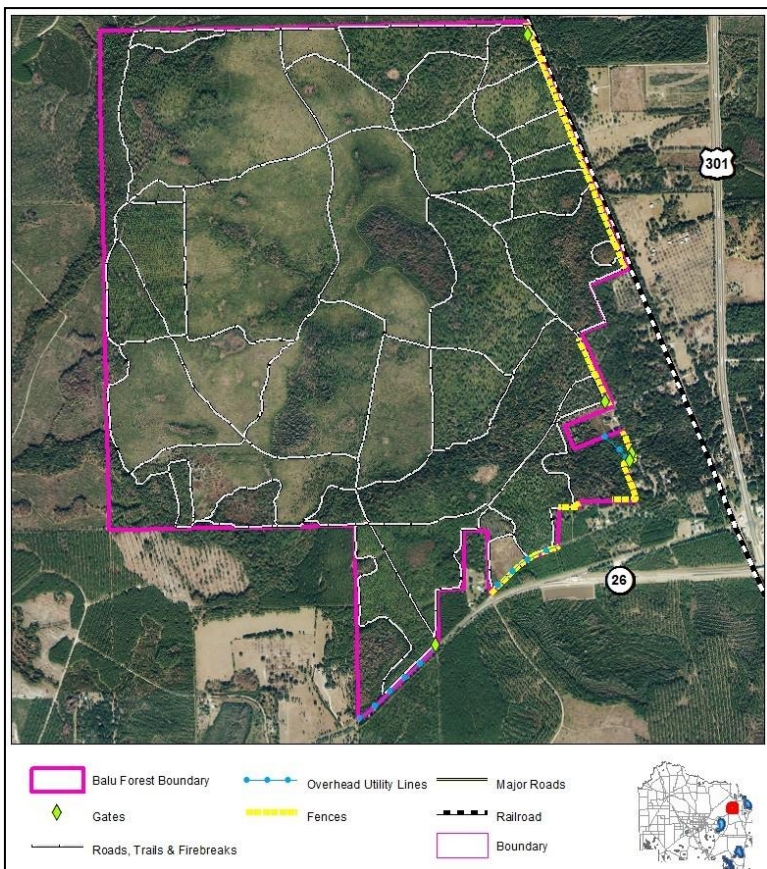
Bee Tree Creek, Balu Forest Bioassessment Summary

Introduction

Bee Tree Creek, Balu Forest is located in Orange Heights, northeastern Alachua County on the north side of State Road 26, approximately 1.7 miles east of County Road 234 (Windsor Road). Balu Forest is a 1,576 acre tract purchased in 1997 for possible use as a solid waste management site. Formerly called Site Echo, the Alachua County Board of Commissioners established new management goals based upon public input in 1999, and renamed the site Balu Forest. The most recent land management plan was approved on June 28, 2011. The objectives of the plan are to restore the ecological communities and to provide revenue generated by a sustainably managed pine forest, to maintain and enhance wildlife habitat and corridor values, to conserve soil and watershed values, and to provide passive public recreational opportunities.

Outstanding features of Balu Forest include nine distinct natural communities including high quality mesic flatwoods and depression marshes, and a portion of Bee Tree Creek, which is the largest tributary of Hatchet Creek. The creek flows through the northwestern portion of the property.

The headwaters of Bee Tree Creek lie in the Austin Carey Forest. The creek flows in a southwesterly direction to Hatchet Creek which flows to Newnans Lake. The land uses that drain into the sampling site include mainly silviculture, and natural forest. Bee Tree Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on March 26, 2009 in the Newnans Lake Conservation Area. The Stream Condition Index (SCI) method was utilized on September 9, 2013 in Balu Forest. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Physical and Chemical Characterization

Bee Tree Creek was an average of 3 meters wide and 0.4 meters deep. Non-point source pollution was possible from a culvert leading to the creek. No pools were documented in the reach; the velocity was moderate at 0.14 meters per second. The water was clear but very dark tannic (tea-colored) with no odors or sheen. Temperature, pH, and specific conductivity were all within normal ranges. The dissolved oxygen was low at 2.11 mg/L, which is common in darkly colored streams, particularly when the water temperature is warm.

Physical/Chemical Data	BTCNLC 3/27/2009	BTCBalu 9/9/2013
Temperature Degrees (C°)	18.0	23.0
Dissolved Oxygen (mg/L)	2.03	2.11
Specific Conductivity (µS/cm)	147	86
pH (SU)	5.76	7.21

Habitat Characterization

The habitat suitable for benthic macroinvertebrates was difficult to see in the dark water, but included mostly leaf packs and snags of fallen tree branches. The bottom was sandy. No erosion was noted and some of the habitat was slightly silt-smothered. The riparian zone was greater than 18 meters wide with native plants such as cypress and saw palmetto along the banks that moderately shaded the stream. Fish were rare and periphyton and aquatic macrophytes were absent. Of 160 possible points for the habitat assessment, Bee Tree Creek received 121 points, placing it in the optimal range.

Plants Noted in Riparian Zone BTCBalu 9/9/2013	
Scientific Name	Common Name
<i>Taxodium distichum</i>	Bald cypress
<i>Pinus taeda</i>	Loblolly pine
<i>Serenoa repens</i>	Saw palmetto
<i>Acer rubrum</i>	Southern red maple
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Quercus nigra</i>	Water oak
<i>Myrica cerifera</i>	Wax myrtle
<i>Rhododendron canescens</i>	Sweet pinxter azalea
<i>Fraxinus caroliniana</i>	Pop ash

Habitat Assessment Scores	BTCNLC 3/27/2009	BTCBalu 9/9/2013
Substrate Diversity	14	8
Substrate Availability	11	8
Water Velocity	2	12
Habitat Smothering	14	17
Primary Score	41	45
Artificial Channelization	20	20
Bank Stability - Right Bank	8	8
Bank Stability - Left Bank	8	8
Riparian Buffer Zone Width - Right Bank	10	10
Riparian Buffer Zone Width - Left Bank	9	10
Riparian Zone Vegetation Quality - Right Bank	10	10
Riparian Zone Vegetation Quality - Left Bank	10	10
Secondary Score	75	76
Total Score	116	121
Interpretation	Suboptimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Bee Tree Creek contained caddisfly, damselfly, beetle, and many filter-feeding midge larvae. Isopods were abundant and the spongilla fly larva, *Sisyrha vicaria*, which lives in sponges was found only at this station. Amphipods and worms were also present. The macroinvertebrate community in Bee Tree Creek was diverse and scored in the healthy category.



Spongilla fly larva, *Sisyra vicaria*

BioRecon/SCI Results	BTCNLC 3/27/2009	BTCBalu 9/9/2013	
Sample Type	BioRecon	SCI	
Metric Measured	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	23	17	25
Number of Ephemeroptera Taxa	3	0	0
Number of Trichoptera Taxa	0	1	1
Number of Long-lived Taxa	2	1	0
Number of Clinger Taxa	2	2	2
Number of Sensitive Taxa	5	2	3
% Filterer	N/A	48.1%	34.8%
% Tanytarsini	N/A	64.1%	45.6%
% Dominance	N/A	41.7%	29.8%
% Very Tolerant Taxa	N/A	1.9%	4.4%
Score	4	43.6	45.46
Mean SCI Score	N/A	45	
Interpretation	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10]=Exceptional, [4–7]=Healthy, [0–4]=Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

In spite of the low dissolved oxygen, Bee Tree Creek had a healthy macroinvertebrate population typical of blackwater streams. The mean score of 45 was in the lower half of the healthy range. The sample site being in the upper reaches of the watershed, may make this section of the creek susceptible to intermittent flow decreasing the potential for long-lived taxa. The highly colored (tannic) water and heavy canopy reducing light penetration may be causing the absence of periphyton that would encourage grazers.



Bee Tree Creek, Balu Forest

Blues Creek at NW 71st Street

Bioassessment Summary

Introduction

Blues Creek lies in northwest Gainesville, Alachua County, Florida. It flows west from NW 43rd Street, north of NW 53rd Avenue to San Felasco Hammock State Preserve where it recharges the Floridan aquifer at Big Otter Ravine. Upstream of NW 71st Street, the watershed drains natural forest, low density residential neighborhoods, agriculture, and silviculture. Blues Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on February 13, 2003 and April 9, 2009. The Stream Condition Index (SCI) method was utilized on January 25, 2013. In 2003, the creek was sampled east of NW 71st Street in a low-density residential area. In 2009 and 2013, the creek was sampled west of NW 71st Street downstream of the Alachua County Environmental Protection Department staff gage. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Blues Creek

Physical and Chemical Characterization

Blues Creek was an average of 2 meters wide and 0.2 meters deep. A small amount of pollution could runoff from NW 71st Street and residential areas upstream. The stream velocity was good, about 0.25 meters per second. The water was clear and tannic (tea-colored). There were no unnatural odors, oils, or iron/sulfur bacteria present. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	Blues71E 2/13/2003	Blues71 4/9/2009	Blues71 1/25/2013
Temperature Degrees (C°)	10.2	15.4	14.5
Dissolved Oxygen (mg/L)	9.4	10.3	9.5
Specific Conductivity (µS/cm)	104	120	135
pH (SU)	5.05	5.96	6.53

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, rock rubble, and roots of vegetation living on the banks. The bottom was mostly sand with areas of silty pools. The vegetation was native, mixed hardwood forest with only a small amount of exotic Taro. The riparian zone was greater than 18 meters wide and was vegetated with native trees that heavily shaded the stream. Fish were rare; aquatic macrophytes and periphyton (algae) were absent.

Plants Noted in Riparian Zone Blues71 1/25/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Carpinus caroliniana</i>	Bluebeech
<i>Carya glabra</i>	Pignut Hickory
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Fraxinus americana</i>	White ash
<i>Ilex opaca</i>	American holly
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Pinus glabra</i>	Spruce pine
<i>Quercus michauxii</i>	Swamp chestnut oak

Plant noted with (E) is an exotic species

Habitat Assessment Scores	Blues71E 2/13/2003	Blues71 4/9/2009	Blues71 1/25/2013
Substrate Diversity	13	16	15
Substrate Availability	8	10	14
Water Velocity	20	18	15
Habitat Smothering	17	11	16
Primary Score	58	55	60
Artificial Channelization	20	20	20
Bank Stability - Right Bank	9	7	8
Bank Stability - Left Bank	9	7	8
Riparian Buffer Zone Width - Right Bank	10	9	10
Riparian Buffer Zone Width - Left Bank	10	8	9
Riparian Zone Vegetation Quality - Right Bank	10	9	9
Riparian Zone Vegetation Quality - Left Bank	10	8	9
Secondary Score	78	68	73
Total Score	136	123	133
Interpretation	Optimal	Optimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Blues Creek contained a variety of benthic macroinvertebrates, including dragonfly, damselfly, mayfly, blackfly, caddisfly, and midge larvae. Worms, and beetles were also present, but the SCI sampling lacked any long-lived organisms (requiring more than one year to complete their life cycle). Both BioRecons assessments showed a community dominated by chironomid (midge), blackfly, and mayfly larvae and both had a Healthy result. The score dropped slightly from 2003 to 2009, which may be due to the change in sampling location, or time of year. The SCI score indicated a healthy community as well with many filter feeders. Previous drought conditions may affect the results, although the stream had been flowing well for at least six months prior to sampling at all sampling events.



Aquatic beetle, *Helichus lithophilus*

BioRecon/SCI Results	Blues71E 2/13/2003	Blues71 4/9/2009	Blues71 1/25/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	18	18	26	23
Number of Ephemeroptera Taxa	4	5	1	2
Number of Trichoptera Taxa	2	1	2	1
Number of Long-lived Taxa	3	2	0	0
Number of Clinger Taxa	4	4	5	7
Number of Sensitive Taxa	4	4	4	6
% Filterer	N/A	N/A	60.7%	69.3%
% Tanytarsini	N/A	N/A	2.8%	8.0%
% Dominance	N/A	N/A	40.0%	39.3%
% Very Tolerant Taxa	N/A	N/A	4.1%	2.7%
Score	5	4	47.5	56.08
Mean SCI Score	N/A	N/A	52	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10]=Exceptional, [4–7]=Healthy, [0–4]=Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Blues Creek appeared to have a fairly healthy habitat at this location. Water quality does not seem to be a cause for concern but rather drought and perhaps runoff from upstream. The greatest concern for the creek's macroinvertebrates is its intermittent nature with occasional dry conditions, a natural occurrence due to periods of low rainfall. Continued sampling over time will give a clearer picture of the health and human impact on this creek. Blues Creek can be viewed and enjoyed in San Felasco Hammock Preserve State Park and the City of Gainesville's San Felasco Park.

Boulware Spring Run in Robinson Heights Subdivision Bioassessment Summary

Introduction

Boulware Spring Run flows out of Boulware Spring in southeastern Gainesville in Alachua County, Florida. Boulware Spring, which discharges 300,000 gallons of water per day, was a meeting and swimming place and a source of drinking water for Alachua County residents for many years. Boulware Spring has been designated as an American Water Landmark and is listed on the National Register of Historic Places. The spring run flows through upland mixed forest and a residential area before flowing into Paynes Prairie State Preserve State Park. The water continues into Alachua Sink, which discharges or flows into the Floridan aquifer. The



Boulware Spring

The sampling site is located in Robinson Heights Subdivision, a medium-density residential area. Upstream of the site, the watershed drains about equal amounts of natural forest, residential neighborhoods, and commercial land, and a smaller amount of pasture land. Boulware Spring Run was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on March 6, 2002 and April 17, 2009. The Stream Condition Index (SCI) method was utilized on January 30, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.

Physical and Chemical Characterization

Boulware Spring Run was an average of one meter wide and 0.15 meters deep. The current velocity was swift at 0.33 meters per second. Silt and sand smothering was slight. The water was clear, with no unnatural odors or oils present. Temperature, pH, and dissolved oxygen were all within normal ranges. Specific conductance was elevated.

Physical/Chemical Data	Boulwr 3/6/2002	Boulwr 4/17/2009	Boulwr 1/30/2013
Temperature Degrees (C°)	15	18.8	22.5
Dissolved Oxygen (mg/L)	9.9	7.9	7.3
Specific Conductivity (µS/cm)	NA	515	537
pH (SU)	7.85	7.28	7.68

NA = Not Analyzed

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation/trees living on the banks, snags (fallen trees or branches), leaf packs, and aquatic vegetation. The stream bottom was mostly sandy with a small amount of rock rubble and silty pools. No erosion was noted. The riparian zone was vegetated with native and exotic plants that provided light to moderate shade. Fish were common, aquatic macrophytes were abundant, and minimal periphyton was observed. Out of 160 possible points for the habitat assessment, Boulware Spring Run received 126 placing it in the lower portion of the optimal range. This is a better score than this site received in previous years and the improvement was due to more stable banks, less habitat smothering, and an increase in habitat diversity and availability.

Plants Noted in Riparian Zone Boulwr 1/30/2013	
Scientific Name	Common Name
<i>Alternanthera philoxeroides</i>	Alligatorweed (E)
<i>Ardisia crenata</i>	Coral ardisia (E)
<i>Carpinus caroliniana</i>	Bluebeech
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Ilex vomitoria</i>	Yaupon
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Prunus caroliniana</i>	Carolina laurelcherry
<i>Quercus nigra</i>	Water oak
<i>Sambucus canadensis</i>	American black elderberry

Plants noted with (E) are exotic species



Boulware Spring Run

Habitat Assessment Scores	Boulwr 3/6/2002	Boulwr 4/17/2009	Boulwr 1/30/2013
Substrate Diversity	10	17	20
Substrate Availability	8	18	20
Water Velocity	15	15	16
Habitat Smothering	8	15	16
Primary Score	41	65	72
Artificial Channelization	16	15	19
Bank Stability - Right Bank	6	9	10
Bank Stability - Left Bank	6	9	10
Riparian Buffer Zone Width - Right Bank	3	3	5
Riparian Buffer Zone Width - Left Bank	3	3	4
Riparian Zone Vegetation Quality - Right Bank	4	3	3
Riparian Zone Vegetation Quality - Left Bank	4	4	3
Secondary Score	42	46	54
Total Score	83	111	126
Interpretation	Suboptimal	Suboptimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

A variety of benthic macroinvertebrates were present during the January 30th, 2013 sampling. These included species of dragonfly, damselfly, blackfly, caddisfly, midge larvae, worms, clams, and snails. The mean SCI score was 66 out of a possible 100, a score at the high end of the healthy range, showing improvement from earlier BioRecon results.

BioRecon/SCI Results	Boulwr 3/6/2002	Boulwr 4/17/2009	Boulwr 1/30/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	20	23	36	34
Number of Ephemeroptera Taxa	0	2	1	1
Number of Trichoptera Taxa	1	1	2	2
Number of Long-lived Taxa	5	3	2	1
Number of Clinger Taxa	2	3	6	6
Number of Sensitive Taxa	2	2	6	5
% Filterer Taxa	N/A	N/A	48.0%	49.7%
% Tanytarsini	N/A	N/A	35.3%	35.1%
% Dominance	N/A	N/A	30.1%	31.2%
% Very Tolerant Taxa	N/A	N/A	10.5%	9.1%
Score	3	3	68.35	63.51
Mean SCI Score	N/A	N/A	66	
Interpretation	Impaired	Impaired	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above=Exceptional, 35-67=Healthy, 34 and below = Impaired

Discussion

The in-stream bioassessment results for Boulware Spring Run show improvement in habitat and macroinvertebrate community. The 2002 and 2009 results indicated a suboptimal habitat and an impaired community. The habitat assessment score is now in the optimal category and the increase in macroinvertebrate diversity placed the SCI score in the healthy range. The total number of taxa found increased by approximately 50% (over total taxa reported in 2002 and 2009) and the number of clinger and sensitive taxa more than doubled. The lower quality habitat and drought or low rainfall conditions prior to the earlier sampling events likely contributed to the impairment. Continued assessments should be conducted to verify ecosystem health.



Dragonfly, *Dromogomphus* larva

Cellon Creek Bioassessment Summary

Introduction

Cellon Creek is located in the City of Alachua near Hague in Alachua County, Florida. The creek flows south under US 441, then west where it recharges the Floridan aquifer via Lee Sink in the northern area of San Felasco Hammock State Preserve. The watershed consists of primarily natural, agricultural, and residential areas with small amounts of industrial, commercial, silviculture, and pasture/ field land uses. The sampling site is located on the western side of US 441, downstream of the roadway. Cellon Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance



Cellon Creek downstream of US 441

(BioRecon) method on September 18, 2003 and April 24, 2009. The Stream Condition Index (SCI) method was utilized on December 16, 2014. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.

Physical and Chemical Characterization

Cellon Creek is a first order stream that was an average of 2 meters wide and 0.1 meter deep. The water level was lower than in previous sampling events. The velocity was about 0.11 meters per second at a typical transect. However, several places along the 100-meter stretch reached ideal velocities of 0.25 meters per second. The water was clear with no unnatural odors or oils present. Temperature, pH, dissolved oxygen, and conductivity were all within normal ranges.

Physical/Chemical Data	Cellon 9/18/2003	Cellon 4/24/2009	Cellon 12/16/2014
Temperature Degrees (C°)	22.07	17.55	12.4
Dissolved Oxygen (mg/L)	8.38	8.84	9.55
Specific Conductivity (µS/cm)	513	489	343
pH (SU)	8.03	7.47	6.73

Habitat Characterization

The habitat suitable for macroinvertebrates included snags of fallen tree branches, leaf packs, rocky riffle areas, and sand. Clay outcroppings were common and could easily be mistaken for rock. Roots of vegetation living on the banks were mostly out of the water and unavailable for aquatic macroinvertebrate colonization. The bottom substrate was mostly clay, stone, and sand. Cellon Creek may have been channelized in the past as it is very straight. However large native trees grew in the riparian zone, and spoil banks were not obvious. The riparian zone had been slightly disturbed, the banks were steep, and some erosion was evident. Fish and periphyton were rare, and aquatic macrophytes and iron/sulfur bacteria were absent.

Plants Noted in Riparian Zone Cellon 12/16/2014	
Scientific Name	Common Name
<i>Carpinus caroliniana</i>	Ironwood
<i>Celtis laevigata</i>	Hackberry; Sugarberry
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Quercus michauxii</i>	Swamp chestnut oak
<i>Quercus nigra</i>	Water oak
<i>Sabal palmetto</i>	Cabbage palm
<i>Serenia repens</i>	Saw palmetto

Habitat Assessment Scores	Cellon 9/18/2003	Cellon 4/24/2009	Cellon 12/16/2014
Substrate Diversity	20	18	18
Substrate Availability	9	12	17
Water Velocity	14	13	11
Habitat Smothering	15	13	11
Primary Score	58	56	57
Artificial Channelization	13	18	12
Bank Stability - Right Bank	7	8	4
Bank Stability - Left Bank	7	7	4
Riparian Buffer Zone Width - Right Bank	5	9	9
Riparian Buffer Zone Width - Left Bank	9	6	9
Riparian Zone Vegetation Quality - Right Bank	6	9	9
Riparian Zone Vegetation Quality - Left Bank	8	8	9
Secondary Score	55	65	57
Total Score	113	121	113
Interpretation	Suboptimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Cellon Creek had an abundant amount and variety of benthic macroinvertebrates present, including damselfly, mayfly, blackfly, caddisfly, crane fly, and midge larvae. Midge (non-biting fly) larvae were the dominant taxa found. The damselfly nymph or naiad (*Calopteryx maculata*), common in this stream, feeds on a variety of prey and is also preyed upon by a variety of predators. Clams, snails, worms, water bugs, and a variety of beetles were also present. The average SCI score for Cellon Creek (66 points) placed it in the healthy category.



Damselfly larva and adult,
Calopteryx maculata

BioRecon/SCI Results	Cellon 9/18/2003	Cellon 4/24/2009	Cellon 12/16/2014	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	21	31	37	34
Number of Ephemeroptera Taxa	2	1	2	2
Number of Trichoptera Taxa	3	3	1	2
Number of Long-lived Taxa	4	6	0	1
Number of Clinger Taxa	5	6	7	6
Number of Sensitive Taxa	4	4	6	5
% Filterer	N/A	N/A	26.6%	18.6%
% Tanytarsini	N/A	N/A	17.5%	10.7%
% Dominance	N/A	N/A	10.0%	12.0%
% Very Tolerant Taxa	N/A	N/A	30.0%	28.9%
Score	5	6	67.7	64.96
Mean SCI Score	N/A	N/A	66	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10]=Exceptional, [4–7]=Healthy, [0–4]=Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Cellon Creek has a diverse macroinvertebrate assemblage and with over 35 taxa present, one of the most diverse populations found in the streams assessed during 2013 and 2014. The absence of long-lived taxa and the presence of a lower number of caddisfly species may have been related to a number of factors including the condition of the available habitat and bank stability (smothering the available habitat with silt and/or sand may have diminished the amount of useable habitat) or the lower water velocity (caddisflies are generally sensitive to changes in flow). The Cellon Creek macroinvertebrate community appears to be quite healthy and apparently has not suffered significantly from human impacts in the watershed. The SCI score was two points away from the exceptional category for the 2014 sampling event. The satellite image shows a large amount of tree canopy, both upstream and downstream of the sampling location.

Hatchet Creek at Buck Bay Bioassessment Summary

Introduction

Hatchet Creek flows from its headwaters in Buck Bay Flatwoods, west of CR 225 (NE 38th Street) and north of NE 53rd Avenue (CR 1470), southeast to Newnans Lake in Alachua County, Florida. When the water level is low, it is possible to see the creek flowing into a sinkhole east of Waldo Road, creating a waterfall into the intermediate aquifer. The SCI sampling site was located near the headwaters on property recently acquired by Alachua County Forever and previously owned by Cox & Moore. This acquisition is within the primary and secondary protection zone for the City of Gainesville Murphree well field, and active wells are one quarter mile to the southeast of the property (Buck Bay Flatwoods Cox & Moore Site Evaluation, 5/16/2012). This land acquisition protects approximately 4,082 linear feet of Hatchet Creek. The site has intermittent flow; care was taken to ensure the water had been flowing for several months prior to sampling. Hatchet Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on December 4, 2001 and December 1, 2009 at a station on the east side of CR 225 and the Stream Condition Index (SCI) method was utilized on September 19, 2013 at Buck Bay. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. Hatchet Creek was sampled further downstream using an artificial substrate (Hester-Dendy) sampler on January 15, 2013 at the sink. For Hester-Dendy evaluation, a sampler is placed in the water for 28 days and then retrieved. The biological organisms populating the sampler are removed, identified, and counted.



Hatchet Creek at Buck Bay

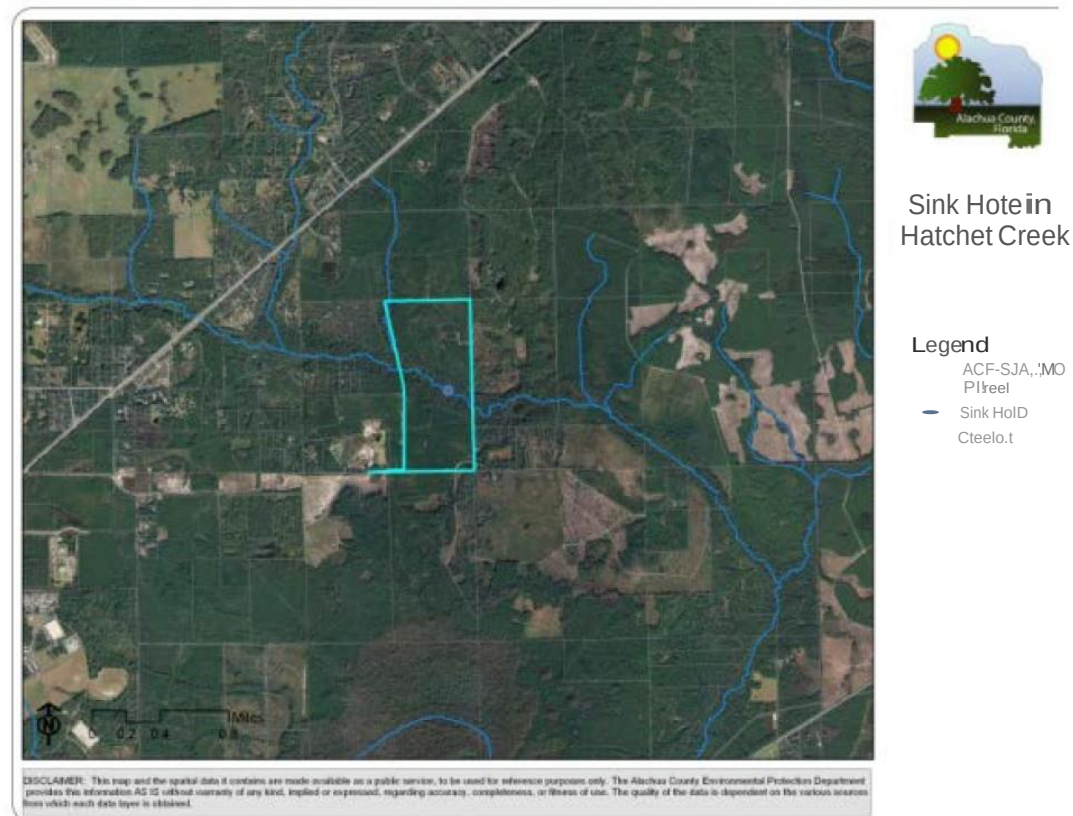
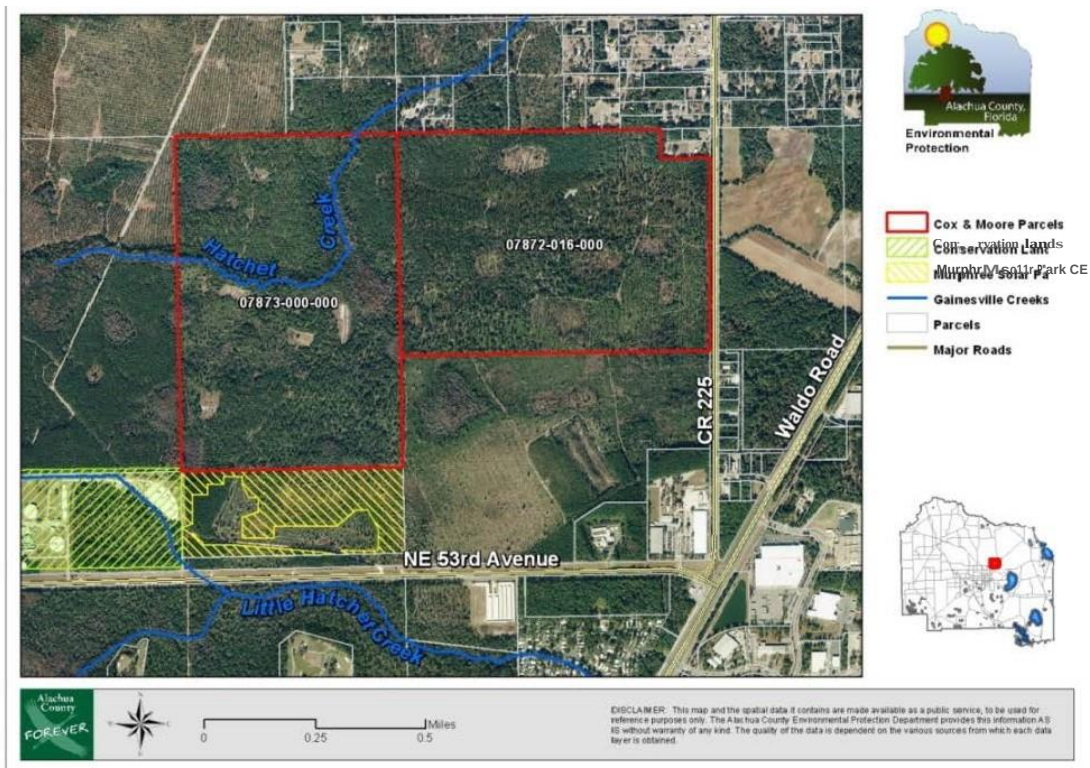
Physical and Chemical Characterization

This property was previously managed for timber but was in recovery with longleaf pine and native understory re-growing naturally. The May 16, 2012 site evaluation states “the floodplain swamp and bottomland forest have been logged in the past, but are currently in good condition with mature trees and intact ground cover.” Hatchet Creek was an average of 0.5 meter wide and 0.2 meter deep. Velocity was measured at a narrow, shallow portion of the stream, and the flow was minimal. Non-point source pollution was not evident at the site. The water was clear but tea-colored (tannic). Temperature, pH, and specific conductivity were all within normal ranges, but the dissolved oxygen level was low, which is common in highly tannic warm water.

Physical/Chemical Data	Hat225 12/4/2001	Hat225 12/1/2009	HatBBay 9/19/2013
Temperature Degrees (C°)	18	15.6	23.3
Dissolved Oxygen (mg/L)	4.2	7.5	1.6
Specific Conductivity (µS/cm)	N/A	74	89
pH (SU)	6.00	6.52	4.96

Buck Bay Flatwoods - Cox & Moore Aerial Map

Map2



Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches and leaf packs. Sand and a small amount of rock habitat were also sampled. Erosion was slight and some of the habitat was a bit silt-smothered. The riparian zone was greater than 18 meters wide and wetland plants such as Virginia willow, fetterbush, and black gum were growing along the banks. The riparian zone was vegetated with primarily native plants that moderately shaded the stream. Fish were present but rare. Periphyton and aquatic plants were absent. Evidence of hogs was noted. The only habitat assessment metric in which Hatchet Creek scored in the poor range was typical water velocity. Of 160 possible points for the habitat assessment, Hatchet Creek received 127 points, an optimal rating.

Plants Noted in Riparian Zone HatBBay 9/19/2013	
Scientific Name	Common Name
<i>Ilex cassine</i>	Dahoon holly
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Lyonia lucida</i>	Fetterbush Lyonia
<i>Magnolia virginiana</i>	Sweet bay
<i>Myrica cerifera</i>	Wax myrtle
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Black gum
<i>Quercus nigra</i>	Water oak
<i>Rhododendron canescens</i>	Sweet pinxter azalea
<i>Serenoa repens</i>	Saw palmetto

Habitat Assessment Scores	Hat225 12/4/2001	Hat225 12/1/2009	HatBBay 9/19/2013
Substrate Diversity	16	13	14
Substrate Availability	18	9	20
Water Velocity	3	3	3
Habitat Smothering	6	13	10
Primary Score	43	38	47
Artificial Channelization	9	15	20
Bank Stability - Right Bank	9	9	10
Bank Stability - Left Bank	9	8	10
Riparian Buffer Zone Width - Right Bank	10	10	10
Riparian Buffer Zone Width - Left Bank	10	10	10
Riparian Zone Vegetation Quality - Right Bank	10	9	10
Riparian Zone Vegetation Quality - Left Bank	10	9	10
Secondary Score	67	70	80
Total Score	110	108	127
Interpretation	Suboptimal	Suboptimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 120-160 = Optimal

Benthic Macroinvertebrates

BioRecon surveys of Hatchet Creek at CR 225 in 2001 and 2009 indicated the macroinvertebrate community in this reach of the creek is exceptional. Hatchet Creek contained a variety of benthic macroinvertebrates including damselfly, dragonfly, mayfly, caddisfly, dobsonfly, and midge larvae. The amphipod or scud of the Genus *Crangonyx* was abundant here. Worms, mites, and beetles were also present. Many of the taxa present were sensitive to pollution. Hatchet Creek at CR 225 (east of the current sample site at Buck Bay) received the highest score possible for a BioRecon in 2009. The site at Buck Bay also received an exceptional score.



Amphipod or scud, *Crangonyx*

BioRecon/SCI Results	Hat225 12/4/2001	Hat225 12/1/2009	HatBBay 9/19/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	31	38	41	37
Number of Ephemeroptera Taxa	4	6	1	2
Number of Trichoptera Taxa	8	10	5	7
Number of Long-lived Taxa	7	4	2	2
Number of Clinger Taxa	6	6	7	6
Number of Sensitive Taxa	7	14	6	5
% Filterer	N/A	N/A	23.7%	32.1%
% Tanytarsini	N/A	N/A	0.7%	2.0%
% Dominance	N/A	N/A	8.6%	11.3%
% Very Tolerant Taxa	N/A	N/A	5.9%	5.3%
Score	9	10	69.10	74.42
Mean SCI Score	N/A	N/A	72	
Interpretation	Exceptional	Exceptional	Exceptional	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Hatchet Creek was sampled for the 2013 Hester-Dendy analysis further downstream at the sink during high water when a Stream Condition Index (SCI) assessment could not take place because of the poor sampling (flooded) conditions. The SCI sampling of Hatchet Creek was subsequently carried out near the headwaters at Buck Bay as discussed. The sample location at the sink is located on Alachua County Forever conservation land on the east side of Waldo Road and accessed through the Austin Carey Forest. This land is managed by St. Johns River Water Management District. The Hester-Dendy indices showed this site had a large number of Florida Index species. The other metrics indicated that it is a healthy stream as well.

Artificial Substrate (Hester-Dendy) Sampling Results	HATSINK 1/15/2013
Shannon-Weaver Diversity Index (Base 2)	3.220
Pielou's Evenness (H/Hmax)	0.656
Florida Index	37
Total Density (No./M ²)	777
Total Number of Taxa	24

- Shannon-Weaver Diversity Index: 3- 5 = clean water conditions; 0- 2 = stressed waters.

- Pielou's Evenness Values range between 0 and 1.

A value of 1 denotes all taxa are represented by an equal number of individuals (the closer a value is to 1, the better the distribution).

- Florida Index: 0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; and 10 and above = clean.

- Total Taxa Values have been up-collapsed so as not to inflate numbers.

Discussion

The SCI sampling of Hatchet Creek was conducted near the headwaters at Buck Bay, which had recently been acquired by Alachua County. In spite of the low current velocity, Hatchet Creek at Buck Bay had an exceptional macroinvertebrate community. The BioRecon process allows for sorting out organisms that are known to be sensitive, such as mayflies. The SCI sorting protocol is random, which could account for differences in taxa recorded. Hatchet Creek at Buck Bay is expected to have some water even in periods of drought as there are deep pools where macroinvertebrates may take refuge. The large amount of silviculture and natural land with no stormwater entering the stream are likely factors contributing to the exceptional results in this stream. Hester-Dendy sampling occurred during high water when a Stream Condition Index (SCI) assessment could not take place at the sink because of the poor sampling conditions. The Hester-Dendy sampling at the sink and data analysis showed a macroinvertebrate population indicative of clean water conditions. The Florida Index score of 37 was the highest Florida Index score of the five stations sampled in 2013. High numbers of sensitive taxa, clinger taxa, and suspension feeders are indicative of an excellent macroinvertebrate assemblage.

Hogtown Creek at NW 45th Avenue Bioassessment Summary

Introduction

Hogtown Creek lies in western Gainesville, Alachua County, Florida. The creek is 11.3 miles long and flows in a southwesterly direction from north of NW 53rd Avenue to Haile Sink. The sampling site was located near the headwaters north of NW 45th Avenue. A new park near the headwaters opened in 2012. Land use in the watershed upstream of the sample site includes 26% natural forest, 10% silviculture, 27% residential neighborhoods, 18% commercial and 19% industrial. Hogtown Creek at NW 45th Avenue was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on January 12, 2001 and December 6, 2008. The Stream Condition Index (SCI) method was utilized on December 14, 2012. Sampling events included a physical and chemical characterization, habitat assessment, and macroinvertebrate assessment.



Hogtown Creek at NW 45th Avenue

Physical and Chemical Characterization

Hogtown Creek at NW 45th Avenue was an average of 2 meters wide and 0.15 meters deep. The water rose to about 1.6 m above the base flow during storms in 2001 and that increased to over 2 meters in 2008, based on visible water marks or stand seen during the bioassessments. This high water mark remained at 2 meters in 2012. Banks were high and mossy with erosion and clay outcroppings in places. Non-point source pollution was evident by the presence of a culvert at the downstream end of the reach near 45th Avenue. The water velocity was poor during the first events, but improved in 2012. The water was clear with no odors or oils. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	Hog45 1/12/2001	Hog45 12/6/2008	Hog45 12/14/2012
Temperature Degrees (C°)	13	14.2	15.2
Dissolved Oxygen (mg/L)	7.71	9.13	9.19
Specific Conductivity (µS/cm)	371	311	359
pH (SU)	7.62	7.53	7.59

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, roots of vegetation living on the banks, rock rubble and a small amount of aquatic vegetation. Erosion was slightly evident and silt and sand lightly smothered some of the habitat. The riparian zone contained mostly native vegetation for over 18 meters on either side of the stream with native plants that lightly shaded the creek in winter and provided heavy shade in summer. There was some evidence of human activity by the occasional small trail near the stream and a small amount of exotic vegetation. Fish were common. A small amount of periphyton was present in 2001 which increased in 2008, but none was noted in 2012. Aquatic macrophytes were rare and iron/sulfur bacteria was not observed. Of 160 possible points for the habitat assessment, Hogtown Creek at NW 45th Avenue scored 135 points, an optimal rating. The main change from previous events was increased water velocity and a decrease in habitat smothering.

Plants Noted in Riparian Zone Hog45 12/14/2012	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Carpinus caroliniana</i>	Bluebeech
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Nyssa sylvatica</i>	Black gum
<i>Orontium aquaticum</i>	Goldenclub, Neverwet
<i>Pinus taeda</i>	Loblolly pine
<i>Quercus nigra</i>	Water oak
<i>Sabal palmetto</i>	Cabbage palm
<i>Sambucus canadensis</i>	American elderberry
<i>Taxodium distichum</i>	Bald cypress

Habitat Assessment Scores	Hog45 1/12/2001	Hog45 12/6/2008	Hog45 12/14/2012
Substrate Diversity	16	19	19
Substrate Availability	13	14	13
Water Velocity	4	8	15
Habitat Smothering	12	14	18
Primary Score	45	55	65
Artificial Channelization	20	20	20
Bank Stability - Right Bank	5	8	6
Bank Stability - Left Bank	5	8	6
Riparian Buffer Zone Width - Right Bank	10	8	10
Riparian Buffer Zone Width - Left Bank	10	8	10
Riparian Zone Vegetation Quality - Right Bank	9	8	9
Riparian Zone Vegetation Quality - Left Bank	9	8	9
Secondary Score	68	68	70
Total Score	113	123	135
Interpretation	Suboptimal	Suboptimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Hogtown Creek contained a variety of benthic macroinvertebrates including dragonfly, damselfly, mayfly, dobsonfly, blackfly, crane fly, caddisfly, and midge larvae. Crayfish, amphipods, clams, snails, and the water striders *Rhagovelia choreutes* were also present, and the tiny black riffle beetles *Microcylloepus pusillus* were abundant. Hogtown Creek at NW 45th Avenue placed in the healthy category using the BioRecon and SCI methods.



Water Strider, *Rhagovelia choreutes*

BioRecon/SCI Results	Hog45 1/12/2001	Hog45 12/6/2008	Hog45 12/14/2012	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	24	23	27	32
Number of Ephemeroptera Taxa	2	4	1	1
Number of Trichoptera Taxa	2	1	2	1
Number of Long-lived Taxa	5	2	3	2
Number of Clinger Taxa	5	4	7	7
Number of Sensitive Taxa	6	3	5	2
% Filterer	N/A	N/A	10.9%	16.6%
% Tanytarsini	N/A	N/A	3.4%	6.0%
% Dominance	N/A	N/A	28.6%	23.2%
% Very Tolerant Taxa	N/A	N/A	9.5%	11.3%
Score	5	4	53.47	51.73
Mean SCI Score	N/A	N/A	53	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Hogtown Creek at NW 45th Avenue had a healthy macroinvertebrate population during all sampling events with the same general assortment of macroinvertebrates. Development upstream of this station may cause some negative impacts on the biological community but it has not yet been significant according to the studies. Drought or withdrawal of water from the shallow surficial aquifer that feeds the stream may have a greater negative impact on the benthic community at this intermittent headwater section of the stream.

Hogtown Creek at NW 16th Avenue

Bioassessment Summary

Introduction

The Hogtown Creek watershed encompasses 21 square miles in Alachua County, Florida, mainly within the City of Gainesville. The creek flows in a southwesterly direction from headwaters north of NW 53rd Avenue to Haile Sink where it drains into the Floridan aquifer. Land use in the watershed upstream of the sample site includes natural forest and wetlands, residential neighborhoods, commercial and industrial. Hogtown Creek at NW 16th Avenue was first sampled using the Florida Department of Environmental Protection (FDEP) Stream Condition Index (SCI) method on February 4, 2013. The sampling event included a physical and chemical characterization, habitat assessment, and macroinvertebrate assessment.



Hogtown Creek at NW 16th Avenue

Physical and Chemical Characterization

Hogtown Creek at NW 16th Avenue was an average 3.5 meters wide and 0.1 meters deep. The water rose to about 1.3 meters above the base flow during storms. Banks were vegetated with some erosion, and the bottom was very sandy with areas of sand deposition. Non-point source pollution was obvious from road runoff leading directly to the creek. The water velocity was suitable at 0.20 m/s. The water was clear with no odors or oils. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	Hog16 2/4/2013
Temperature Degrees (C°)	12.9
Dissolved Oxygen (mg/L)	10.63
Specific Conductivity (µS/cm)	123
pH (SU)	7.88

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, and roots of vegetation living on the banks. Erosion was slightly evident but silt and sand moderately smothered the habitat. The riparian zone contained mostly native vegetation for over 10 meters on either side of the stream, but there was evidence of human activity beyond that. Native plants lightly shaded the creek in winter and provided heavy shade in summer. Fish were common. Periphyton, aquatic macrophytes, and iron/sulfur bacteria were not observed. Of 160 possible points for the habitat assessment, the Hogtown Creek at NW 16th Avenue received 112 points placing it in the suboptimal range.

Plants Noted in Riparian Zone Hog16 2/4/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Carpinus caroliniana</i>	Bluebeech
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Quercus nigra</i>	Water oak
<i>Sambucus canadensis</i>	American elderberry

Habitat Assessment Scores	Hog16 2/4/2013
Substrate Diversity	13
Substrate Availability	10
Water Velocity	14
Habitat Smothering	13
Primary Score	50
Artificial Channelization	18
Bank Stability - Right Bank	8
Bank Stability - Left Bank	8
Riparian Buffer Zone Width - Right Bank	5
Riparian Buffer Zone Width - Left Bank	5
Riparian Zone Vegetation Quality - Right Bank	9
Riparian Zone Vegetation Quality - Left Bank	9
Secondary Score	62
Total Score	112
Interpretation	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Hogtown Creek contained a variety of benthic macroinvertebrates including dragonfly, damselfly, mayfly, caddisfly, and midge larvae. The damselfly *Argia tibialis* was abundant at this station. Beetles, water striders, and amphipods were also present, and blackflies were the dominant organism. Hogtown Creek at NW 16th Avenue placed in the healthy category using the SCI assessment.



SCI Results	Hog16 2/4/2013	
Metric Measured	Aliquot 1	Aliquot 2
Total Number of Taxa	28	22
Number of Ephemeroptera Taxa	4	3
Number of Trichoptera Taxa	3	2
Number of Long-lived Taxa	1	0
Number of Clinger Taxa	6	6
Number of Sensitive Taxa	4	5
% Filterer	43.7%	49.0%
% Tanytarsini	12.0%	5.2%
% Dominance	34.0%	43.2%
% Very Tolerant Taxa	0.7%	0.7%
Score	69.56	56.73
Mean SCI Score	63	
Interpretation	Healthy	

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Hogtown Creek at NW 16th Avenue had a healthy macroinvertebrate population. The mean SCI scores for all Hogtown Creek stations ranged from 53 to 63, with this location having the highest average score of the three locations assessed. Clinger and sensitive taxa were the most prevalent macroinvertebrate taxa identified. The in-stream habitat is impacted by sand sedimentation washing in from the roads; however, the greatest sediment impact is from the bank erosion that occurs during the high water levels and flows that accompany storm events. This location can be enjoyed at the City of Gainesville's Ring Park.

Hogtown Creek at Haile Sink Bioassessment Summary

Introduction

The Hogtown Creek watershed encompasses 21 square miles in Alachua County, Florida, mainly within the City of Gainesville. The creek flows in a southwesterly direction from the headwaters north of NW 53rd Avenue to Haile Sink, where it drains into the Floridan aquifer. The sampling site was located upstream of Haile Sink. Land use affecting the site was 65% low-density residential, 20% mixed hardwood forest and wetland, and 15% commercial. Hogtown Creek at Haile Sink was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method March 12, 2002 and March 10, 2009. The Stream Condition Index (SCI) method was utilized on



Hogtown Creek at Haile Sink

January 25, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. This location was also sampled using an artificial substrate (Hester-Dendy) sampler on March 25, 2013. Previous Hester-Dendy deployments were conducted upstream at SW 20th Avenue in September 1996, June 2000, and October 28, 2008. For these evaluations, a sampler is placed in the water for 28 days and then retrieved. The biological organisms populating the sampler are removed, identified, and counted.

Physical and Chemical Characterization

Hogtown Creek at Haile Sink was rocky-bottomed, an average of 4-5 meters wide and 0.35 meters deep. The water rises to 1.0 m above the base flow during storms. The banks were low, and no local erosion or non-point source pollution was evident. The water velocity was good, about 0.25 to 0.33 m/s, and the water was clear without any unnatural odors in the water or sediment. Water quality parameters were within normal ranges.

Physical/Chemical Data	HogSink 3/12/2002	HogSink 3/10/2009	HogSink 1/25/2013
Temperature Degrees (C°)	18.9	16.2	12.9
Dissolved Oxygen (mg/L)	10.5	8.6	10.2
Specific Conductivity (µS/cm)	261	295	293
pH (SU)	7.67	6.84	7.59

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included primarily rock rubble, but also aquatic vegetation, roots of vegetation living on the banks, and a small amount of snag. The riparian zone was greater than 18 meters wide and contained native, mostly wetland plants. The canopy was open with rushes, sedges, grasses, and scattered planer and willow trees in the riparian zone. Aquatic macrophytes and fish were common, and periphyton smothered the habitats. No iron or sulfur bacteria were observed. Of 160 possible points for the habitat assessment, Hogtown Creek at Haile Sink received 149 points, placing it in the optimal range. The only metric which was not optimal was habitat smothering due to the abundant periphyton.

Plants Noted in Riparian Zone HogSink 1/25/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Eupatorium capillifolium</i>	Dog fennel
<i>Hydrocotyl</i> sp.	Pennywort
<i>Juncus</i> sp.	Rush
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Ludwigia repens</i>	Creeping primrose-willow
<i>Planera aquatic</i>	Planer tree
<i>Quercus virginiana</i>	Live oak
<i>Typha</i> sp.	Cattail
<i>Vaucheria</i> sp.	Yellow-green algae

Habitat Assessment Scores	HogSink 3/12/2002	HogSink 3/10/2009	HogSink 1/25/2013
Substrate Diversity	12	16	17
Substrate Availability	12	20	20
Water Velocity	19	15	18
Habitat Smothering	20	11	14
Primary Score	63	62	69
Artificial Channelization	20	20	20
Bank Stability Right Bank	10	10	10
Bank Stability Left Bank	10	10	10
Riparian Buffer Zone Width - Right Bank	9	10	10
Riparian Buffer Zone Width - Left Bank	10	10	10
Riparian Zone Vegetation Quality - Right Bank	9	7	10
Riparian Zone Vegetation Quality - Left Bank	10	7	10
Secondary Score	78	74	80
Total Score	141	136	149
Interpretation	Optimal	Optimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates and Hester-Dendy Results

Hogtown Creek contained a variety of benthic macroinvertebrates including damselfly, mayfly, blackfly, caddisfly, and midge larvae. Blackflies and the midge larvae *Polypedilum flavum* were dominant organisms. Worms, amphipods, snails, clams, water mites, and beetles were also present. Hogtown Creek at Haile Sink fell into the healthy (but not exceptional) category for all sampling events.

BioRecon/SCI Results	HogSink 3/12/2002	HogSink 3/10/2009	HogSink 1/25/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	27	23	21	27
Number of Ephemeroptera Taxa	5	4	4	3
Number of Trichoptera Taxa	5	3	3	3
Number of Long-lived Taxa	3	1	1	1
Number of Clinger Taxa	4	4	7	5
Number of Sensitive Taxa	4	3	4	3
% Filterer	N/A	N/A	31.3%	40.7%
% Tanytarsini	N/A	N/A	2.7%	6.0%
% Dominance	N/A	N/A	28.7%	27.3%
% Very Tolerant Taxa	N/A	N/A	2.0%	4.0%
Score	6	4	60.86	60.89
Mean SCI Score	N/A	N/A	61	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

An artificial substrate (Hester-Dendy) study was also performed at this station. The microcaddisfly *Hydroptila* was found in large numbers here. There were 29 Florida Index points and 42 different taxa. The index results all indicate a healthy stream at this location.

Artificial Substrate (Hester-Dendy) Sampling Results	Hog20 Sept. 1996	Hog20 June 2000	Hog20 10/28/2008	HogSink 3/25/2013
Shannon-Weaver Diversity Index (Base 2)	3.711	2.607	4.261	3.444
Pielou's Evenness (H/Hmax)	0.707	0.727	0.747	0.613
Florida Index	16	0	21	29
Total Density (No./M ²)	859	567	2533	2580
Total Number of Taxa	38	12	42	42

- Shannon-Weaver Diversity Index: 3- 5 = clean water conditions; 0- 2 = stressed waters.

- Pielou's Evenness Values range between 0 and 1; A value of 1 denotes all taxa are represented by an equal number of individuals (the closer a value is to 1, the better the distribution).

- Florida Index: 0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; and 10 and above = clean.

- Total Taxa Values have been up-collapsed so as not to inflate numbers.

Discussion

The water quality in Hogtown Creek at Haile Sink appeared to be in good condition; however, the increased abundance of periphyton on the rocks and other habitats indicates nutrient enrichment. The habitat assessment scores were very high and that raises the expectation of a higher score for the SCI evaluation. Hogtown Creek can be enjoyed near the Haile Sink at the City of Gainesville's Split Rock Conservation Area.



Mayfly larva, *Labiobaetis frondalis*

Lake Forest Creek at University Avenue (CR 329B) Bioassessment Summary

Introduction

Lake Forest Creek originates near Morningside Nature Center, and flows south and east by Lake Forest Elementary School and into Newnans Lake. Its watershed spans 8.9 square miles across urban and rural Gainesville. The dominant land uses upstream of the sampling station at CR 329B are residential, silviculture, wetlands, and transportation infrastructure. This sampling site was located on the south side (upstream) of CR 329B where it flows under the road and into Newnans Lake. Lake Forest Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on March 17, 2009. The Stream Condition Index (SCI) method was utilized on January 30, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Lake Forest Creek, south of CR 329B

Physical and Chemical Characterization

Lake Forest Creek was an average of 2 meters wide and 0.15 meter deep. No erosion of the banks was observed and no pollution sources were evident. The water velocity was fair, averaging 0.13 meters per second. The water was colorless and slightly turbid. The sediment was sand and silt with an anaerobic odor. A sheen, possibly caused by decaying natural organic material or iron bacteria, was observed on the water surface. Temperature, pH, and dissolved oxygen were within healthy ranges.

Physical/Chemical Data	LFC329B 3/17/2009	LFC329B 1/30/2013
Temperature Degrees (C°)	18.9	18.5
Dissolved Oxygen (mg/L)	9.1	7.2
Specific Conductivity (µS/cm)	NA	179
pH (SU)	3.81	7.19

NA = Not Analyzed

Habitat Characterization

The riparian zone was greater than 18 meters wide with mainly native wetland plants; however, exotic Taro was growing near the road. The creek was moderately shaded, and periphyton, fish, and aquatic macrophytes were common. The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, leaf packs, snags of fallen tree branches, and aquatic plants. The habitat was noted to be severely silt-smothered, but there were some pools and riffles. Of 160 possible points for the habitat assessment, Lake Forest Creek received 130 points placing it in the optimal range.

Plants Noted in Riparian Zone LFC329B 1/30/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Myrica cerifera</i>	Wax myrtle
<i>Orontium aquaticum</i>	Goldenclub, Neverwet
<i>Osmunda regalis</i>	Royal fern
<i>Peltandra</i> sp.	Arum
<i>Sambucus canadensis</i>	American black elderberry
<i>Saururus cernuus</i>	Lizard's tail
<i>Taxodium distichum</i>	Bald cypress

Plant noted with (E) is an exotic species



Mix of Native and Exotic Vegetation

Habitat Assessment Scores	LFC329B 3/17/2009	LFC329B 1/30/2013
Substrate Diversity	17	17
Substrate Availability	12	14
Water Velocity	13	11
Habitat Smothering	8	12
Primary Score	50	54
Artificial Channelization	20	20
Bank Stability - Right Bank	10	10
Bank Stability - Left Bank	10	10
Riparian Buffer Zone Width - Right Bank	10	10
Riparian Buffer Zone Width - Left Bank	10	10
Riparian Zone Vegetation Quality - Right Bank	10	8
Riparian Zone Vegetation Quality - Left Bank	10	8
Secondary Score	80	76
Total Score	130	130
Interpretation	Optimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Lake Forest Creek contained a variety of benthic macroinvertebrates including damselfly, mayfly, caddisfly, moth, and many blackfly and midge larvae. Worms, isopods, snails, and beetles were also present. The limpet *Ferrissia fragilis* was a common invertebrate found attached to leaves in the water. Lake Forest Creek scored in the healthy category for both BioRecon and SCI assessments.



Limpet, *Ferrissia fragilis*

BioRecon/SCI Results	LFC329B 3/17/2009	LFC329B 1/30/2013	
Sample Type	BioRecon	SCI	
Metric Measured	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	33	30	30
Number of Ephemeroptera Taxa	3	1	2
Number of Trichoptera Taxa	3	1	1
Number of Long-lived Taxa	4	0	0
Number of Clinger Taxa	3	5	5
Number of Sensitive Taxa	4	1	2
% Filterer	N/A	23.4%	20.1%
% Tanytarsini	N/A	53.9%	55.7%
% Dominance	N/A	32.2%	40.3%
% Very Tolerant Taxa	N/A	4.2%	4.0%
Score	6	47.87	48.43
Mean SCI Score	N/A	48	
Interpretation	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Lake Forest Creek contained a healthy benthic macroinvertebrate population typical of a blackwater stream. The total number of taxa in 2009 and 2013 were similar. In the 2013 SCI assessment, clinger taxa were most abundant. The 2009 BioRecon data showed a more diverse assemblage of taxa with a greater numbers of mayflies, caddisflies, and long-lived species. During periods of drought, Lake Forest Creek may have reduced or no flow, potentially resulting in lower numbers of long-lived species. It is a wetland stream at this station with little human impact except near the road, where illegal dumping of trash is common.

Little Hatchet Creek, North Branch, Airport Industrial Park Bioassessment Summary

Introduction

The headwaters of the North Branch of Little Hatchet Creek are located near the Gainesville Regional Utilities Murphree well field, and Ironwood Golf Course in northeastern Gainesville, Alachua County, Florida. The creek flows from west of SR 24 (NE Waldo Road) to the east through the Gainesville Airport Industrial Park and south through Gum Root Swamp to Newnans Lake. Upstream of the sampling sites, the watershed contains a variety of land uses: 12% pine plantation, 46% natural forest, 12% residential neighborhoods, 21% industrial, and 9% commercial. Little Hatchet Creek receives reclaimed water (treated wastewater effluent) from the domestic wastewater treatment facility at Brittany Estates Mobile Home Park, which is upstream of the sample sites.



Little Hatchet Creek, Airport Industrial Park

The sampling sites were moved slightly for each sample event, but were in proximity to each other. The North Branch of Little Hatchet Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on February 6, 2003 and February 7, 2009. The Stream Condition Index (SCI) method was utilized on January 15, 2013 and the BioRecon method was used again on May 29, 2014. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. This location was also sampled using an artificial substrate (Hester-Dendy) sampler on October 28, 2008 and February 13, 2013. For this evaluation, a sampler is placed in the water for 28 days and then retrieved. The biological organisms populating the sampler are removed, identified, and counted.

Physical and Chemical Characterization

The North Branch of Little Hatchet Creek was an average of 2.0 meters wide and 0.15 meters deep. Non-point source pollution was not evident at this site; however, drainage from the Airport Industrial Park enters the creek upstream. The water velocity was high; an average of 0.4 to 0.66 meters per second in 2013, but slowed to 0.33 meters per second in May of 2014. The water was clear but tea-colored (tannic), with no unnatural odors or oils present. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	LHTNB 2/6/2003	LHTNB 2/7/2009	LHTNB 1/15/2013	LHTNB 5/29/2014
Temperature Degrees (C°)	12.0	12.1	19.0	25.52
Dissolved Oxygen (mg/L)	8.4	10.5	9.1	8.34
Specific Conductivity (µS/cm)	NA	259	230	224
pH (SU)	7.5	6.9	6.8	7.26

NA = Not Analyzed

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches, and leaf packs. Rock rubble was an added habitat in May 2014. Erosion upstream was evident and sand smothering was noted as severe at both of the recent sampling events. The riparian zone was greater than 18 meters wide and vegetated with native and some non-native plants that lightly shaded the stream. Fish and periphyton were common during the past sampling events and aquatic macrophytes were present but rare. During the 2013 event, no periphyton or aquatic macrophytes were observed and fish were rarely seen. The presence of iron/sulfur bacteria during the first three events could indicate the impact of disturbed land that may have been previously used as a landfill. During the May 2014 sampling event, no iron/sulfur bacteria were observed. Of 160 possible points for the habitat assessment, the North Branch of Little Hatchet Creek received 116 points in the 2013 event and 109 points in 2014, placing it in the suboptimal range.

Plants Noted in Riparian Zone LHTNB 1/15/2013	
Scientific Name	Common Name
<i>Acer negundo</i>	Box elder
<i>Acer rubrum</i>	Southern red maple
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Itea virginica</i>	Virginia willow
<i>Lygodium japonica</i>	Japanese climbing fern (E)
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Orontium aquaticum</i>	Goldenclub, Neverwet
<i>Persea borbonia</i>	Red bay
<i>Pinus elliotii</i>	Slash pine
<i>Sambucus canadensis</i>	American black elderberry
<i>Serenoa repens</i>	Saw palmetto

Plants noted with (E) are exotic species

Habitat Assessment Scores	LHTNB 2/6/2003	LHTNB 2/7/2009	LHTNB 1/15/2013	LHTNB 5/29/2014
Substrate Diversity	11	13	14	8
Substrate Availability	5	8	4	6
Water Velocity	20	18	19	20
Habitat Smothering	8	13	11	9
Primary Score	44	52	48	43
Artificial Channelization	20	20	16	17
Bank Stability - Right Bank	5	10	8	7
Bank Stability - Left Bank	5	10	8	7
Riparian Buffer Zone Width - Right Bank	10	9	10	10
Riparian Buffer Zone Width - Left Bank	10	9	10	9
Riparian Zone Vegetation Quality - Right Bank	6	7	8	8
Riparian Zone Vegetation Quality - Left Bank	6	7	8	8
Secondary Score	62	72	68	66
Total Score	106	124	116	109
Interpretation	Suboptimal	Optimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates and Hester-Dendy Results

The North Branch of Little Hatchet Creek contained a less diverse population of benthic macroinvertebrates in 2013 than at earlier sampling events, but showed a greater diversity (and possible recovery) again in 2014. The organisms included damselfly, mayfly, blackfly, caddisfly, and midge larvae. Amphipods, clams, worms, and beetles were also present. The BioRecon and the SCI results were interpreted as healthy.

BioRecon/SCI Results	LHTNB 2/6/2003	LHTNB 2/7/2009	LHTNB 1/15/2013		LHTNB 5/29/2014
Sample Type	BioRecon	BioRecon	SCI		BioRecon
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2	N/A
Total Number of Taxa	22	28	15	20	24
Number of Ephemeroptera Taxa	1	4	3	3	4
Number of Trichoptera Taxa	3	3	3	3	3
Number of Long-lived Taxa	3	4	0	1	4
Number of Clinger Taxa	4	5	6	7	6
Number of Sensitive Taxa	4	4	3	4	5
% Filterer	N/A	N/A	43.3%	45.3%	NA
% Tanytarsini	N/A	N/A	0.7%	0.7%	NA
% Dominance	N/A	N/A	26.0%	30.0%	NA
% Very Tolerant Taxa	N/A	N/A	2.7%	0.7%	NA
Score	4	6	50.96	59.26	6
Mean SCI Score	N/A	N/A	55		N/A
Interpretation	Healthy	Healthy	Healthy		Healthy

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

The North Branch of Little Hatchet Creek had poorer results in the 2013 Hester-Dendy analysis than in the 2008 sampling event. The Shannon-Weaver Diversity Index score of 1.632 is characteristic of stressed waters. There were only 13 different species, but the station scored 11 in the Florida Index and sensitive mayflies were the dominant organism, which makes the results difficult to interpret. The site was re-sampled using the BioRecon method in May of 2014 and the results were healthy.

Artificial Substrate (Hester-Dendy) Sampling Results	LHTNB 10/28/2008	LHTNB 2/13/2013
Shannon-Weaver Diversity Index (Base 2)	3.058	1.632
Pielou's Evenness (H/Hmax)	0.606	0.429
Florida Index	21	11
Total Density (No./M ²)	2958	1821
Total Number of Taxa	29	13

- Shannon-Weaver Diversity Index: 3- 5 = clean water conditions; 0- 2 = stressed waters.

- Pielou's Evenness Values range between 0 and 1; A value of 1 denotes all taxa are represented by an equal number of individuals (the closer a value is to 1, the better the distribution).

- Florida Index: 0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; and 10 and above = clean.

- Total Taxa Values have been up-collapsed so as not to inflate numbers.

Discussion

The variety of pollution sources in the watershed and erosion upstream of the site may be causing the North Branch of Little Hatchet Creek to score lower at times but it appears to recover, or score higher, as it did in May 2014. Weather and flow changes probably affect the macroinvertebrate populations which generally prefer even flows to drought and high water. At this station, the large riparian zone and a fair amount of natural land use as well as high dissolved oxygen and good water velocity help to maximize the habitability of the available substrate for aquatic life and possibly counteract any pollution. Sand smothering is another important factor negatively affecting the aquatic life after large storm events.



Caddisfly larvae, *Oecetis* sp.



Mayfly larvae, *Labiobaetis propinquus*
(male left, female right)

Little Lochloosa Creek Bioassessment Summary

Introduction

Little Lochloosa Creek is located in Phifer Flatwoods Preserve north of Lake Lochloosa between the City of Gainesville and Hawthorne in eastern Alachua County, Florida. This ephemeral stream drains mainly natural land, tree plantations, and low density residential land use before it flows into Lake Lochloosa. The sampling site was located upstream of the Gainesville to Hawthorne rail trail, west of SE 152nd Street. Little Lochloosa Creek was sampled using the Florida Department of Environmental Protection (FDEP) Stream Condition Index (SCI) method on September 21, 2014. The sampling event included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Little Lochloosa Creek

Physical and Chemical Characterization

Little Lochloosa Creek averaged 2.5 meters in width and the average depth was 0.3 meters. Non-point source pollution was not evident at the site. The water velocity was 0.11 m/s at a narrow, shallow section of the stream, but generally there was little flow. The water was clear and tea-colored (tannic). No unnatural odors were present; however, an oily sheen from decomposing leaves was observed. Temperature and pH were within normal ranges. The low dissolved oxygen was likely due to the low flow and dark tannic water typical of a wetland stream. Low specific conductivity was likely due to recent rainfall and lack of a groundwater source contributing to the creek.

Physical/Chemical Data	LtLchCrk 8/21/2014
Temperature Degrees (C°)	26.2
Dissolved Oxygen (mg/L)	1.40
Specific Conductivity (µS/cm)	56
pH (SU)	6.65

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches, rocks, and a small amount of leaf packs. The bottom was sandy with silty pools. No silt or sand smothered the habitat. The banks appeared relatively undisturbed and the riparian zone was vegetated with native plants that heavily shaded the stream. No invasive exotic plants were present on either bank. Fish were common; however, aquatic macrophytes, periphyton, and iron/sulfur bacteria were not observed. Of 160 possible points for the habitat assessment, Little Lochloosa Creek received 132 points, placing it in the optimal range.

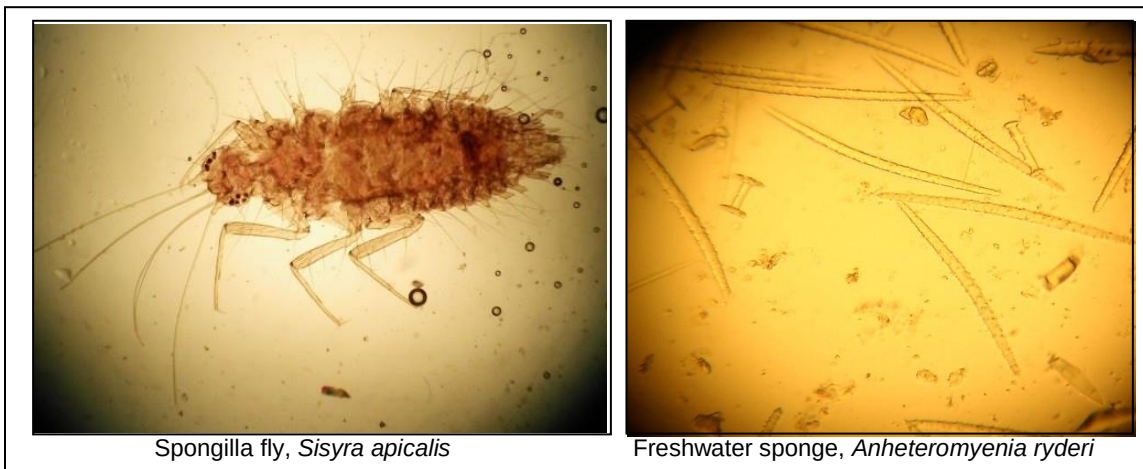
Plants Noted in Riparian Zone LtLchCrk 8/21/2014	
Scientific Name	Common Name
<i>Quercus nigra</i>	Water oak
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Taxodium distichum</i>	Bald cypress
<i>Quercus laurifolia</i>	Laurel oak
<i>Acer rubrum</i>	Red maple
<i>Pinus palustris</i>	Longleaf pine
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Smilax sp.</i>	Greenbrier
<i>Sabal palmetto</i>	Cabbage Palm
Pteridophyte (various)	Ferns
<i>Rubus sp.</i>	Blackberry

Habitat Assessment Scores	LtLchCrk 8/21/2014
Substrate Diversity	13
Substrate Availability	16
Water Velocity	11
Habitat Smothering	17
Primary Score	57
Artificial Channelization	15
Bank Stability - Right Bank	10
Bank Stability - Left Bank	10
Riparian Buffer Zone Width - Right Bank	10
Riparian Buffer Zone Width - Left Bank	10
Riparian Zone Vegetation Quality - Right Bank	10
Riparian Zone Vegetation Quality - Left Bank	10
Secondary Score	75
Total Score	132
Interpretation	Optimal

0 - 40 = Poor; 41 - 80 = Marginal; 81 - 120 = Suboptimal; 121 - 160 = Optimal

Benthic Macroinvertebrates

The organisms found in Little Lochloosa Creek during this sampling event indicate a balanced community. Larvae of the spongilla fly (*Sisyra apicalis*) were commonly found along with freshwater sponges. One of the species of sponge identified was *Anheteromyenia ryderi*; the identifiable hard parts (megascleres and gemmoscleres or spicules) of sponges found at Little Lochloosa Creek are shown below. These filter feeders coated a variety and abundance of substrates including roots and snags. Other aquatic organisms included crayfish, amphipods, isopods, snails, worms, mites, and the larvae of mayflies, caddisflies, crane flies, dragonflies, mosquitoes, and midges.



SCI Results	LtLchCrk 8/21/2014	
Metric Measured	Aliquot 1	Aliquot 2
Total Number of Taxa	37	30
Number of Ephemeroptera Taxa	0	1
Number of Trichoptera Taxa	1	1
Number of Long-lived Taxa	1	1
Number of Clinger Taxa	0	1
Number of Sensitive Taxa	4	3
% Filterer	6.3%	5.8%
% Tanytarsini	8.2%	8.4%
% Dominance	15.7%	17.4%
% Very Tolerant Taxa	17.0%	16.1%
Score	46.27	44.96
Mean SCI Score	46	
Interpretation	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above=Exceptional, 35-67=Healthy, 34 and below =Impaired

Discussion

Little Lochloosa Creek is a lovely, natural stream which frequently stops flowing. Because of this feature and the low dissolved oxygen typical of a wetland stream, the macroinvertebrate community, although healthy, is not optimal. Because the stream is intermittent and is frequently dry or has very low flow, the dissolved oxygen can be very low which can be a factor in the low numbers of mayflies (Ephemeroptera), caddisflies (Trichoptera), long-lived taxa, and clinger taxa. The habitat assessment indicated a very natural system with diverse native vegetation, and low banks which are ideal because they allow stormwater to flood into the flatwoods where the water is filtered as it slowly seeps into the ground.



The Gainesville to Hawthorne rail trail crossing over Little Lochloosa Creek

Lochloosa Creek near Fishcamp Road

Bioassessment Summary

Introduction

Lochloosa Creek is located north and west of Lake Lochloosa between the City of Gainesville and Hawthorne in eastern Alachua County, Florida. The stream drains mainly natural land, tree plantations, and low density residential land use before it flows into Lake Lochloosa. The watershed covers almost 43 square miles. The sampling site was located at the St. Johns River Water Management District sampling station at Fishcamp Road in a flood plain area. Lochloosa Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on September 14, 2009. The Stream Condition Index (SCI) method was utilized on September 9, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Lochloosa Creek

Physical and Chemical Characterization

Lochloosa Creek averaged 5 meters in width and the average depth was 0.4 meters. Non-point source pollution was not evident at the site. The water velocity was 0.25 m/s. The water was clear but tea-colored (tannic), with no unnatural odors or oils present. Temperature, pH, dissolved oxygen, and conductivity were all within normal ranges. The very low specific conductance in 2013 was likely due to recent rainfall.

Physical/Chemical Data	LchCrk 9/14/2009	LchCrk 9/9/2013
Temperature Degrees (C°)	24.2	24.7
Dissolved Oxygen (mg/L)	7.05	5.52
Specific Conductivity (µS/cm)	135	63
pH (SU)	6.23	5.19

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches, small amounts of vegetation and leaf packs. The bottom was sandy with silty pools. Only a slight amount of silt and sand smothered the habitat. The banks appeared relatively undisturbed and the quality of the riparian zone was vegetated with native plants that moderately shaded the stream. No invasive exotic plants were present on either bank. Fish were common; aquatic macrophytes and periphyton were absent. Of 160 possible points for the habitat assessment, Lochloosa Creek received 133 points, placing it in the optimal range.

Plants Noted in Riparian Zone LchCrk 9/9/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Carpinus caroliniana</i>	Bluebeech
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Myrica cerifera</i>	Wax myrtle
<i>Osmunda regalis</i>	Royal fern
<i>Quercus laurifolia</i>	Laurel oak
<i>Quercus nigra</i>	Water oak
<i>Sabal palmetto</i>	Cabbage palm
<i>Salix caroliniana</i>	Coastal plain willow
<i>Taxodium distichum</i>	Bald cypress

Habitat Assessment Scores	LchCrk 9/14/2009	LchCrk 9/9/2013
Substrate Diversity	13	10
Substrate Availability	15	8
Water Velocity	15	17
Habitat Smothering	18	18
Primary Score	61	53
Artificial Channelization	20	20
Bank Stability - Right Bank	9	10
Bank Stability - Left Bank	9	10
Riparian Buffer Zone Width - Right Bank	10	10
Riparian Buffer Zone Width - Left Bank	9	10
Riparian Zone Vegetation Quality - Right Bank	10	10
Riparian Zone Vegetation Quality - Left Bank	10	10
Secondary Score	77	80
Total Score	138	133
Interpretation	Optimal	Optimal

0 - 40 = Poor; 41 - 80 = Marginal; 81 - 120 = Suboptimal; 121 - 160 = Optimal

Benthic Macroinvertebrates

The organisms found in Lochloosa Creek during this sampling event indicate a healthy community however, dragonfly and damselfly larvae were surprisingly missing from the sorted fraction of the sample, and long-lived organisms were also missing. That absence may have been due to a drought earlier in the year; however, sampling was delayed until several months of flowing water was ensured. Mayflies, caddisflies, midges, and blackflies were abundant for some species. The mayfly *Maccaffertium smithae* was a dominant organism. Limpets and other snails, leeches, worms, and amphipods were also present.



Mayfly nymph, *Maccaffertium*

BioRecon/SCI Results	LchCrk 9/14/2009	LchCrk 9/9/2013	
Sample Type	BioRecon	SCI	
Metric Measured	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	27	21	24
Number of Ephemeroptera Taxa	4	1	2
Number of Trichoptera Taxa	3	2	3
Number of Long-lived Taxa	3	0	0
Number of Clinger Taxa	4	5	5
Number of Sensitive Taxa	6	5	5
% Filterer	NA	32.9%	27.5%
% Tanytarsini	NA	12.1%	9.8%
% Dominance	NA	40.9%	42.5%
% Very Tolerant Taxa	NA	7.4%	3.3%
Score	6	47.12	51.51
Mean SCI Score	N/A	49	
Interpretation	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above=Exceptional, 35-67=Healthy, 34 and below =Impaired

Discussion

The Lochloosa Creek sampling station is located in an ideal setting for macroinvertebrates with a large area of natural land surrounding it. The low banks make the area susceptible to flooding, which is very healthy for the system. If the flow of water is continuous, it is certain to have a balanced and diverse macroinvertebrate community. However, this stream can run dry and care must be taken to wait to sample until it has a chance to recover. The results of the 2009 and 2013 bioassessments were similar; however, in 2013 a lower number of Ephemeroptera (mayfly) taxa were identified.

Mill Creek at Old Bellamy Road

Bioassessment Summary

Introduction

Mill Creek originates in an area north of the City of Alachua and east of SR 241 in northwestern Alachua County, Florida east of the Mill Creek Preserve which was acquired by Alachua County Forever in 2005. Townsend Branch, which flows out of Mill Creek Preserve, joins Mill Creek upstream of the sample station that is located upstream of scenic Old Bellamy Road. Mill Creek flows in a southwesterly direction toward the City of Alachua and into Mill Creek Sink (and cave system), which has a hydrologic connection with Hornsby Spring on the Santa Fe River. Mill Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on October 28, 2002 and September 14, 2009. The Stream Condition Index (SCI) method was utilized on September 12, 2014. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Mill Creek

Physical and Chemical Characterization

Mill Creek averaged 2 meters in width and the average depth was 0.2 meters. Non-point source pollution was not evident at the site but nearby grazing and agricultural land may be a source. The average water velocity was very good at 0.36 m/s. The water was slightly turbid and tea-colored (tannic), with no unnatural odors or oils present. Temperature, pH, dissolved oxygen, and conductivity were all within normal, healthy ranges.

Physical/Chemical Data	MillOldB 10/28/2002	MillOldB 9/14/2009	MillOldB 8/12/2014
Temperature Degrees (C°)	21.2	24.5	25.2
Dissolved Oxygen (mg/L)	7.51	6.99	7.64
Specific Conductivity (µS/cm)	102	81	84
pH (SU)	7.15	7.14	7.36

Habitat Characterization

The habitat suitable for benthic macro-invertebrates included roots of vegetation living on the banks, snags of fallen tree branches, small amounts of vegetation and leaf packs. The bottom was sandy with silty pools. A slight amount of silt and a moderate amount of sand smothered the habitat. The banks appeared relatively undisturbed and the riparian zone was vegetated with native plants that heavily shaded the stream. No invasive exotic plants were present on either bank. Fish, aquatic macrophytes, and periphyton were rare. Iron and sulfur bacteria were not observed. Of 160 possible points for the habitat assessment, Mill Creek received 139 points, placing it in the optimal range. The improvement in the habitat assessment score from earlier sampling events was due to the current velocity and abundant rain over the year leading up to the sampling event. The creek has some clay outcropping which can contribute to silty conditions, but the flowing water rinsed away the silt from the substrates inhabited by the macroinvertebrates.

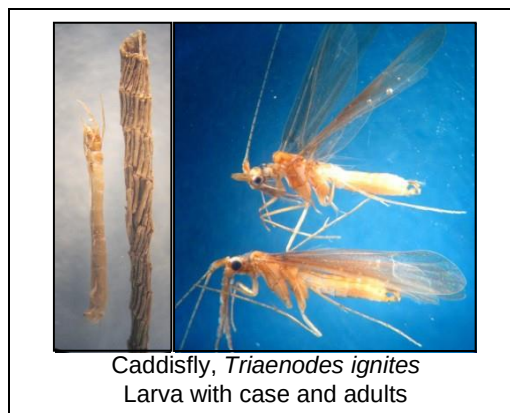
Plants Noted in Riparian Zone MillOldB 8/12/2014	
Scientific Name	Common Name
<i>Acer negundo</i>	Box elder
<i>Carpinus caroliniana</i>	American hornbeam
<i>Carya glabra</i>	Pignut hickory
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Orontium aquaticum</i>	Golden club
<i>Pinus taeda</i>	Loblolly pine
<i>Quercus michauxii</i>	Swamp chestnut oak
<i>Quercus virginiana</i>	Live oak
<i>Sabal palmetto</i>	Cabbage palm

Habitat Assessment Scores	MillOldB 10/28/2002	MillOldB 9/14/2009	MillOldB 8/12/2014
Substrate Diversity	15	13	14
Substrate Availability	9	13	12
Water Velocity	14	8	18
Habitat Smothering	10	13	18
Primary Score	48	47	62
Artificial Channelization	20	18	20
Bank Stability - Right Bank	10	8	9
Bank Stability - Left Bank	10	8	8
Riparian Buffer Zone Width - Right Bank	10	10	10
Riparian Buffer Zone Width - Left Bank	10	10	10
Riparian Zone Vegetation Quality - Right Bank	9	10	10
Riparian Zone Vegetation Quality - Left Bank	10	10	10
Secondary Score	79	74	77
Total Score	127	121	139
Interpretation	Optimal	Suboptimal	Optimal

0 - 40 = Poor; 41 - 80 = Marginal; 81 - 120 = Suboptimal; 121 - 160 = Optimal

Benthic Macroinvertebrates

The organisms found in Mill Creek during this sampling event indicate an exceptional community. The aquatic invertebrates included three different dragonfly larvae and various riffle beetles, damselfly, mayfly, several caddisfly larvae, a variety of midge larvae, worms, snails and clams, blackfly larvae, and leeches.



BioRecon/SCI Results	MillOldB 10/28/2002	MillOldB 9/14/2009	MillOldB 8/12/2014	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	23	24	41	35
Number of Ephemeroptera Taxa	3	0	2	2
Number of Trichoptera Taxa	3	5	6	4
Number of Long-lived Taxa	1	2	2	4
Number of Clinger Taxa	6	5	8	7
Number of Sensitive Taxa	6	2	7	8
% Filterer	NA	NA	9.9%	11.4%
% Tanytarsini	NA	NA	0.7%	2.1%
% Dominance	NA	NA	13.5%	13.1%
% Very Tolerant Taxa	NA	NA	7.8%	7.6%
Score	5	4	76.97	78.00
Mean SCI Score	N/A	N/A	77	
Interpretation	Healthy	Healthy	Exceptional	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above=Exceptional, 35-67=Healthy, 34 and below =Impaired

Discussion

Previous BioRecon sampling events for Mill Creek at Old Bellamy Road received healthy scores. For a year prior to the SCI sampling, conditions were ideal for supporting the exceptional aquatic macroinvertebrate community. There was a high diversity of caddisflies, long-lived, clinger and sensitive taxa and Mill Creek had the highest SCI score of all sites evaluated in Alachua County between 2012 and 2014. The optimal habitat assessment score shows a very natural riparian zone. The dissolved oxygen was optimal for macroinvertebrates, water velocity was excellent, and the macroinvertebrate community reflected the good conditions. The wet spring of 2014 and later summer rain contributed to the excellent hydrologic conditions and exceptional results.

Monterey Creek Bioassessment Summary

Introduction

Monterey Creek is a tributary to Possum Creek in a residential area in northwest Gainesville, Alachua County, Florida. The stream has been sampled at three different locations. The land use was 10% forest, 72% residential, 14% commercial, and 4% industrial. Monterey Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on October 25, 2002 upstream of NW 43rd Street and NW 33rd Avenue and on July 12, 2008 farther upstream at NW 44th Drive. The Stream Condition Index (SCI) method was utilized on March 1, 2013 downstream in a lower density residential area on private land downstream of a small tributary near NW 38th Drive. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Monterey Creek

Physical and Chemical Characterization

Monterey Creek averaged 1.7 meters wide and 0.05 meters deep. Non-point source pollution at the site was likely only from the residential yards upstream of the creek, runoff from NW 43rd Street, and the tributary. The water velocity was 0.17 m/s. The water was clear and colorless, with no unnatural odors or oils present. Temperature, pH, dissolved oxygen, and conductivity were all within normal ranges.

Physical/Chemical Data	Mntry 33 10/25/2002	Mntry44 7/12/2008	Mntry38 3/1/2013
Temperature Degrees (C°)	22.5	25.4	14.6
Dissolved Oxygen (mg/L)	6.1	5.1	8.6
Specific Conductivity (µS/cm)	149	215	171
pH (SU)	6.56	6.39	7.28

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches, rock rubble, and leaf packs. A little waterfall had been created in the stream, which seemed to oxygenate the water and provide good habitat. Erosion was slight and moderate silt smothering but no sand smothering was observed. The riparian zone was mainly native trees that lightly shaded the stream, some lawns with a few ornamental plants on one side and mainly native plants on the other. Some exotic vegetation was present in the understory. Fish and periphyton were common, aquatic macrophytes, and iron/sulfur bacteria were absent. Of 160 possible points for the habitat assessment, Monterey Creek received 111 points, placing it in the suboptimal range.

Plants Noted in Riparian Zone Mntry38 3/1/2013	
Scientific Name	Common Name
<i>Ardisia crenata</i>	Coral ardisia
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia grandiflora</i>	Bull bay
<i>Pinus taeda</i>	Loblolly pine
<i>Prunus caroliniana</i>	Cherry laurel
<i>Quercus michauxii</i>	Swamp chestnut oak
<i>Quercus nigra</i>	Water oak
<i>Toxicodendron radicans</i>	Poison ivy

Plant noted with (E) is an exotic species

Habitat Assessment Scores	Mntry33 10/25/2002	Mntry44 7/12/2008	Mntry38 3/1/2013
Substrate Diversity	13	16	16
Substrate Availability	9	12	10
Water Velocity	15	10	13
Habitat Smothering	9	13	13
Primary Score	46	51	52
Artificial Channelization	15	13	19
Bank Stability - Right Bank	5	7	7
Bank Stability - Left Bank	8	7	7
Riparian Buffer Zone Width - Right Bank	2	5	5
Riparian Buffer Zone Width - Left Bank	7	3	8
Riparian Zone Vegetation Quality - Right Bank	4	6	5
Riparian Zone Vegetation Quality - Left Bank	5	6	8
Secondary Score	46	47	59
Total Score	92	98	111
Interpretation	Suboptimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Monterey Creek contained a variety of benthic macroinvertebrates including damselfly, blackfly, dragonfly, caddisfly, mayfly, and midge larvae. Limpets, worms, crayfish, and a variety of beetles were also present. Monterey Creek scored in the exceptional range for the SCI assessment. This result shows signs of improvement from earlier BioRecon scores at the stations located further upstream.



BioRecon/SCI Results	Mntry33 10/25/2002	Mntry44 7/12/2008	Mntry38 3/1/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	21	25	29	33
Number of Ephemeroptera Taxa	1	0	4	3
Number of Trichoptera Taxa	1	1	1	2
Number of Long-lived Taxa	3	3	1	0
Number of Clinger Taxa	4	2	6	6
Number of Sensitive Taxa	2	1	4	6
% Filterer	N/A	N/A	34.2%	35.3%
% Tanytarsini	N/A	N/A	10.1%	11.1%
% Dominance	N/A	N/A	18.1%	18.3%
% Very Tolerant Taxa	N/A	N/A	4.0%	0.7%
Score	3	2	65.66	70.07
Mean SCI Score	N/A	N/A	68	
Interpretation	Impaired	Impaired	Exceptional	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Monterey Creek was obviously disturbed upstream of the sampling stations and along the reaches sampled in previous events (2002 and 2008). The presence of soapsuds and iron/sulfur bacteria are indicative of human disturbances that could have impaired the macroinvertebrate population at the upstream stations. The time of sampling should not make a difference in results; however, the earlier events were sampled when the water temperatures were warmer and dissolved oxygen was lower. The new sample site on NW 38th Drive shows a remarkable assemblage of organisms (indicative of recovery) and no unusual water quality issues.

Possum Creek at NW 53rd Avenue

Bioassessment Summary

Introduction

Possum Creek lies in northwest Gainesville, Alachua County, Florida. It flows in a southeasterly direction from north of NW 53rd Avenue to north of NW 8th Avenue, where it joins Hogtown Creek. The sampling site was located south of NW 53rd Avenue at Possum Creek Park. The watershed contains 56% residential neighborhoods, 21% natural forest, 2% pine plantation, 13% commercial and 8% industrial land uses. Possum Creek at NW 53rd Avenue was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on November 12, 2000 and June 26, 2008. The Stream Condition Index (SCI) method was utilized on December 14, 2012. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Possum Creek at NW 53rd Avenue

Physical and Chemical Characterization

Possum Creek at NW 53rd Avenue was an average of 1.8 meters wide and 0.15 meters deep. The banks were low with no erosion noted. Non-point source pollution was possible from NW 53rd Avenue, a nearby shopping center, and an electricity transfer station. The water velocity was fair at 0.17 m/s. The water was stained lightly tannic (tea-colored), no unnatural odors were present, but sheen was noted on the surface in pooled areas possibly from decomposing vegetation. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	Pos53 11/12/2000	Pos53 6/26/2008	Pos53 12/14/2012
Temperature Degrees (C°)	19.0	22.2	15.6
Dissolved Oxygen (mg/L)	7.6	8.0	7.8
Specific Conductivity (µS/cm)	NA	142	120
pH (SU)	6.70	7.13	7.22

NA = Not Analyzed

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, roots of vegetation living on the banks, and aquatic plants. Erosion was not observed; sand and silt smothering was slight. The riparian zone was greater than 18 meters wide over most of the reach, except for trails, and moderately shaded with native plants. Fish and aquatic macrophytes were present. Periphyton and iron/sulfur bacteria were absent. Of 160 possible points for the habitat assessment, Possum Creek at NW 53rd Avenue received 145 points, placing it in the optimal range.

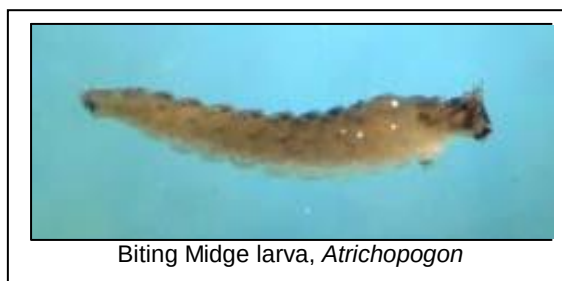
Plants Noted in Riparian Zone Pos53 12/14/2012	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Ilex americana</i>	American holly
<i>Itea virginica</i>	Virginia willow
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Orontium aquaticum</i>	Golden club
<i>Osmunda regalis</i>	Royal fern
<i>Prunus caroliniana</i>	Cherry laurel
<i>Quercus nigra</i>	Water oak
<i>Sambucus canadensis</i>	Elderberry
<i>Saururus cernuus</i>	Lizard's tail

Habitat Assessment Scores	Pos53 11/12/2000	Pos53 6/26/2008	Pos53 12/14/2012
Substrate Diversity	20	18	18
Substrate Availability	12	12	15
Water Velocity	11	17	14
Habitat Smothering	14	17	18
Primary Score	57	64	65
Artificial Channelization	18	20	20
Bank Stability - Right Bank	9	10	10
Bank Stability - Left Bank	9	10	10
Riparian Buffer Zone Width - Right Bank	10	6	10
Riparian Buffer Zone Width - Left Bank	10	9	10
Riparian Zone Vegetation Quality - Right Bank	10	9	10
Riparian Zone Vegetation Quality - Left Bank	10	9	10
Secondary Score	76	73	80
Total Score	133	137	145
Interpretation	Optimal	Optimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Possum Creek contained a variety of benthic macroinvertebrates including dragonfly, damselfly, mayfly, crane fly, caddisfly, and midge larvae. The no-see-um larvae *Atrichopogon* was also present. Amphipods, clams, limpets, and beetles were also present during the sampling event. The SCI and BioRecon scores all indicated a healthy biological community in Possum Creek at NW 53rd Avenue.



Biting Midge larva, *Atrichopogon*

BioRecon/SCI Results	Pos53 11/12/2000	Pos53 6/26/2008	Pos53 12/14/2012	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	23	21	27	34
Number of Ephemeroptera Taxa	1	1	2	2
Number of Trichoptera Taxa	2	2	1	2
Number of Long-lived Taxa	5	6	1	1
Number of Clinger Taxa	3	4	7	7
Number of Sensitive Taxa	2	3	2	3
% Filterer	N/A	N/A	31.1%	30.7%
% Tanytarsini	N/A	N/A	33.8%	41.4%
% Dominance	N/A	N/A	14.9%	20.0%
% Very Tolerant Taxa	N/A	N/A	2.7%	3.5%
Score	4	4	56.72	60.34
Mean SCI Score	N/A	N/A	65	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Possum Creek at NW 53rd Avenue had a healthy habitat and biological community. The habitat assessment scored in the optimal category for all three bioassessments. The 2012 SCI assessment was in the healthy range and showed an increase in the total number of taxa, including more clinger taxa than reported previously in BioRecon assessments. It is a lovely stream with interesting native wetland plants and is accessible from Possum Creek Park walking east through the woods.

Possum Creek at NW 16th Avenue

Bioassessment Summary

Introduction

Possum Creek lies in northwest Gainesville, Alachua County, Florida. It flows in a southeasterly direction from north of NW 53rd Avenue to north of NW 8th Avenue, where it joins Hogtown Creek. Upstream of the sampling site, the watershed drains mainly residential neighborhoods (73%) with 12% forest, small amounts of field and timber, 9% commercial, and 3% industrial land use. Possum Creek at NW 16th Avenue was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on December 5, 2000 and November 22, 2008 north of NW 8th Avenue near Westside Park. The Stream Condition Index (SCI) method was utilized on February 4, 2013 just north of NW 16th Avenue. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Possum Creek at NW 16th Avenue

Physical and Chemical Characterization

Possum Creek at NW 16th Avenue was one meter wide and shallow (0.1 m deep). The creek showed signs of human impact with houses, fences, and yards backing up to the creek. Non-point source pollution was likely from residential areas. The water velocity was optimal, and the water was clear with no unnatural odors or oils present. Temperature, pH, and dissolved oxygen were all within normal ranges.

Physical/Chemical Data	Pos8Av 12/5/2000	Pos8Av 11/22/2008	Pos16 2/4/2013
Temperature Degrees (C°)	11.1	8.8	10.3
Dissolved Oxygen (mg/L)	11.7	8.2	12.0
Specific Conductivity (µS/cm)	188	280	256
pH (SU)	7.81	7.31	7.77

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, roots of vegetation living on the banks, aquatic plants, and rock rubble. Erosion of the banks was only slight but sand and silt smothered some of the habitat. The riparian zone was shaded with native plants, but some exotic invasive plants grew in the understory. Fish and aquatic plants were present and periphyton was abundant. Iron and sulfur bacteria were absent. Of 160 possible points for the habitat assessment, Possum Creek at NW 16th Avenue received only 98 points primarily due to the very small riparian zone or buffer of natural land along the banks. It also appeared to have been channelized at some point, but was recovering.

Plants Noted in Riparian Zone Pos16 2/4/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Sabal palmetto</i>	Cabbage Palm

Plant noted with (E) is an exotic species

Habitat Assessment Scores	Pos8Av 12/5/2000	Pos8Av 11/22/2008	Pos16 2/4/2013
Substrate Diversity	18	18	18
Substrate Availability	14	8	13
Water Velocity	20	18	16
Habitat Smothering	17	10	16
Primary Score	69	54	63
Artificial Channelization	15	13	13
Bank Stability - Right Bank	5	5	5
Bank Stability - Left Bank	5	5	5
Riparian Buffer Zone Width - Right Bank	10	9	1
Riparian Buffer Zone Width - Left Bank	10	5	1
Riparian Zone Vegetation Quality - Right Bank	7	9	5
Riparian Zone Vegetation Quality - Left Bank	7	9	5
Secondary Score	59	55	35
Total Score	128	109	98
Interpretation	Optimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

The water quality, flow conditions, and variety of habitats available made Possum Creek a healthy environment for benthic macroinvertebrates. Even though the riparian buffer zone was narrow, the site contained a variety of benthic macroinvertebrates including dragonfly, damselfly, mayfly, crane fly, caddisfly, midge, and other fly larvae. Crayfish, worms, and beetles were also present including the sensitive riffle beetle *Macronychus glabratus*. The SCI and BioRecon scores indicated a healthy biological community in Possum Creek at NW 16th Avenue.



Riffle beetle, *Macronychus glabratus*

BioRecon/SCI Results	Pos8Av 12/5/2000	Pos8Av 11/22/2008	Pos16 2/4/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	20	24	25	23
Number of Ephemeroptera Taxa	2	3	3	2
Number of Trichoptera Taxa	2	3	1	1
Number of Long-lived Taxa	5	5	2	1
Number of Clinger Taxa	4	5	6	5
Number of Sensitive Taxa	4	5	5	4
% Filterer	N/A	N/A	51.3%	59.4%
% Tanytarsini	N/A	N/A	14.7%	9.4%
% Dominance	N/A	N/A	37.6%	49.7%
% Very Tolerant Taxa	N/A	N/A	3.2%	8.1%
Score	5	6	64.07	49.03
Mean SCI Score	N/A	N/A	57	
Interpretation	Healthy	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

The Possum Creek residential neighborhood does not seem to have a negative impact on the stream. There was a large amount of periphyton and some aquatic plants present due to the open canopy at this location and perhaps to nutrients washing in from the yards, or it may be from naturally occurring phosphorus in the clay soils. The presence of periphyton and plants combined with the variety of other habitats available provide ample food and shelter for macroinvertebrates.

Prairie Creek south of SR 20 Bioassessment Summary

Introduction

Prairie Creek flows from Newnans Lake south past Paynes Prairie where part of it flows to Alachua Lake on Paynes Prairie via Camps Canal and part to the River Styx and into Orange Lake. The creek is essentially a canal, carrying lake water, which has retained some sinuosity in places but is also channelized. A berm separates the canal from the Paynes Prairie and a break in the berm contains a metal plate which may be raised to allow water to flow onto the prairie when desired. Prairie Creek was sampled using the Florida Department of Environmental Protection (FDEP) Stream Condition Index (SCI) method on May 20, 2013 and the Biological Reconnaissance (BioRecon) method on May 29, 2014. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Prairie Creek south of SR 26
Paynes Prairie Preserve State Park

Physical and Chemical Characterization

The physical and chemical data were within the normal ranges expected for this area except for dissolved oxygen, which was recorded as 1.12 mg/L during the 2013 event and 3.05 mg/L in 2014. The water velocity ranged from 0.25 to 0.4 m/s, which is good for macroinvertebrates. The water was brown and turbid; the Secchi disk (which measures turbidity) was measured at 0.55 to 0.6 meters below the surface.

Physical/Chemical Data	PrrCrk 5/20/2013	PrrCrk 5/29/2014
Temperature Degrees (C°)	28.2	28.12
Dissolved Oxygen (mg/L)	1.12	3.05
Specific Conductivity (µS/cm)	111	87
pH (SU)	6.8	7.06

Habitat Characterization

The habitat assessment score was 113 in 2013 and 118 in 2014, which was in the suboptimal range, showing marginal scores in substrate availability and artificial channelization in 2013. However, the reach did not appear to have been channelized, but had sinuosity with pools and shallow areas. In 2014, the only habitat greater than 2 square meters in size was snag habitat (submerged tree branch). Small amounts of aquatic vegetation and leaf packs were also observed.

Plants Noted in Riparian Zone PrrCrk 5/20/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Red maple
<i>Alternanthera philoxeroides</i>	Alligator weed (E)
<i>Ceratophyllum demersum</i>	Coontail
<i>Eichhornia crassipes</i>	Water hyacinth (E)
<i>Pistia stratiotes</i>	Water lettuce
<i>Taxodium distichum</i>	Bald cypress

Plants noted with (E) are exotic species

Habitat Assessment Scores	PrrCrk 5/20/2013	PrrCrk 5/29/2014
Substrate Diversity	12	5
Substrate Availability	8	11
Water Velocity	15	20
Habitat Smothering	13	13
Primary Score	48	49
Artificial Channelization	8	11
Bank Stability - Right Bank	10	10
Bank Stability - Left Bank	10	10
Riparian Buffer Zone Width - Right Bank	10	10
Riparian Buffer Zone Width - Left Bank	10	10
Riparian Zone Vegetation Quality - Right Bank	8	9
Riparian Zone Vegetation Quality - Left Bank	9	9
Secondary Score	65	69
Total Score	113	118
Interpretation	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Prairie Creek had the lowest percentage of filter feeders in the study and no sensitive organisms were found. Because of the low SCI score and the abundance of the amphipod *Hyalella azteca* complex (average 54.28%), this site was re-sampled using the BioRecon method in 2014. The BioRecon score is not influenced by a single abundant organism. The BioRecon results showed a higher number of taxa (28 compared to 23 in the SCI), higher number of Trichoptera or caddisfly taxa (3 compared to 1) and more long-lived taxa (3 compared to 1); one Ephemeroptera or mayfly was found in each event. However, no sensitive taxa and 10 very tolerant taxa were found and the resulting score was still classified as impaired. The most common of the tolerant taxa was the Chironomidae larvae *Glyptotendipes meridionalis*. This genus is typically found in eutrophic conditions¹. The only long-lived taxon found in the SCI was the invasive exotic apple snail. These were not collected in the BioRecon but the egg masses were observed. The BioRecon sampling included the long-lived crayfish, shrimp, and spring fishfly.



Amphipod *Hyalella Azteca*, Chironomid *Glyptotendipes* (pupae), and *Glyptotendipes* (larva)

BioRecon/SCI Results	PrrCrk 5/20/2013		PrrCrk 5/29/2014
Sample Type	SCI		BioRecon
Metric Measured	Aliquot 1	Aliquot 2	N/A
Total Number of Taxa	23	18	28
Number of Ephemeroptera Taxa	0	1	1
Number of Trichoptera Taxa	1	0	3
Number of Long-lived Taxa	1	1	3
Number of Clinger Taxa	1	2	1
Number of Sensitive Taxa	0	0	0
% Filterer	6.9%	5.9%	NA
% Tanytarsini	7.9%	5.3%	NA
% Dominance	51.3%	57.2%	NA
% Very Tolerant Taxa	34.2%	27.0%	NA
Score	20.04	18.33	3
Mean SCI Score	19		N/A
Interpretation	Impaired		Impaired

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

The low score in the Prairie Creek SCI assessment is typical of Florida canals^{2,3}. Improvement in water quality in Newnans Lake, particularly nutrient loading, and possibly the control of the exotic snails should help improve the water clarity and biological community. Although the BioRecon showed impairment, it also showed an increased diversity in the macroinvertebrate community from the previous year's SCI assessment.

¹Epler, JH 2001. Manual for the larval Chironomidae (Diptera) of North and South Carolina: A guide to the taxonomy of the midges of the Southeastern United States including Florida. St. Johns River Water Management District Special Publication SJ2001-SP13, Palatka, Florida.

²Strom, DG, DL Evans, MK Hein, MV Hoyer, L Line, EL Mosura-Bliss, R Giambrone, D. Pilat, and J. De La Fuente. 2010. Aquatic Species Diversity List, Big Cypress and Brighton Reservations. Prepared for the Seminole Tribe of Florida. Prepared by Water & Air Research, Inc., Gainesville, Florida.

³Line, L, DG.Strom, DL Evans, MK Hein, J Hill, EL Mosura-Bliss, R Giambrone, BL Vance, E Tavarez and L Bedinger. 2013. Aquatic Species Diversity Assessment, Big Cypress and Brighton Reservations. Prepared for the Seminole Tribe of Florida. Prepared by Water & Air Research, Inc., Gainesville, Florida.

Springstead Creek at US 441

Bioassessment Summary

Introduction

Springstead Creek is located in Gainesville, Alachua County, Florida. The creek flows in a westerly direction from the North Main Street Commercial Park under N. Main Street, NW 6th Street and US 441 to Hogtown Creek. The sampling site was located upstream of the confluence with Hogtown Creek just west of US 441. Land use draining into the creek was 17% natural forest, 40% residential, 30% commercial, and 12% industrial with a small amount of pine plantation. Springstead Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on June 21, 2001 upstream of NW 6th Street and NW 2nd Avenue and on January 15, 2010 at the site west of US 441. The Stream Condition Index (SCI) method was utilized on February 7, 2013 at the site west of US 441. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. This location was also sampled using an artificial substrate (Hester-Dendy) sampler in September 1996, on April 16, 2009, and on February 7, 2013. For this evaluation, a sampler is placed in the water for 28 days and then retrieved. The biological organisms populating the sampler are removed, identified, and counted.



Springstead Creek at US 441

Physical and Chemical Characterization

Springstead Creek was sand-bottomed, and averaged 2.5 meters wide and 0.1 meters deep. Banks were eroded and there were clay outcroppings in places. Sources of non-point pollution were US 441, the residences backing up to the creek east of US 441, and industrial and commercial land farther upstream. The water velocity was good, about 0.25 m/s, and the water was clear with no surface oils or sediment odors. Water quality parameters were within normal ranges.

Physical/Chemical Data	SprstdNW2 6/21/2001	Sprstd441 1/15/2010	Sprstd441 2/7/2013
Temperature Degrees (C°)	N/A	11.49	17.1
Dissolved Oxygen (mg/L)	5.6	10.1	8.0
Specific Conductivity (µS/cm)	NA	278	250
pH (SU)	6.90	7.59	7.29

NA = Not Analyzed

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included snags of fallen tree branches, leaf packs, roots of vegetation living on the banks, in-stream aquatic vegetation, and rock rubble. Habitat was slightly smothered with silt and sand. The riparian zone was fairly natural on one side and was only about 4 meters wide on the other side. Native trees lightly shade the creek in winter and provide moderate shade in summer. Exotic plants were common in the understory. Periphyton was abundant, fish were common, and iron/sulfur bacteria and aquatic plants were rare. Of 160 possible points for the habitat assessment, Springstead Creek scored 108 points placing it in the suboptimal range.

Plants Noted in Riparian Zone Sprstd441 2/7/2013	
Scientific Name	Common Name
<i>Ardisia crenata</i>	Coral ardesia (E)
<i>Carpinus caroliniana</i>	Blue beech
<i>Dioscorea bulbifera</i>	Air potato (E)
<i>Hedera helix</i>	English Ivy
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Quercus nigra</i>	Water Oak
<i>Ruellia simplex</i>	Mexican petunia (E)
<i>Sabal palmetto</i>	Cabbage palm
<i>Sambucus canadensis</i>	Elderberry

Plants noted with (E) are exotic species

Habitat Assessment Scores	SprstdNW2 6/21/2001	Sprstd441 1/15/2010	Sprstd441 2/7/2013
Substrate Diversity	11	18	18
Substrate Availability	11	9	11
Water Velocity	18	15	16
Habitat Smothering	12	11	13
Primary Score	52	53	58
Artificial Channelization	19	20	19
Bank Stability - Right Bank	4	4	3
Bank Stability - Left Bank	4	4	5
Riparian Buffer Zone Width - Right Bank	6	5	2
Riparian Buffer Zone Width - Left Bank	4	9	10
Riparian Zone Vegetation Quality - Right Bank	7	5	4
Riparian Zone Vegetation Quality - Left Bank	7	6	7
Secondary Score	51	53	50
Total Score	103	106	108
Interpretation	Suboptimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Blackflies were dominant organisms in Springstead Creek. However there were a variety of other benthic macroinvertebrates including damselfly, mayfly, crane fly, caddisfly, and midge larvae. Worms, crayfish, snails, and a variety of beetles were also present. The mayfly *Acentrella alachua* and the limpet *Laevapex fuscus* were found in both the SCI and Hester-Dendy samples at this site. The BioRecon and SCI results scored in the healthy range.



Mayfly, *Acentrella alachua*



Limpet, *Laevapex fuscus*

BioRecon/SCI Results	SprstdNW2 6/21/2001	Sprstd441 1/15/2010	Sprstd441 2/7/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	15	23	27	25
Number of Ephemeroptera Taxa	1	3	3	3
Number of Trichoptera Taxa	1	1	1	2
Number of Long-lived Taxa	2	3	1	0
Number of Clinger Taxa	3	4	6	5
Number of Sensitive Taxa	2	3	5	4
% Filterer	N/A	N/A	60.33%	41.72%
% Tanytarsini	N/A	N/A	2.67%	0.64%
% Dominance	N/A	N/A	51.33%	37.58%
% Very Tolerant Taxa	N/A	N/A	2.67%	5.10%
Score	2	4	48.76	43.97
Mean SCI Score	N/A	N/A	52	
Interpretation	Impaired	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

The Hester-Dendy results indicate a healthy stream with good results for Shannon-Weaver Diversity Index, Pielou's Evenness, and Florida Index scores.

Artificial Substrate (Hester-Dendy) Sampling Results	Sprstd Sept. 1996	Sprstd 4/16/2009	Sprstd441 2/7/2013
Shannon-Weaver Diversity Index (Base 2)	3.617	4.470	4.048
Pielou's Evenness (H/Hmax)	0.811	0.824	0.872
Florida Index	10	22	29
Total Density (No./M ²)	349	1110	846
Total Number of Taxa	23	40	21

- Shannon-Weaver Diversity Index: 3- 5 = clean water conditions; 0- 2 = stressed waters.
- Pielou's Evenness Values range between 0 and 1; A value of 1 denotes all taxa are represented by an equal number of individuals (the closer a value is to 1, the better the distribution).
- Florida Index: 0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; and 10 and above = clean.
- Total Taxa Values have been up-collapsed so as not to inflate numbers.

Discussion

Springstead Creek has a fairly healthy macroinvertebrate population at this site in spite of commercial, industrial, and residential runoff. The habitat assessments scores are in the suboptimal range and the BioRecon and SCI scores are all in the healthy category. The site shows improvement since 2001. The BioRecons and SCI showed similar numbers of clinger and sensitive taxa. The 2013 SCI sampling found only one long-lived taxon in one sample aliquot. Water quality during storm events may be a cause for concern; and erosion likely causes sedimentation downstream in Hogtown Creek, smothering the habitat.

Sweetwater Branch at SE 4th Street Bioassessment Summary

Introduction

Sweetwater Branch is a creek that originates in the center of the City of Gainesville in Alachua County, Florida. It flows in a southeasterly direction from NW 2nd Street and NW 16th Avenue under Main Street and south through commercial, residential, and industrial areas. Non-contact cooling water from the Gainesville Regional Utilities (GRU) J.R. Kelly (electrical) Generating Station is discharged to the stream near Depot Avenue. The GRU Main Street Water Reclamation Facility discharges treated wastewater effluent into the stream east of Williston Road. Finally, Sweetwater Branch flows into Paynes Prairie and then into Alachua Sink, which drains into the aquifer. The sampling site was located at SE 4th Street, downstream from the electrical generating plant and upstream of the wastewater treatment plant. The land use in the basin draining into the site is 60% residential, 33% commercial, and 4% industrial with a small amount of forest. Sweetwater Branch was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on February 21, 2001 and February 1, 2009. The Stream Condition Index (SCI) assessment was conducted by FDEP personnel on February 21, 2012 and September 11, 2012. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. This site was also evaluated with the FDEP's Linear Vegetation Survey (LVS) and the Rapid Periphyton Survey (RPS).



Sweetwater Branch at SE 4th Avenue

Physical and Chemical Characterization

Sweetwater Branch is sand-bottomed with a typical width of 3.0 meters and about 0.15 meters in depth. Non-point source pollution was obvious from roads, parking lots, residential, commercial, and industrial areas. During the 2012 sampling events the water velocity was approximately 0.1 – 0.14 m/s. Water was clear and colorless in February 2012 but tannic or tea-colored in September of 2012, with no unnatural oils in the water or in the sediment. Water quality parameters were within normal ranges.

Physical/Chemical Data	SWBSE4 2/21/2001	SWBSE4 2/1/2009	SWBSE4 2/21/2012	SWBSE4 9/11/2012
Temperature Degrees (C°)	19	13.11	16.1	26.05
Dissolved Oxygen (mg/L)	9.42	9.64	9.56	7.36
Specific Conductivity (µS/cm)	389	430	344	471
pH (SU)	7.80	6.45	8.2	7.78

Habitat Characterization

The major habitats suitable for benthic macroinvertebrates included a small amount of leaf packs, roots of vegetation living on the banks, snags of fallen tree branches, and rock rubble. Sand and silt moderately smothered the habitat due to bank erosion and sediment deposition during storm events, as this site receives large amounts of stormwater from impervious surfaces upstream. Pools and shallow riffles provided a variety of depths and the creek was moderately shaded with native trees, palms, and exotic plants. This stream had been channelized in the past but showed some recovery of sinuosity. The riparian zone was roughly 10 meters wide on the left bank and 15 meters wide on the right bank. Periphyton was commonly observed as were fish. Iron/sulfur bacteria and aquatic macrophytes were rare or absent.

Habitat Assessment Scores	SWBSE4 2/21/2001	SWBSE4 2/1/2009	SWBSE4 2/21/2012	SWBSE4 9/11/2012
Substrate Diversity	16	17	11	8
Substrate Availability	13	9	6	8
Water Velocity	11	14	10	12
Habitat Smothering	11	12	13	14
Primary Score	51	52	40	42
Artificial Channelization	12	13	15	13
Bank Stability - Right Bank	5	5	5	5
Bank Stability - Left Bank	5	5	5	5
Riparian Buffer Zone Width - Right Bank	8	4	7	7
Riparian Buffer Zone Width - Left Bank	8	4	5	5
Riparian Zone Vegetation Quality - Right Bank	6	4	7	7
Riparian Zone Vegetation Quality - Left Bank	6	4	6	6
Secondary Score	50	39	50	48
Total Score	101	91	90	90
Interpretation	Suboptimal	Suboptimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Two Linear Vegetation Surveys (LVS) were conducted in 2012. The LVS is a survey of the plant species living in the water along a 100 meter reach of the stream. A plant must cover at least one square meter to be counted as dominant or co-dominant. The exotic plants *Colocasia esculenta* (Wild taro), *Ruellia simplex* (Mexican petunia), and *Sphagneticola trilobata* (Creeping oxeye), and the native *Cardamine pennsylvanica* (Pennsylvania bittercress) were identified growing in the water; they were not considered dominant. The Rapid Periphyton Survey (RPS) is a survey of the periphyton thickness found along eleven transects across a 100 meter reach of the stream. The RPS results varied in that more periphyton was observed in February than in the July of 2012. The tannic colored water may have shaded the periphyton and high flows during summer rains may have washed some of it away. The percent canopy cover is also measured at each transect and was similar in both events.

Benthic Macroinvertebrates

Among the taxa found in Sweetwater Branch were damselfly, midge, blackfly, mayfly, and caddisfly larvae. Aquatic beetles, worms, clams, and snails were also present. *Argia sedula* is a damselfly typically found as larvae in the water and in adult form flying along the banks. The SCI scores varied greatly from 51 points in February to 30 points in September. Seasonal differences may be caused by high temperatures and heavy summer rains that can stress the organisms in the system. The RPS conducted in February 2012 showed larger amounts of periphyton; this abundant food source may have helped to improve the SCI score.



Adult damselfly, *Argia sedula*

BioRecon/SCI Results	SWBSE4 2/21/2001	SWBSE4 2/1/2009	SWBSE4 2/21/2012		SWBSE4 9/11/2012	
Sample Type	BioRecon	BioRecon	SCI		SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Total Number of Taxa	12	25	24	20	14	12
Number of Ephemeroptera Taxa	0	0	1	1	1	1
Number of Trichoptera Taxa	1	1	2	2	2	1
Number of Long-lived Taxa	1	3	1	0	1	1
Number of Clinger Taxa	2	1	5	5	4	2
Number of Sensitive Taxa	1	0	3	3	0	1
% Filterer	N/A	N/A	44.9%	33.8%	19.18	17.69
% Tanytarsini	N/A	N/A	4.1%	4.9%	2.74	0
% Dominance	N/A	N/A	33.3%	25.0%	33.56	38.78
% Very Tolerant Taxa	N/A	N/A	22.5%	20.8%	36.3	42.18
Score	1	2	53.50	48.41	34.3	24.87
Mean SCI Score	N/A	N/A	51		30	
Interpretation	Impaired	Impaired	Healthy		Impaired	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

The benthic community of this Sweetwater Branch site varies, but is generally not very healthy. Without changes in stormwater retention upstream and improvements to the riparian zone along the banks, it will be difficult to make lasting improvements in the benthic community. Several recent studies on Sweetwater Branch from 2011 to 2014 were conducted downstream of this location, above and below the wastewater discharge and just upstream of the Paynes Prairie wetland. These studies included physical and chemical characterization, habitat assessment, SCI assessment, LVS, and RPS¹. The average SCI score of the other sampling events was 32 points and six of the eight showed impairment. The Rapid Periphyton Surveys usually indicated little periphyton; from none to a very thin, slimy layer. Occasionally a thicker layer was reported at some transects, but 65-80 percent of the bottom contained no periphyton.

¹ FDEP. 2014. *Sweetwater Branch Stream Condition Index Results*. Unpublished data.

Three Lakes Creek upstream of Glen Springs Road Bioassessment Summary

Introduction

Three Lakes Creek is a tributary to Possum Creek in Gainesville, Alachua County, Florida. The creek flows from northeast of NW 39th Avenue (SR 222) and NW 34th Street southwest under Glen Springs Road (NW 31st Boulevard) and NW 34th Street, where it converges with Possum Creek. The sampling site was located on the upstream side of Glen Springs Road. Residential areas account for 82% of the land use in its watershed, while 8% is forest/natural land, 8% is commercial, and 2% is industrial. Three Lakes Creek was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on May 31, 2001 and May 29, 2008. The Stream Condition Index (SCI) method was utilized on December 14, 2012. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Three Lakes Creek upstream of Glen Springs Road

Physical and Chemical Characterization

Three Lakes Creek was sand and gravel-bottomed with clay and limestone out-croppings. During the 2012 sampling event, the stream averaged 1.5 meters wide and was shallow, (0.05 meters deep). The banks were slightly eroded in places. Non-point source pollution may run off from roads and the residential areas upstream of the creek. The stream velocity was good, about 0.2 m/s. The water was clear and colorless with no oils or odors. Dissolved oxygen, pH, specific conductivity, and temperature were all within the normal range.

Physical/Chemical Data	ThreeLk 5/31/2001	ThreeLk 5/29/2008	ThreeLk 12/14/2012
Temperature Degrees (C°)	22.0	21.1	15.5
Dissolved Oxygen (mg/L)	4.6	6.5	8.5
Specific Conductivity (µS/cm)	NA	314	424
pH (SU)	6.90	7.28	7.29

NA = Not Analyzed

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included roots of vegetation living on the banks, snags of fallen tree branches, leaf packs, and a small amount of rock rubble. Some of the habitat was slightly sand and silt-smothered, which is normal. The riparian zone was greater than 18 meters wide, and vegetated with a variety of trees that moderately shaded the stream. Fish were common and aquatic plants, periphyton, and iron/sulfur bacteria were absent. Of 160 possible points for the habitat assessment, Three Lakes Creek received 133 points placing it in the optimal range.

Plants Noted in Riparian Zone ThreeLk 12/14/2012	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Ardisia crenata</i>	Coral ardesia (E)
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Iris virginica</i>	Blue flag
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Magnolia grandiflora</i>	Bull bay
<i>Parthenocissus quinquefolia</i>	Virginia creeper
<i>Pinus taeda</i>	Loblolly pine
<i>Quercus virginiana</i>	Live oak
<i>Triadica sebifera</i>	Chinese tallow (E)

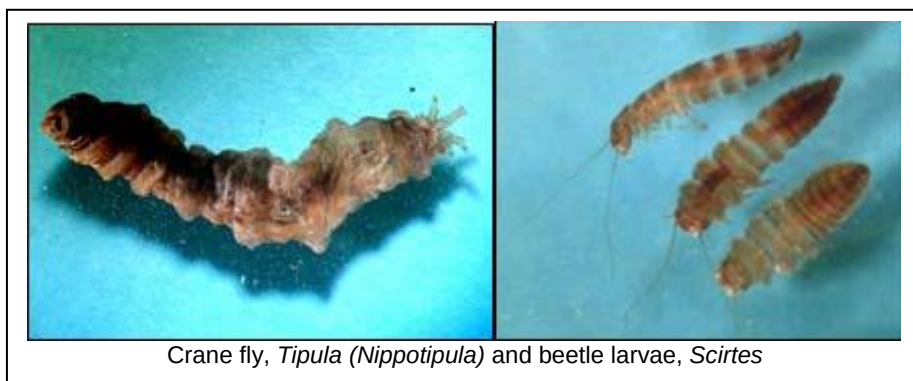
Plants noted with (E) are exotic species

Habitat Assessment Scores	ThreeLk 5/31/2001	ThreeLk 5/29/2008	ThreeLk 12/14/2012
Substrate Diversity	15	15	18
Substrate Availability	11	9	15
Water Velocity	13	14	14
Habitat Smothering	10	17	19
Primary Score	49	55	66
Artificial Channelization	20	20	20
Bank Stability - Right Bank	5	8	5
Bank Stability - Left Bank	5	8	5
Riparian Buffer Zone Width - Right Bank	10	9	10
Riparian Buffer Zone Width - Left Bank	10	9	8
Riparian Zone Vegetation Quality - Right Bank	10	7	9
Riparian Zone Vegetation Quality - Left Bank	10	7	10
Secondary Score	70	68	67
Total Score	119	123	133
Interpretation	Suboptimal	Optimal	Optimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

The habitat at Three Lakes Creek with a sand and gravel bottom is perfect for crane fly larvae such as *Tipula* and many other benthic macroinvertebrates. Damselfly, dragonfly, mayfly, caddisfly, blackfly, midge and other fly larvae were present in the samples. Snails, crayfish, leeches, and several different beetles were also present. Three Lakes Creek improved in its BioRecon scores from 2001 to 2008; and the 2012 SCI score interpretation was very healthy, one point short of being in the exceptional range.



BioRecon/SCI Results	ThreeLk 5/31/2001	ThreeLk 5/29/2008	ThreeLk 12/14/2012	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	16	26	38	36
Number of Ephemeroptera Taxa	1	3	2	3
Number of Trichoptera Taxa	1	2	1	1
Number of Long-lived Taxa	4	3	2	2
Number of Clinger Taxa	2	4	6	7
Number of Sensitive Taxa	2	4	6	5
% Filterer	N/A	N/A	28.7%	37.5%
% Tanytarsini	N/A	N/A	8.5%	13.5%
% Dominance	N/A	N/A	20.6%	19.9%
% Very Tolerant Taxa	N/A	N/A	24.8%	9.6%
Score	3	5	63.33	71.31
Mean SCI Score	N/A	N/A	67	
Interpretation	Impaired	Healthy	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Optimal in-stream habitat and a natural riparian zone provide the best opportunity for healthy macroinvertebrate populations, as seen in this section of Three Lakes Creek. Optimal habitat assessment results and a very healthy macroinvertebrate assemblage, with a total taxa count of 36 to 38, were observed. Clinger and sensitive taxa were both found in higher numbers in the SCI sampling as compared to the previous BioRecon assessments. The SCI score of 67 was one point below the exceptional category.

Tumblin Creek at SW 14th Avenue

Bioassessment Summary

Introduction

Tumblin Creek originates in the center of the City of Gainesville in Alachua County, Florida. The water in the creek emerges from a culvert near SW 5th Avenue and flows in a southwesterly direction through P. K. Yonge School property and other commercial, residential, and industrial areas before it empties into Bivens Arm Lake. The sampling site was located near an apartment complex upstream of SW 14th Avenue, just east of US 441. The land use in the basin draining into the site is 41% residential, 53% commercial, 4% industrial and 2% forest/natural. Tumblin Creek at SW 14th Avenue was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on February 19, 2010. The Stream Condition Index (SCI) method was utilized on February 7, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.



Tumblin Creek at SW 14th Avenue

Physical and Chemical Characterization

Tumblin Creek at SW 14th Avenue had a typical width of 2.0 meters and about 0.15 meter depth. Non-point source pollution was obvious from roads, parking lots, residential, commercial, and industrial areas. The water velocity was approximately 0.08 m/s; water was slightly turbid with a clear color and no unnatural oils in the water or sediment. An anaerobic odor was present in the deeper areas. Water quality parameters were within normal ranges.

Physical/Chemical Data	Tum14 2/19/2010	Tum14 1/10/2013
Temperature Degrees (C°)	12.8	19.8
Dissolved Oxygen (mg/L)	11.26	8.32
Specific Conductivity (µS/cm)	356	424
pH (SU)	7.85	7.71

Habitat Characterization

The habitat suitable for benthic macroinvertebrates included a small amount of leaf packs, roots of vegetation living on the banks, snags of fallen tree branches, and rock rubble. Erosion and sand smothering of habitat was moderate. The riparian zone was 18 meters wide in the left bank and 10 meters wide in the right bank due to an apartment complex in close proximity. The creek was slightly shaded with native trees, palms, and exotic plants. Periphyton, iron/sulfur bacteria, and aquatic macrophytes were absent; and fish were rare in the creek.

Plants Noted in Riparian Zone Tum14 1/10/2013	
Scientific Name	Common Name
<i>Acer rubrum</i>	Southern red maple
<i>Carpinus caroliniana</i>	Bluebeech
<i>Eriobotrya japonica</i>	Loquat (E)
<i>Juniperus virginiana</i>	Eastern red cedar
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Lygodium japonica</i>	Japanese climbing fern (E)
<i>Macfadyena unguis-cati</i>	Cats-claw vine (E)
<i>Pinus taeda</i>	Loblolly pine
<i>Quercus nigra</i>	Water oak
<i>Sabal palmetto</i>	Cabbage palm

Plants noted with (E) are exotic species

Habitat Assessment Scores	Tum14 2/19/2010	Tum14 1/10/2013
Substrate Diversity	13	18
Substrate Availability	11	12
Water Velocity	12	9
Habitat Smothering	14	17
Primary Score	50	56
Artificial Channelization	10	18
Bank Stability - Right Bank	5	5
Bank Stability - Left Bank	5	5
Riparian Buffer Zone Width - Right Bank	3	5
Riparian Buffer Zone Width - Left Bank	9	10
Riparian Zone Vegetation Quality - Right Bank	5	3
Riparian Zone Vegetation Quality - Left Bank	7	3
Secondary Score	44	49
Total Score	94	105
Interpretation	Suboptimal	Suboptimal

0-4 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

Among the taxa found at this Tumblin Creek site were damselfly, midge, caddisfly larvae, water striders, amphipods, crayfish, water beetles, worms, and snails, including *Melanoides* sp. an invasive snail that has been found in very large numbers. Tumblin Creek at SW 14th Avenue scored in the low end of the range for the healthy category, one point away from being classified as impaired.



Snail, *Melanoides* sp.

BioRecon/SCI Results	Tum14 2/19/2010	Tum14 2/7/2013	
Sample Type	BioRecon	SCI	
Metric Measured	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	7	18	16
Number of Ephemeroptera Taxa	0	0	0
Number of Trichoptera Taxa	1	1	2
Number of Long-lived Taxa	1	1	2
Number of Clinger Taxa	1	3	4
Number of Sensitive Taxa	0	1	1
% Filterer	N/A	23.1%	27.9%
% Tanytarsini	N/A	7.0%	3.2%
% Dominance	N/A	23.4%	25.0%
% Very Tolerant Taxa	N/A	26.6%	34.0%
Score	1	33.78	36.82
Mean SCI Score	N/A	35	
Interpretation	Impaired	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

The benthic community in Tumblin Creek at SW 14th Avenue may have slightly improved. We can't conclude that there has been a definite improvement, since two different methods for sampling and collecting macroinvertebrates were used. The SCI score was on the low end of the healthy category. The habitat assessment did show a slight improvement and this could be due to some recovery of the land surrounding the creek at this location. A wet retention basin was constructed near SW 6th Street and north of Depot Avenue to treat some of the water from downtown Gainesville before it enters the creek. This amendment is enhanced by plantings of cypress trees, other native vegetation, and a recreational path which meanders around the pond.

Tumblin Creek, wooded area west of US 441

Bioassessment Summary

Introduction

Tumblin Creek originates in the center of the City of Gainesville in Alachua County, Florida. The water in the creek first emerges above ground from a culvert near SW 5th Avenue and flows in a southwesterly direction before it empties into Bivens Arm Lake. The sampling site was located in the wooded area near the end of the creek. The land use in the basin draining into the site is about 36% residential, 54% commercial, 5% industrial and 5% forest/natural. This Tumblin Creek site was sampled using the Florida Department of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on April 7, 2000 and May 12, 2009. The Stream Condition Index (SCI) method was utilized on February 7, 2013. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment. This location was also sampled using an artificial substrate (Hester-Dendy) sampler in June of 2000, on October 28, 2008 and February 17, 2013. For this evaluation, a sampler is placed in the water for 28 days and then retrieved. The biological organisms populating the sampler are removed, identified, and counted.



Tumblin Creek Wooded Area

Physical and Chemical Characterization

Tumblin Creek was about two meters wide, but braided (overloaded with sediment and broken into smaller channels) and about 0.1 meter deep. Non-point source pollution was obvious upstream of the site from roads, parking lots, residential, commercial, and industrial areas. The water velocity at the time of the 2013 sampling event was 0.17 m/s; the water was clear and colorless, with no unnatural odors or oils there or in the sediment. Dissolved oxygen, temperature, specific conductivity, and pH were within normal ranges considering the time of the year the sampling was performed.

Physical/Chemical Data	TumWd 4/7/2000	TumWd 5/12/2009	TumWd 2/7/2013
Temperature Degrees (C°)	22.9	23.7	20.2
Dissolved Oxygen (mg/L)	8.43	6.02	10.74
Specific Conductivity (µS/cm)	516	397	367
pH (SU)	7.68	7.20	8.28

Habitat Characterization

The Tumblin Creek watershed has been negatively impacted by human activities; impacts include runoff pollution, destruction and reduction of riparian zones, and high stormwater flows. The habitat suitable for benthic macroinvertebrates included leaf packs, roots of vegetation living on the banks, snags of fallen tree branches, and small amounts of rock rubble. There was shifting sand smothering some of the habitat. The stream was moderately shaded in this floodplain area. The riparian zone was greater than 18 meters wide with native trees, palms, and some exotic plants mixed with natives in the understory. Periphyton was rare and fish were abundant; iron/sulfur bacteria and aquatic plants were absent in the creek. Of 160 possible points for the habitat assessment, Tumblin Creek received 115 points placing it in the suboptimal range.

Plants Noted in Riparian Zone TumWd 2/7/2013	
Scientific Name	Common Name
<i>Acer negundo</i>	Box-elder
<i>Acer rubrum</i>	Southern red maple
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Dioscorea bulbifera</i>	Air potato (E)
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Blackgum
<i>Pinus taeda</i>	Loblolly pine
<i>Ruellia simplex</i>	Mexican petunia (E)
<i>Sabal palmetto</i>	Cabbage palm
<i>Salix caroliniana</i>	Coastal Plain Willow
<i>Sambucus canadensis</i>	American black elderberry

Plants noted with (E) are exotic species

Habitat Assessment Scores	TumWd 4/7/2000	TumWd 5/12/2009	TumWd 2/7/2013
Substrate Diversity	19	18	13
Substrate Availability	12	14	18
Water Velocity	14	14	13
Habitat Smothering	7	12	10
Primary Score	52	58	54
Artificial Channelization	20	18	17
Bank Stability - Right Bank	10	7	7
Bank Stability - Left Bank	10	7	7
Riparian Buffer Zone Width - Right Bank	10	8	10
Riparian Buffer Zone Width - Left Bank	10	8	10
Riparian Zone Vegetation Quality - Right Bank	5	6	5
Riparian Zone Vegetation Quality - Left Bank	5	6	5
Secondary Score	70	60	61
Total Score	122	118	115
Interpretation	Optimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates and Hester-Dendy Results

Tumblin Creek contained damselfly, midge, mayfly, caddisfly larvae, beetles, snails, flatworms and other fly larvae. The exotic snail, *Melanoides*, formerly dominated this creek and others in urban Gainesville. However, they were not collected in the sampling event in 2009 and only one was identified in the 2013 sampling event. Although *Melanoides* are still found in the creek, they are not seen in large densities as found in the past. Tumblin Creek scored in the healthy category for the SCI assessment, however on the low end of the range. The dominant taxon was the midge larvae *Polypedilum flavum*.

BioRecon/SCI Results	TumWd 4/7/2000	TumWd 5/12/2009	TumWd 2/7/2013	
Sample Type	BioRecon	BioRecon	SCI	
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2
Total Number of Taxa	13	21	22	20
Number of Ephemeroptera Taxa	0	1	1	0
Number of Trichoptera Taxa	0	1	1	1
Number of Long-lived Taxa	2	2	0	0
Number of Clinger Taxa	0	2	4	4
Number of Sensitive Taxa	0	1	2	2
% Filterer	N/A	N/A	31.7%	27.5%
% Tanytarsini	N/A	N/A	15.7%	15.2%
% Dominance	N/A	N/A	37.9%	41.1%
% Very Tolerant Taxa	N/A	N/A	14.4%	13.3%
Score	1	2	40.49	35.5
Mean SCI Score	N/A	N/A	38	
Interpretation	Impaired	Impaired	Healthy	

N/A = Not Applicable

BioRecon Scoring: [7–10] = Exceptional, [4–7] = Healthy, [0–4] = Impaired.

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Artificial Substrate (Hester-Dendy) samplers were deployed and three replicates were processed. The data for each replicate was combined. The Shannon-Weaver Diversity Index scored 3.123, which indicates clean water conditions, but is on the low end of the scale.

Artificial Substrate (Hester-Dendy) Sampling Results	TumWd June 2000	TumWd 10/28/2008	TumWd 2/17/2013
Shannon-Weaver Diversity Index (Base 2)	2.390	4.230	3.123
Pielou's Evenness (H/Hmax)	0.554	0.770	0.643
Florida Index	3	9	17
Total Density (No./M ²)	478	925	564
Total Number of Taxa	20	38	24

- Shannon-Weaver Diversity Index: 3- 5 = clean water conditions; 0- 2 = stressed waters.

- Pielou's Evenness Values range between 0 and 1; A value of 1 denotes all taxa are represented by an equal number of individuals (the closer a value is to 1, the better the distribution).

- Florida Index: 0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; and 10 and above = clean.

- Total Taxa Values have been up-collapsed so as not to inflate numbers.

Discussion

Tumblin Creek has been highly impacted by human activities. The creek is highly modified and the upper portion of the creek runs underground through a concrete culvert. Runoff pollution, reduction of riparian zones, and high stormwater flows due to impervious surface contribute negatively to the health of this creek. This particular site has a large, riparian zone with low banks allowing the water to overflow into the floodplain. A floodplain is helpful to the water quality of a stream as the water can soak into the ground slowly and become cleansed by the plants and soil before returning to the streambed. This feature helps Tumblin Creek at this site to offset some of the negative impacts from upstream. This is the only station on Tumblin Creek where mayfly larvae have been found.



Mayfly, *Labiobetis propinquus*
(left, male and right, female)

The land to the west of the channelized portion of Tumblin Creek, just upstream of this station and on the west side of US 441, was originally part of the floodplain based on the oldest trees and soils (personal communication, Mark Clark 2000). The City of Gainesville Public Works Department has developed designs for a regional stormwater management facility (sediment and trash trap) on Tumblin Creek, downstream of the concrete channel west of US 441. In addition to reducing downstream sedimentation, the project will help rehydrate selected wetland areas in the Tumblin Creek floodplain north of Bivens Arm Lake. It is anticipated that construction of the stormwater management facility will begin in late 2015.

Clark, MW, 2000. Wetlands class, University of Florida field trip.

Turkey Creek Bioassessment Summary

Introduction

Turkey Creek is located in Alachua County, Florida between Gainesville and Alachua, just west of US 441. Turkey Creek flows west through Alachua County Forever's Turkey Creek Hammock Preserve into San Felasco Hammock State Preserve where it recharges the Floridan aquifer via Split Rock Sink on Sanchez Prairie. Several branches of the creek receive runoff from the Turkey Creek subdivision. The watershed includes a wide variety of land uses including residential, pasture, pine plantation, a golf course, and a biomass electricity generation plant. Turkey Creek was sampled using the Florida Department



Turkey Creek near NW 71st Way

of Environmental Protection (FDEP) Biological Reconnaissance (BioRecon) method on March 27, 2003, April 23, 2009, and January 21, 2015. The Stream Condition Index (SCI) method was utilized on December 16, 2014. In 2003 and 2009, the creek was sampled in the Turkey Creek subdivision near Creek Drive and NW 105th Avenue. In 2014 the sample site was relocated near Creek Drive and NW 71st Way, downstream of all branches draining the subdivision. The 2015 BioRecon was conducted in Alachua County Forever's Turkey Creek Hammock Preserve near the original sampling location. Sampling events included a physical and chemical characterization, habitat assessment, and benthic macroinvertebrate assessment.

Physical and Chemical Characterization

Turkey Creek was an average of 2.25 meters wide and 0.08 meters deep; the water level was below previous sampling event levels. The velocity was good, about 0.25 meters per second. The water was clear but tannic (tea-colored) with no unnatural odors. An oily sheen from decomposing leaves could be seen at a few locations. Temperature, pH, dissolved oxygen, and conductivity were all within normal ranges.

Physical/Chemical Data	TrkyCrk 3/3/2003	TrkyCrk 4/23/2009	TrkyCrk71 12/16/2014	TrkPrsrv 1/21/2015
Temperature Degrees (C°)	18.48	22.12	15.5	14.16
Dissolved Oxygen (mg/L)	8.08	8.48	9.77	10.80
Specific Conductivity (µS/cm)	172	274	262	286
pH (SU)	6.95	6.85	6.91	6.81

Habitat Characterization

The habitat suitable for macro-invertebrates observed at NW 71st Way included snags of fallen tree branches and leaf packs. Roots of vegetation living on the banks were mostly out of the water or cypress tree roots offering minimal root habitat. The bottom was mostly sand with fallen leaves and there was a small amount of riffle made of small pebbles. The riparian zone at the site began as shady lawn, but most of the 100-meter reach was lightly shaded with native trees, mostly cypress, and some ground cover of exotic plants. Sparse amounts of blue-green algae could be seen on the sand in sunny areas. Fish and macrophytes were rare. At this site the creek did not appear to have been channelized in the past, but if it had, it appeared to have recovered.

Plants Noted in Riparian Zone TrkyCrk71 12/16/2014	
Scientific Name	Common Name
<i>Acer saccharum</i> subsp. <i>floridanum</i>	Florida maple
<i>Arundinaria tecta</i>	Switchcane
<i>Carpinus caroliniana</i>	Ironwood
<i>Colocasia esculenta</i>	Wild taro (E)
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Orontium aquaticum</i>	Goldenclub, neverwet
<i>Quercus michauxii</i>	Swamp chestnut oak
<i>Quercus nigra</i>	Water oak
<i>Taxodium distichum</i>	Bald cypress
<i>Trachelospermum jasminoides</i>	Confederate jasmine
<i>Tradescantia fluminensis</i>	Small-leaf spiderwort (E)

Plants noted with (E) are exotic species

The habitat assessment for the BioRecon conducted at Turkey Creek Hammock Preserve showed the creek to be vegetated with similar vegetation; however, the exotic vegetation has been removed. The water level was higher for the BioRecon and more root habitat was available. The periphyton, macrophytes and iron/sulfur bacteria were absent and some fish were observed. The water was tannic and clear and no unusual odors or oils were present. A healthy riparian buffer protected the creek which had been previously channelized, but was mostly recovered.

Habitat Assessment Scores	TrkyCrk 3/3/2003	TrkyCrk 4/23/2009	TrkyCrk71 12/16/2014	TrkPrsrv 1/21/2015
Substrate Diversity	17	19	10	13
Substrate Availability	8	10	11	8
Water Velocity	14	9	17	16
Habitat Smothering	8	12	18	14
Primary Score	47	50	51	51
Artificial Channelization	13	18	20	14
Bank Stability - Right Bank	7	7	7	5
Bank Stability - Left Bank	4	7	7	5
Riparian Buffer Zone Width - Right Bank	4	7	9	10
Riparian Buffer Zone Width - Left Bank	2	2	9	10
Riparian Zone Vegetation Quality - Right Bank	9	6	7	10
Riparian Zone Vegetation Quality - Left Bank	4	5	7	10
Secondary Score	43	52	66	64
Total Score	90	102	117	115
Interpretation	Suboptimal	Suboptimal	Suboptimal	Suboptimal

0-40 = Poor; 41-80 = Marginal; 81-120 = Suboptimal; 121-160 = Optimal

Benthic Macroinvertebrates

In 2003, Turkey Creek had a macroinvertebrate community dominated by snails, water bugs, and midge larvae. The macroinvertebrate community improved in 2009 and included a variety of beetles, dragonflies, damselflies, mayflies, and amphipods. The 2014 sampling event found blackfly larvae dominated the macroinvertebrate community, followed by a midge larva, *Polypedium flavum*. Blackfly larvae are filter feeders and are sensitive to pollution. Other invertebrates included three species of mayfly, burrowing dragonfly nymphs, large dobsonfly larvae, and clams. Turkey Creek had an average score of 59 points, placing it in the healthy category.



Blackfly larva, *Simulium*

The benthic macroinvertebrates collected during the BioRecon at Turkey Creek Preserve were a similar array to those collected for the SCI assessment. However, because of the differences in identification levels of worms and midges and the extensive sub-sampling used in the SCI, there is a greater variety of non-worms and midges in the BioRecon results. The sampling results show a great number of total taxa (26 compared to 17), long-lived, clinger, and Trichoptera taxa. The score interpretation for both sites are comparable (healthy) and toward the higher end of each scale.

BioRecon/SCI Results	TrkyCrk 3/3/2003	TrkyCrk 4/23/2009	TrkyCrk71 12/16/2014		TrkPrsrv 1/21/2015
Sample Type	BioRecon	BioRecon	SCI		BioRecon
Metric Measured	N/A	N/A	Aliquot 1	Aliquot 2	N/A
Total Number of Taxa	18	25	17	16	26
Number of Ephemeroptera Taxa	0	2	3	3	2
Number of Trichoptera Taxa	0	1	1	1	3
Number of Long-lived Taxa	0	4	3	1	5
Number of Clinger Taxa	0	3	4	4	7
Number of Sensitive Taxa	2	5	3	4	4
% Filterer	N/A	N/A	63.1%	51.6%	N/A
% Tanytarsini	N/A	N/A	5.1%	5.0%	N/A
% Dominance	N/A	N/A	49.0%	41.1%	N/A
% Very Tolerant Taxa	N/A	N/A	1.3%	4.4%	N/A
Score	1	4	62.52	55.2	6
Mean SCI Score	N/A	N/A	59		N/A
Interpretation	Impaired	Healthy	Healthy		Healthy

N/A = Not Applicable

BioRecon Scoring: [7–10]=Exceptional, [4–7]=Healthy, [0–4]=Impaired

(A square bracket indicates the value next to it is included in the range and a parenthesis indicates the value is excluded.)

SCI Scoring: 68 and above = Exceptional, 35-67 = Healthy, 34 and below = Impaired

Discussion

Turkey Creek appears to have improved since it was first sampled in 2003. However, the sampling site was relocated in 2014, and was recently sampled in two areas which have a more natural riparian buffer zone. Sand smothering has been reduced, the velocity of the current has increased (perhaps due to increased rainfall over the past year), and the biological community reflects that change. The creek flows through the residential Turkey Creek subdivision and the natural forested area in Turkey Creek Hammock Preserve (recently acquired by the Alachua County Forever program) before it enters San Felasco Hammock State Preserve and flows through the park, finally dropping into swallows, which drain back into the aquifer. Efforts to preserve and restore land along the waterway and to limit stormwater runoff have helped to make the biological community healthier and more diverse in Turkey Creek.



Turkey Creek in ACF's Turkey Creek Hammock Preserve

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID: Blue 71-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 1-25-2013 TIME: 1400
 Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)
 SITE NAME: Blues Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Blues 71 RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
 Forest/Natural 77.5% silviculture 4 Field/Pasture 0 Agricultural 0% Residential 36% Commercial 1% Industry 19% Other (Specify) _____
 Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy
 Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >14 Right Bank: 10
 High Water Mark: 0.9 + 1.2 = 1.5 Artificially Impounded ☐ Yes ☒ No
 (m) (above present water level) (present depth) (above bed)
 Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe
 Canopy Cover %: ☐ Open ☐ Lightly Shaded (11-45%)
☐ Heavily Shaded ☒ Moderate Shaded (46-80%)
 Typical Width (m) Depth (m)/Velocity (m/sec) Transect
3.0 m wide
0.14 m/s 0.20 m/s 0.25 m/s
0.1 m deep 0.1 m deep 0.1 m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse
Sediment Odors
☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____
Sediment Deposition
☐ Sludge Sand Smothering: None Slight Moderate Severe
☐ Silt Smothering: None Slight Moderate Severe
☐ Other (Specify): _____
SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled
 Woody Debris (Snags) 5.0 5 _____
 Undercut Banks / Roots 1.0 3 _____
 Leaf Packs or Mat 10.5 5 _____
 Aquatic Vegetation 0.0 0 _____
 Rock or Shell Rubble.. 7.0 5 _____
 Sand..... 600 2 _____
 Mud / Muck / Silt 17.5 0 _____
 Other _____
 Other _____
WATER QUALITY
 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 0.15 14.52 6.58 9.54 135 0.08 0.3
 Bottom: _____
 Water Surface Oils: ☐ None ☒ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____
 Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No
 Clarity ☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque
 Color ☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____
WEATHER CONDITIONS / NOTES:
☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No
SAMPLING TEAM:
E. Tavaréz & M. P.H.S
SIGNATURE: _____
DATE: 1/25/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

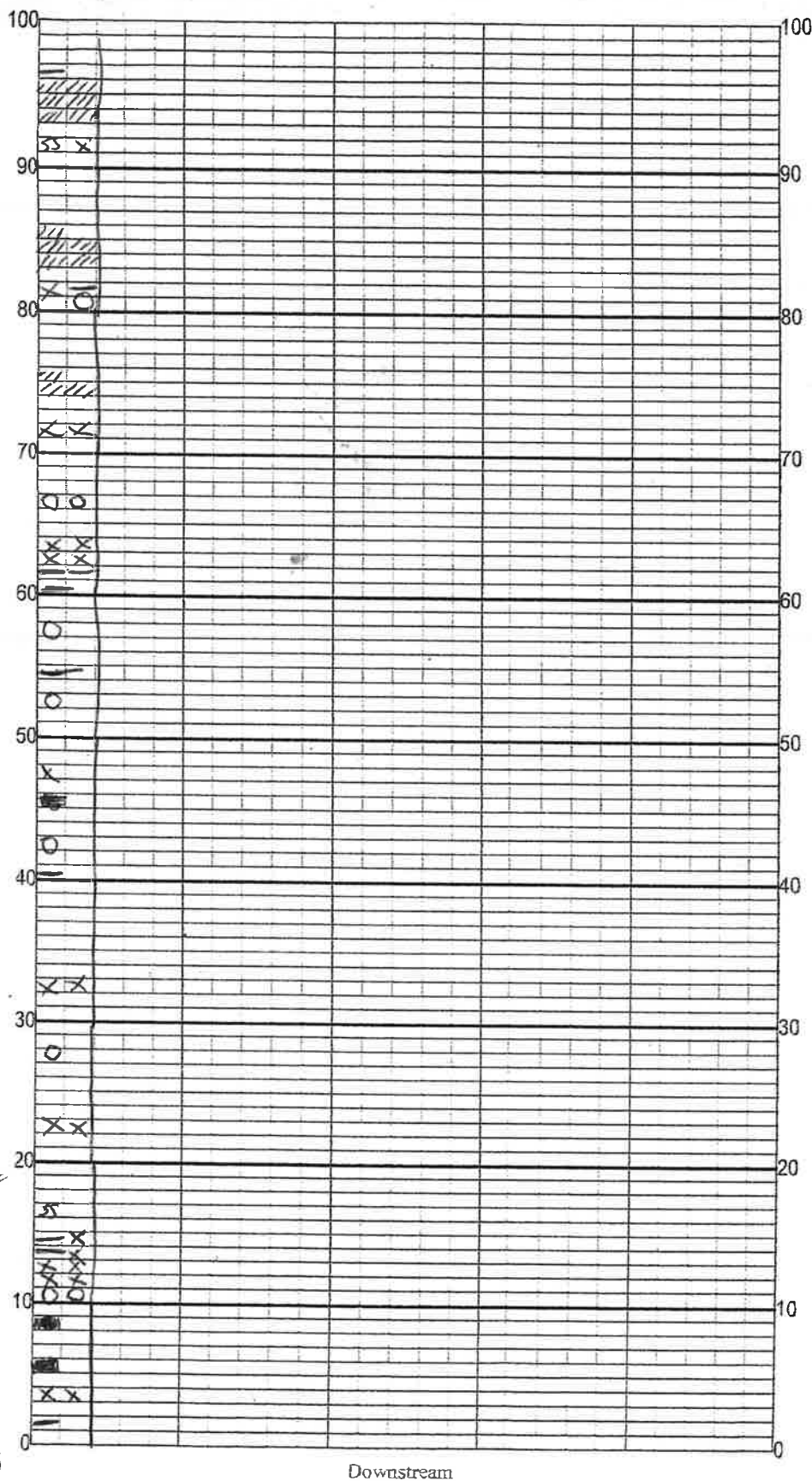
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>11/25/13</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Blues Creek @ NW 71st St.</u>		FIELD ID/NAME: <u>Blues 71 / Blues Creek</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>15</u>	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>14</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 (14) 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>15</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec (15) 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>18</u> <u>16</u> <u>14</u> Primary Score <u>60</u> <u>62</u> <u>60</u>	Adequate number of stable pools (1-2 per 12 times width) and < 25% of habitats affected by sand or silt accumulation. 20 19 (18) 17 (16)	Adequate number of stable pools (1-2 per 12 times width) and > 25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (< 2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (> 10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (> 2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	(20) 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>8</u> Left Bank <u>8</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. (8) 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>9</u>	Width of vegetation greater than 18 m (10) (9)	Width of vegetation > 12 to 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>9</u> Secondary Score <u>75</u> <u>73</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. (10) 9	> 50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

197 139 **TOTAL SCORE**

Date: <u>11/25/13</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: <u>Efrain Tavaréz</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Blues Creek

Date: 1/25/13

Sampler: ET/MP

100 m. Latitude N29.71285°
Longitude W082.41827°

0 m. Latitude N29.71837°
Longitude W082.41859°

Substrates: Code key, draw proportionate habitat abundance. %

— Snags 10 50

SS Roots/undercut banks 2 1.0

X Leaf Packs (or mats) 21 10.5

♡ Aquatic Macrophytes 0 0.0

|||| Rocks 14 7.0

□

○ Pools total # observed = 9
range expected =

Average width 2.0 m

Average depth 0.9 m

Velocity measured at 40 meter mark.

WQ & chemistry taken at 60 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Sweet gum
Florida red maples
Ginus sp.
American hornbeam
Pignut hickory
Taro
Decumaria barbara
white Ash
American holly
Magnolia grandiflora
Virginia creeper
Quercus nigra
Smilax
Olson Ivy

leaf root snag sand rock
|||| /// ||| |||| |||||

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELES

SAMPLE ID: BTC-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 9-9-2013 TIME: 1100

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Bee Tree Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: BTC - Bee Tree Creek RECEIVING BODY OF WATER: Hatchet Creek

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>50%</u>	<u>50%</u>	<u>3</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>1</u>	

Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: 18 Right Bank: 18

High Water Mark: 0.6 + 0.4 = 1.0
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>3.0</u> m wide			
<u>0.11</u> m/s	<u>0.14</u> m/s	<u>0.14</u> m/s	
<u>9.5</u> 0.3 m deep	<u>7.5</u> 0.4 m deep	<u>7.5</u> 0.4 m deep	
<u>0.3</u>	<u>0.4</u>	<u>0.4</u>	

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: None Slight Moderate Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>7.3</u>	<u>7</u>	
Undercut Banks / Roots	<u>0</u>		
Leaf Packs or Mat	<u>0.7</u>	<u>7</u>	
Aquatic Vegetation	<u>0</u>		
Rock or Shell Rubble	<u>0</u>		
Sand	<u>40</u>	<u>6</u>	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:						<u>0.6</u>
Mid-Depth:	<u>0.6</u>	<u>22.99</u>	<u>7.21</u>	<u>2.11</u>	<u>86</u>	<u>0.04</u>
Bottom:						

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Clarity ☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

Color ☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: Partly cloudy, warm

☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

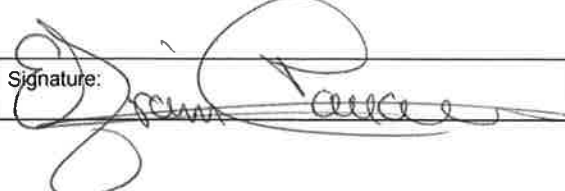
SAMPLING TEAM: E. Tavaraz and R. Willems **SIGNATURE:** [Signature] **DATE:** 9/9/2013

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

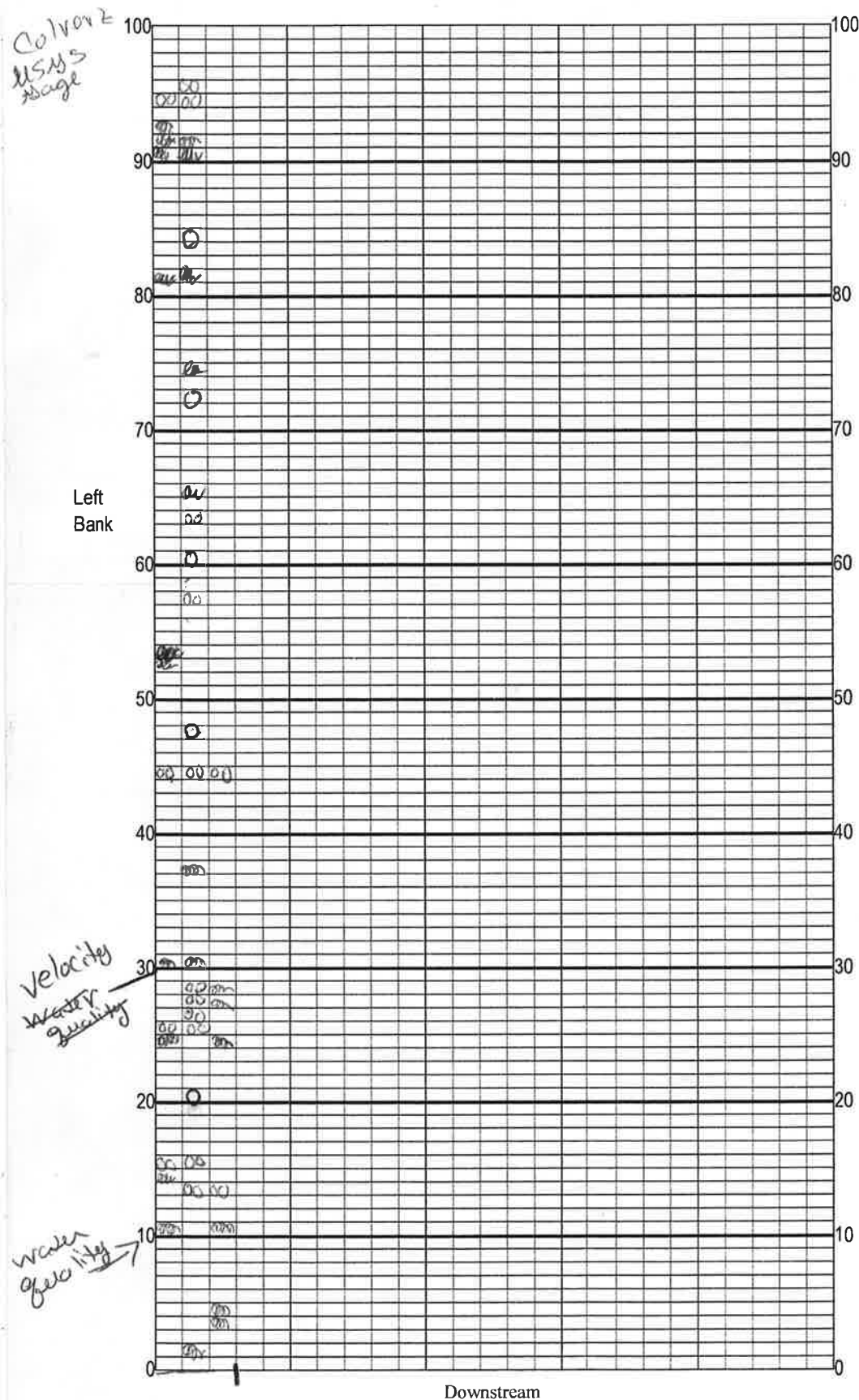
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>9/9/13</u>	RECEIVING BODY OF WATER: <u>Hatchee Creek</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Bee Tree Creek @ Balu Forest</u>		FIELD ID/NAME: <u>BTC/Bee Tree Creek</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1
Substrate Availability <u>8</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 <u>8</u> 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>12</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 <u>12</u> 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>17</u> Primary Score: <u>45</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 <u>17</u> 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>8</u> Left Bank <u>8</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. <u>8</u> 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> Secondary Score <u>76</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

121 **TOTAL SCORE**

Date: <u>9/9/2013</u>	Analyst: <u>E-Tavarez</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Bee Tree Creek
Date: 9/9/2012
Sampler: ET/RTW

100 m: Latitude N 29.73929
Longitude W 082.17140
0 m: Latitude N 29.73878
Longitude W 082.17149

Substrates: Code key, draw proportionate habitat abundance.	%
Snags <u> </u>	<u>7.3</u>
Roots/undercut banks	<u>0</u>
Leaf Packs (or mats) <u> </u>	<u>5.7</u>
Aquatic Macrophytes	<u> </u>
Pools	<u> </u>
total # observed = <u> </u>	
# range expected = <u> </u>	

Average width 3 m
Average depth 0.4 m

Velocity measured at 30 meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:
Misc: ||||
100m N 29.73940
W 082.17123

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: Boulwr-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 11/30/13 TIME: 1350

Latitude: _____ Longitude: _____
 [degrees] [minutes] [seconds] [degrees] [minutes] [seconds]

SITE NAME: Boulevard Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Boulwr RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):							
Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>28</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>33</u>	<u>29</u>	<u>0</u>	
Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy				Typical Width (m) Depth (m)/Velocity (m/sec) Transect			
Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☒ Moderate ☐ Heavy				<u>0.0</u> m wide			
Width of Riparian Vegetation (m) on Each Buffer Side							
Left Bank: <u>6</u>		Right Bank: <u>8</u>					
High Water Mark: <u>5</u> + <u>2</u> = <u>7</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No			
Artificially ☒ No ☐ Some recovery ☐ Recent, severe				Canopy Cover %: ☐ Open ☐ Lightly Shaded (11-45%) ☐ Heavily Shaded ☒ Moderate Shaded (46-80%)			

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse		Sediment Odors ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☒ Anaerobic ☐ Other (Specify): _____		Sediment Deposition ☐ Sludge Sand Smothering: None ☒ Slight Moderate Severe Silt Smothering: None ☒ Slight Moderate Severe ☐ Other (Specify): _____	
SUBSTRATE TYPE Assessment Tool: ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI INVERT PERI % # Times # Times Coverage Sampled Sampled		WATER QUALITY			
Woody Debris (Snags) <u>12</u>		Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)
Undercut Banks / Roots <u>12</u>		Top:			
Leaf Packs or Mat <u>11</u>		Mid-Depth:	<u>22.50</u>	<u>7.68</u>	<u>7.26</u>
Aquatic Vegetation <u>10</u>		Bottom:			
Rock or Shell Rubble.. <u>1</u>		Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick			
Sand..... <u>44</u>		Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify): _____			
Mud / Muck / Silt <u>10</u>		Water Sample Taken? ☐ Yes ☒ No		SYSTEM TYPE ☒ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify): _____	
Other		Algae Sample Taken? ☐ Yes ☒ No		Color ☐ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify): _____	
Other		Clarity ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque		ABUNDANCE Absent Rare Common Abundant	
WEATHER CONDITIONS / NOTES: ☐ The antecedent hydrologic conditions have been met to my best knowledge. Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No		Periphyton: ☐ ☒ ☐ ☐ Fish: ☐ ☐ ☒ ☐ Aquatic Macrophytes: ☐ ☐ ☐ ☒ Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐			
SAMPLING TEAM: <u>Efrain Tavaraz & Meagan Putts</u>		SIGNATURE: <u>[Signature]</u>		DATE: <u>11/30/2013</u>	

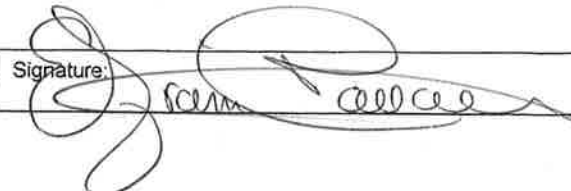
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): 1/30/13	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: Alachua	LOCATION: Boulware Creek		FIELD ID/NAME: Boulwr

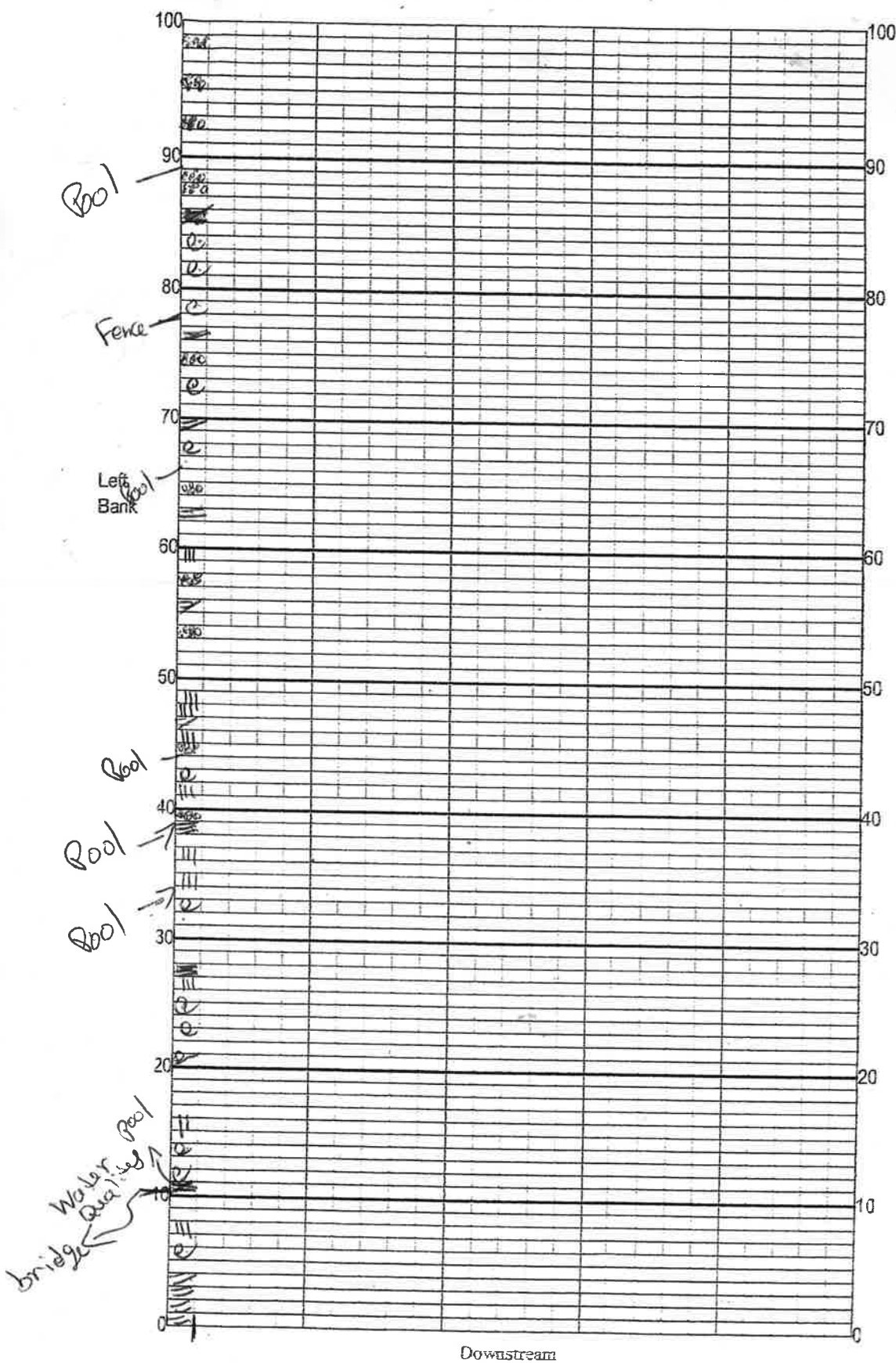
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>20</u>	(20) 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>20</u>	(20) 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Water Velocity <u>16</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 (16)	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>16</u> ----- Primary Score <u>72</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 (16)	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>19</u>	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>10</u> Left Bank <u>10</u>	(10) 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation > 12 to 18m	Width of vegetation 6 to 12 m. human activities still close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>5</u> Left Bank <u>4</u>	10 9	8 7 6	(5) (4)	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>3</u> Left Bank <u>3</u> ----- Secondary Score <u>54</u>	10 9	8 7 6	5 4	(3) 2 1

126

TOTAL SCORE

Date: 1-30-13	Analyst: Efraim Tavaréz	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Buckor

Date: 11/30/13

Sampler: ET/MP

100 m. Latitude _____
Longitude _____
0 m. Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance.

	Snags	12
	Roots/undercut banks	10
	Leaf Packs (or mats)	11
	Aquatic Macrophytes	10
	Rock	10
	Pools	

total # observed = _____
range expected = _____

Average width: _____ m

Average depth: _____ m

Velocity measured at 10 meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Sweetgum
Water oak
Elderberry
Exotic Ginger
Alligator weed
Taro
Wandering Jew
Cherry Laurel
Andesia crevata

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID Cellon 441 ORG ID _____ LATITUDE 29.77026
 COUNTY Alachua STORET # _____ LONGITUDE 082.42971
 DATE 12/16/2014 TIME 1100 SAMPLING AGENCY Water & Air Research
 SITE NAME Cellon Creek
 FIELD ID/NAME CEU441 a CLLNCRIC441 RECEIVING BODY OF WATER Lee Sink

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural <u>33</u> Silviculture <u>3</u> Field/Pasture <u>23</u> Agricultural <u>12</u> Residential <u>11</u> Commercial <u>9</u> Industry <u>9</u> Other (Specify) _____							Landscape Development Intensity Index (LDI) _____
Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☐ Heavy Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy				Typical Width (m) <u>22.5</u> Depth (m)/Velocity (m/sec) Transect			
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>20</u> Right Bank: <u>20</u>				Hydrologic Modification Score (per FT 3101) <u>—</u>			
High Water Mark: <u>0.45</u> + <u>.1</u> = <u>0.55</u> Artificially Impounded (m) (above present water level) (present depth) (above bed) ☐ Yes ☒ No				Typical Width (m) <u>22.5</u> Depth (m)/Velocity (m/sec) Transect <u>0.10</u> m/s <u>0.11</u> m/s <u>0.08</u> m/s <u>9.60</u> m deep <u>8.96</u> m deep <u>No Flow</u> <u>0.08</u> m deep <u>0.08</u> m deep <u>12.29</u> m deep			
Artificially ☐ No ☐ Mostly recovered, more sinuous Channelized: ☒ Some recovery ☐ Recent, severe				Canopy Cover % ☐ Open ☐ Lightly Shaded (11-45%) ☒ Heavily Shaded ☐ Moderate Shaded (46-80%)			

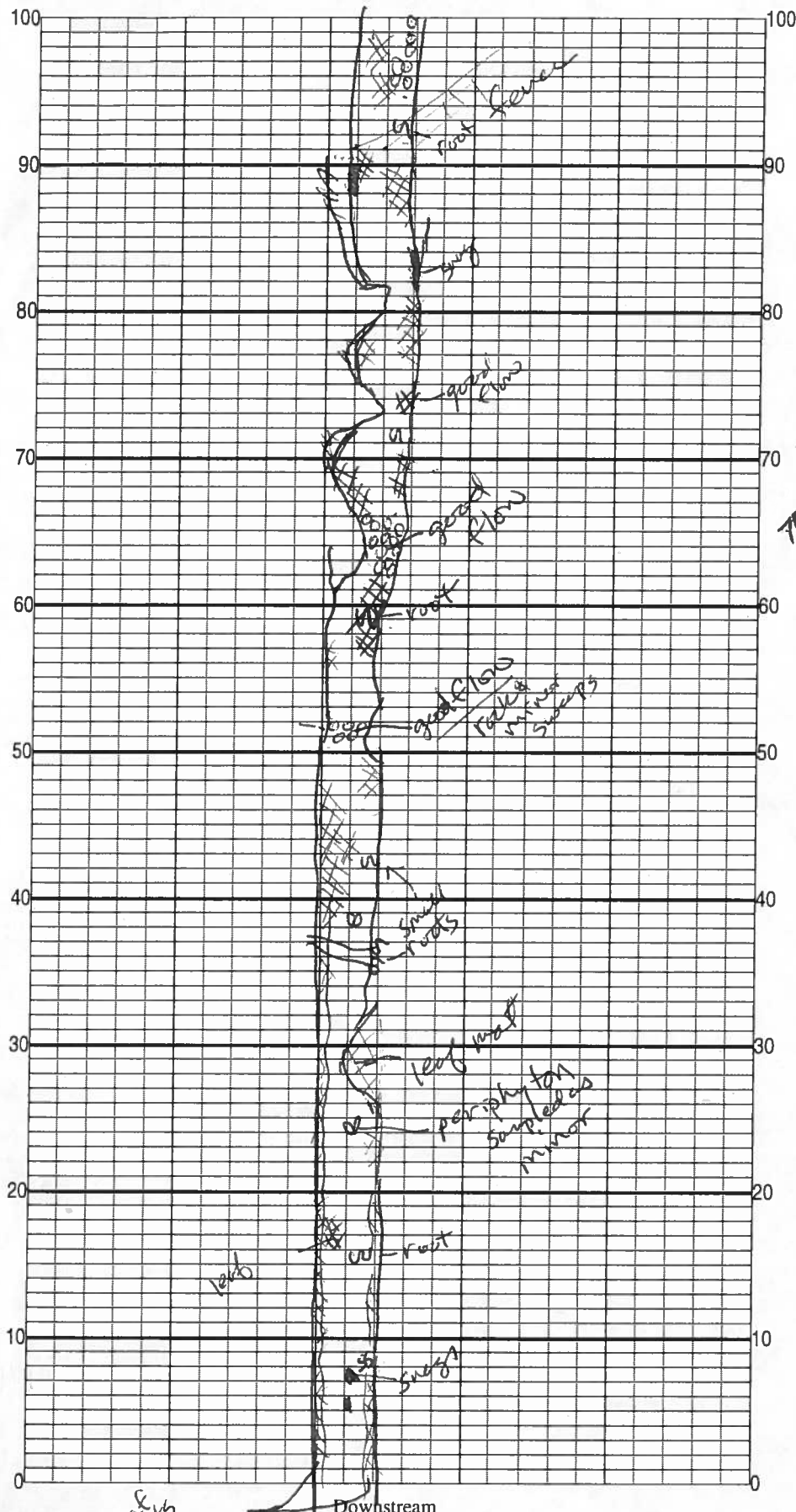
SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse			Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify): _____			Smothering of Substrates Sand Smothering: None ☐ Slight ☒ Moderate ☐ Severe ☐ Silt Smothering: None ☐ Slight ☒ Moderate ☒ Severe ☐ Algae Smothering: None ☒ Slight ☐ Moderate ☐ Severe ☐		
SUBSTRATE TYPE Assessment Tool: ☒ SCI ☐ RPS ☐ LVS ☐ LCI ☐ BioRecon			WATER QUALITY					
Woody Debris (Snags) <u>1</u> <u>4</u> <u>—</u> Undercut Banks / Roots <u>2</u> <u>4</u> <u>—</u> Leaf Packs or Mat <u>38</u> <u>4</u> <u>—</u> Aquatic Vegetation <u>—</u> <u>—</u> <u>—</u> Rock or Shell Rubble.. <u>4</u> <u>4</u> <u>—</u> Sand..... <u>35</u> <u>4</u> <u>—</u> Mud / Muck / Silt <u>—</u> <u>—</u> <u>—</u> Other <u>Clay</u> <u>20</u> <u>—</u> Other <u>—</u> <u>—</u> <u>—</u>			Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) D.O. Sat (%) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M) Top: _____ Mid: <u>10.2</u> <u>12.47</u> <u>6.73</u> <u>9.55</u> <u>89.5</u> <u>343</u> <u>—</u> ☒ VOB Bottom: _____ Meter ID: <u>Taken @ 98 meter mark 07C1267 YSI</u> <u>0.08</u> Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐ Water Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____ Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____ Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐ Color Tannic ☐ Green (Algae) ☐ Clear ☒ Other (Specify) _____ Clarity Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque ☐					
ABUNDANCE Not Obs. Rare Common Abundant Periphyton: ☐ ☒ ☐ ☐ Fish: ☐ ☒ ☐ ☐ Aquatic Plants: ☒ ☐ ☐ ☐ Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐			System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) _____ AMBIENT FIELD CONDITIONS / NOTES: <u>60°</u> <u>clay makes water turbid when disturbed, source of silt</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.					

SAMPLING TEAM Laura Line, Laura Bedinger SIGNATURE: Laura Line DATE: 12/16/14

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet

Left Bank



Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

200m

Location: Cotton Creek 441
Date: 12/16/14
Sampler: Laura Line/Laura Bedin

100 m: Latitude 29.77026
Longitude 82.42971

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance.

2m		Snags	111	5 sweeps each	19%
4m		Roots/undercut banks	1 1/2	minor	2%
10m		Leaf Packs (or mats)	111		38%
		periphyton or minor Aquatic Macrophytes			
1		sand	11		
8m		some rock	111	rock is actually clay but real rich	4%
		Pools		total # observed = _____ # range expected = _____	

Average width 2.25 m

Average depth <0.1 m

Velocity measured at 5 meter mark.

WQ & chemistry taken at 98 meter mark.

Habitat Smothering:

Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:

Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:

Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

20 m downstream of 441
6100 mm Water oak

Palmetto
Ironwood
Sweetgum

Banks very steep

fresh
Roots present, leaves fell on top

Leaf mat cover
1/4 - 1/2 m on each side of stream

Revision Date: March 1, 2014

many roots above water
last time in

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY): 12/16/14	RECEIVING BODY OF WATER: Lee Sink
REMARKS:	COUNTY: Alachua	LOCATION: Cellon Creek @ 441		FIELD ID/NAME: Cellon 441

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>17</u>	Greater than 30% major productive habitat present at site 20 19 18 <u>17</u> 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>11</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 <u>11</u>	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>11</u> ----- Primary Score <u>57</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 <u>11</u>	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>12</u>	20 19 18 17 16	15 14 13 <u>12</u> 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>4</u> Left Bank <u>4</u>	10 9	8 7 6	5 <u>4</u>	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>9</u> Left Bank <u>9</u>	<u>10</u> <u>9</u>	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>9</u> Left Bank <u>9</u> ----- Secondary Score <u>57</u> <u>56</u>	10 <u>9</u>	8 7 6	5 4	3 2 1

441 113

TOTAL SCORE

Date: 12/16/14	Analyst: Laura Line / Laura Bedinger	Signature: <i>Laura Line</i>
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PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: HATBUCK Bay - SOT CORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: Sept 19, 2013 TIME: 1000

Latitude: 29° 16' 33" Longitude: 082° 29' 12"
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Buck Bay - Hatchet Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: HATBUCK BAY RECEIVING BODY OF WATER: Newnan Lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural silviculture Field/Pasture Agricultural Residential Commercial Industry Other (Specify)
39 56 1 0 4 0 1 _____

Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 720m Right Bank: 720m

High Water Mark: 0.6m + .25 = 0.85
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded
☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

0.3 m wide
 _____ m/s .05 m/s _____ m/s
 _____ m deep 0.1 m deep _____ m deep

Artificially ☒ No ☐ Mostly recovered, more sinuous

Channelized: ☐ Some recovery ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils

☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

Sediment Odors

☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____

Sediment Deposition

☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: Slight Moderate Severe
☐ Other (Specify): _____

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon

☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled

✓ Woody Debris (Snags) 10 5 _____

✓ Undercut Banks / Roots 23 5 _____

✓ Leaf Packs or Mat 4.6 5 _____

Aquatic Vegetation 0 _____

✓ count as minor Rock or Shell Rubble.. 1.5 1 _____

✓ Sand 60.9 4 _____

Mud / Muck / Silt _____

Other _____

Other _____

WATER QUALITY

Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 1.05 23.28 4.96 1.64 89 0.04 VOB
 Bottom: _____ 10.70 19.1

Water Surface Oils: ☒ None ☐ Sheen ☐ Globs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

Clarity

☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Color

☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: Warm, clear, humid
Flow is low. Will become separated pools soon.

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM:

Laura Lim, Efrain Tavaraz

SIGNATURE:

Laura Lim

DATE:

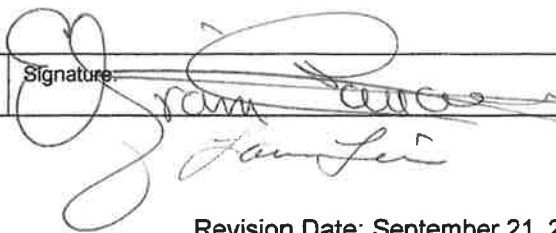
9/19/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

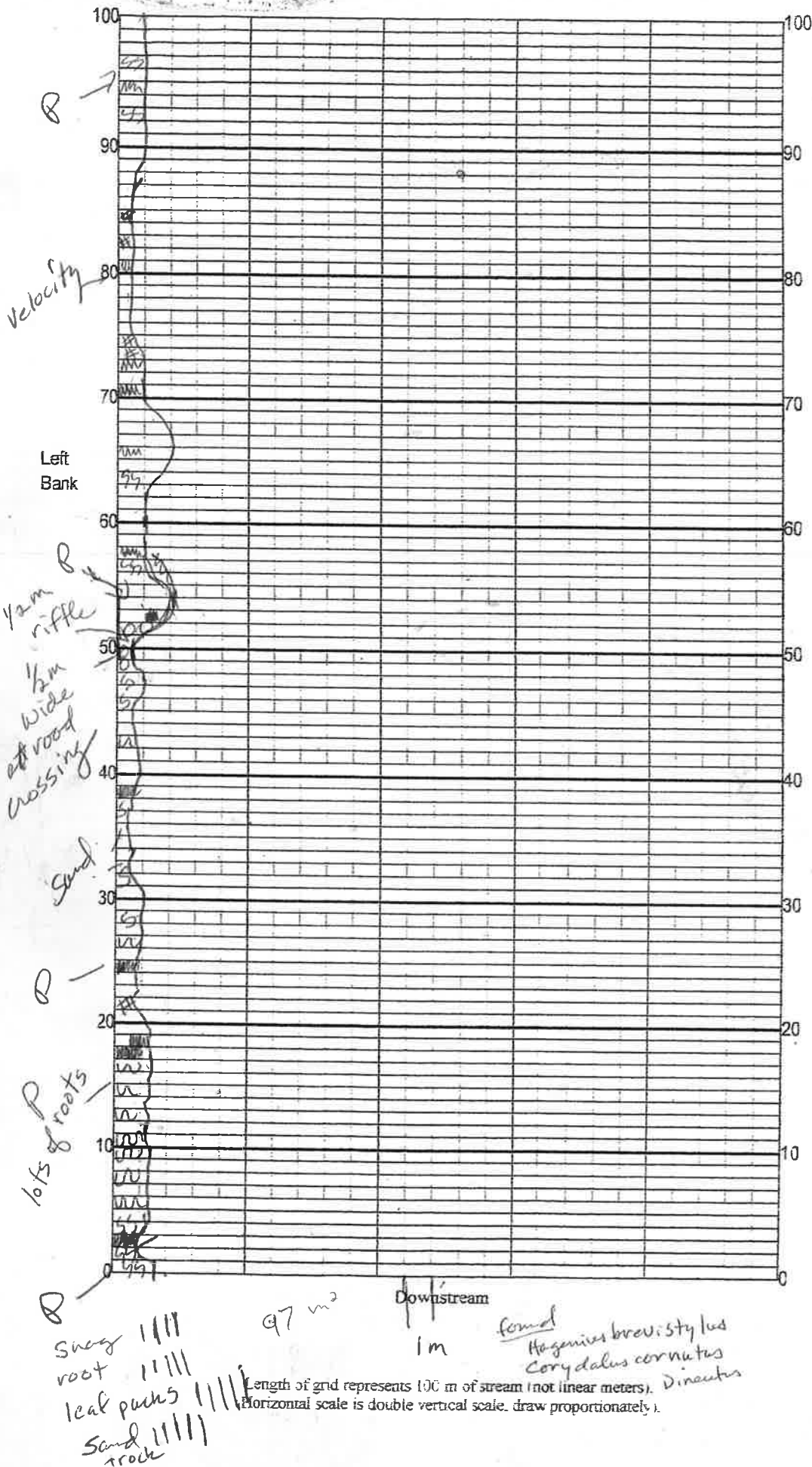
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YYYY): <u>9/19/2013</u>	RECEIVING BODY OF WATER: <u>Newnan's Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Hatchet Creek @ Buck Bay</u>	FIELD ID/NAME: <u>HAT Buck Bay / Hatchet Creek</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>14</u>	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>20</u>	Greater than 30% productive habitat present at site <u>20</u> 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>3</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 <u>3</u> 2 1
Habitat Smothering <u>10</u> ----- Primary Score <u>47</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). <u>10</u> 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. <u>10</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> ----- Secondary Score <u>80</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

127 **TOTAL SCORE**

Date: <u>9/19/2013</u>	Analyst: <u>E. Tavaraz, Laura Line</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



50 m. mark where road crosses creek 29,71633 082,29112

Location: Hatchet @ Bude Bay Flatwoods

Date: Sept. 19, 2013

Sampler: Laura Ling, Efrain Taveras

100 m. Latitude N 29.71578°

Longitude W 082.29147°

0 m. Latitude N 29.71677°

Longitude W 082.29112°

Substrates: Code key, draw proportionate habitat abundance. %

Snags 10%

Roots/undercut banks 23%

Leaf Packs (or mats) 4.6%

Aquatic Macrophytes

Rock rubble - not 2m cants 1.5% minor

Pools total # observed = 5 # range expected = 10

Average width 0.5 m

Average depth 0.2 m

Velocity measured at 80 meter mark.

WQ & chemistry taken at 45 meter mark.

Habitat Smothering: Note areas (on map) where sand or silt is smothering substrates. limiting habitability

Bank Stability: Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width: Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Sweet gum

Flow visible at shallow

spots Lyonia lucida

Holly

Beautyberry

Azalea - native

Itea virginica Smilax

water oak Vitis

Nyssa

Palmetto

Hog damage - digging

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID: Hogib ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 2/4/13 TIME: 1200

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Hogtowne Creek @ NW 16th Ave

SAMPLE COMPLETE? yes

FIELD ID/NAME: Hogib

RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural silviculture Field/Pasture Agricultural Residential Commercial Industry Other (Specify)
☐ 17 ☐ 3 ☐ 0 ☐ 0 ☒ 47 ☐ 23 ☐ 11 ☐

Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 10 Right Bank: 10

High Water Mark: 1.3 + 0.1 = 1.4
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded
☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

3.5 m wide

0.2 m/s 0.2 m/s 0.2 m/s

0.1 m deep 0.1 m deep 0.1 m deep

Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils

☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

Sediment Odors

☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____

Sediment Deposition

☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: None Slight Moderate Severe
☐ Other (Specify): _____

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon

☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled

Woody Debris (Snags) 0.3
 Undercut Banks / Roots 1.4
 Leaf Packs or Mat 6.0
 Aquatic Vegetation 0.0
 Rock or Shell Rubble.. 0.3
 Sand..... 700
 Mud / Muck / Silt 160
 Other
 Other

WATER QUALITY

Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 0.1 12.89 7.88 10.03 123 0.08 ☒ VOB
 Bottom: _____

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

Clarity

☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE ☒ Stream ☐ Lake

☐ Wetland ☐ Estuary

☐ Other (Specify): _____

Color

☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

Absent Rare Common Abundant

Periphyton: ☒ ☐ ☐ ☐

Fish: ☐ ☐ ☒ ☐

Aquatic Macrophytes: ☒ ☐ ☐ ☐

Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐

SAMPLING TEAM:

E. Frain Tavaraz / Meagan Putts

SIGNATURE: _____

DATE: _____

2/4/2013

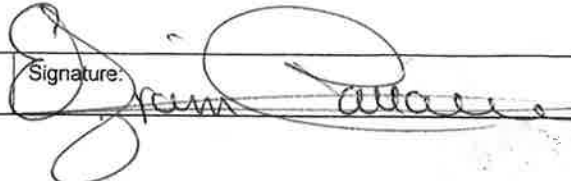
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YYYY): <u>2/4/13</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Hogtowne Creek @ NW 10th Ave</u>		FIELD ID/NAME: <u>Hog16</u>

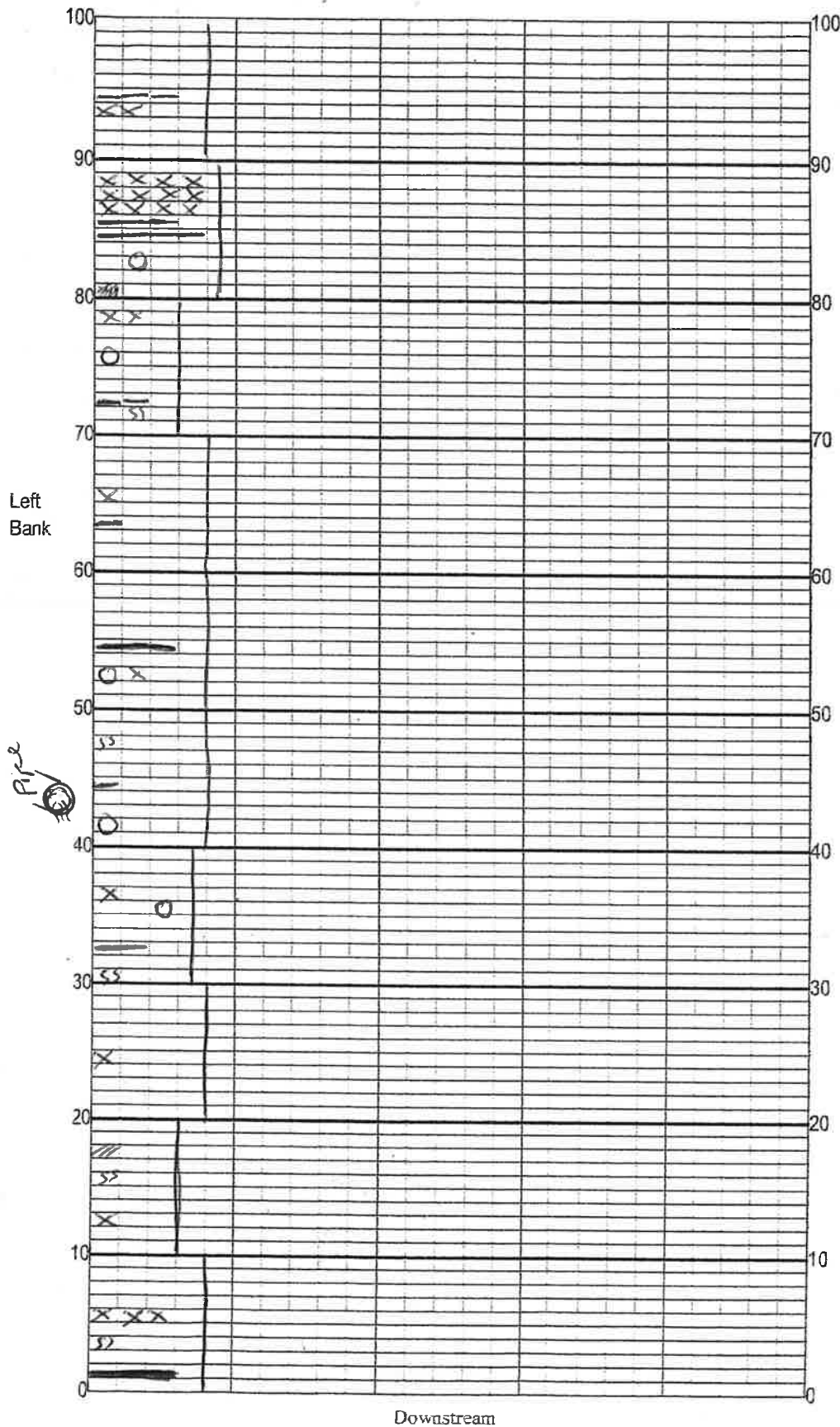
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock].	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>10</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat <u>10</u> 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>14</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 <u>14</u> 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>13</u> Primary Score <u>50</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 <u>13</u> 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>14</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>8</u> Left Bank <u>8</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. <u>8</u> 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>5</u> Left Bank <u>5</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system <u>5</u> 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>9</u> Secondary Score <u>62</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 <u>9</u>	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

112

TOTAL SCORE

Date: <u>2/4/13</u>	Analyst: <u>Efrain Tararez</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Hog 16

Date: 2/4/13

Sampler: ETIMP

100 m. Latitude N29.70899°
Longitude W082.72478°
0 m. Latitude N29.66725°
Longitude W082.34846°

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	22	4.3
	Roots/undercut banks	5	1.4
	Leaf Packs (or mats)	24	6.0
	Aquatic Macrophytes		0.0
	Rock	1	0.3
	Pools	total # observed = 5	# range expected =

Average width 3.5 m

Average depth 0.1 m

Velocity measured at 0 meter mark.

WQ & chemistry taken at 5 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Iron wood
Sweet gum
Sambuca canadensis
Cherry laurel
red maple
Quercus nigra

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID : Hog 45 ORG ID : _____
 COUNTY : ALA STORET # : _____
 DATE : 12-14-12 TIME : 1515

Latitude : _____ Longitude : _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME : Hogtown Creek @ 45th SAMPLE COMPLETE ? yes
 FIELD ID/NAME : Hog 45 RECEIVING BODY OF WATER : _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>26%</u>	<u>10</u>	<u>0</u>	<u>0</u>	<u>23%</u>	<u>18%</u>	<u>19</u>	

Local Watershed Erosion (select one) : ☐ None ☒ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution : ☐ No evidence ☒ Slight ☒ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank : >18 Right Bank : >18 *down stream*

High Water Mark: 2.0 + 0.2 = 2.2
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded : ☐ Yes ☒ No

Artificially : ☒ No ☐ Mostly recovered, more sinuous
 Channelized : ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>0.14</u> <u>0.05</u> m/s <u>75</u>	<u>2.0</u> m wide <u>0.2</u> m/s <u>55</u>	<u>0.25</u> m/s <u>45</u>
<u>0.05</u> m deep	<u>0.1</u> m deep	<u>0.2</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils : ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) : _____
Sediment Deposition : ☐ Sludge Sand Smothering : ☐ None ☒ Slight ☐ Moderate ☐ Severe
 Silt Smothering : ☒ None ☐ Slight ☐ Moderate ☐ Severe ☐ Other (Specify) : _____

SUBSTRATE TYPE
 Assessment Tool : ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>6.5</u>		
Undercut Banks / Roots	<u>4.0</u>		
Leaf Packs or Mat	<u>7.0</u>		
Aquatic Vegetation	<u>1.5</u>		
Rock or Shell Rubble..	<u>3.5</u>		
Sand.....	<u>62.5</u>		
Mud / Muck / Silt	<u>15.0</u>		
Other			
Other			

WATER QUALITY

Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :						<u>0.2</u>
Mid-Depth :	<u>0.1</u>	<u>15.17</u>	<u>7.59</u>	<u>9.19</u>	<u>359</u>	<u>0.17</u>
Bottom :						

Water Surface Oils : ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify) : _____

Water Sample Taken ? ☐ Yes ☒ No
 Algae Sample Taken ? ☐ Yes ☒ No

SYSTEM TYPE : ☒ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) : _____

Clarity : ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque
Color : ☐ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify) : _____

WEATHER CONDITIONS / NOTES :
☐ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM : E. Tavaraz / M. Butts
 SIGNATURE : _____ DATE : 1/28/2013

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>12/14/12</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>ALA</u>	LOCATION: <u>Hogtown @ 45th</u>		FIELD ID/NAME: <u>Hog45</u>

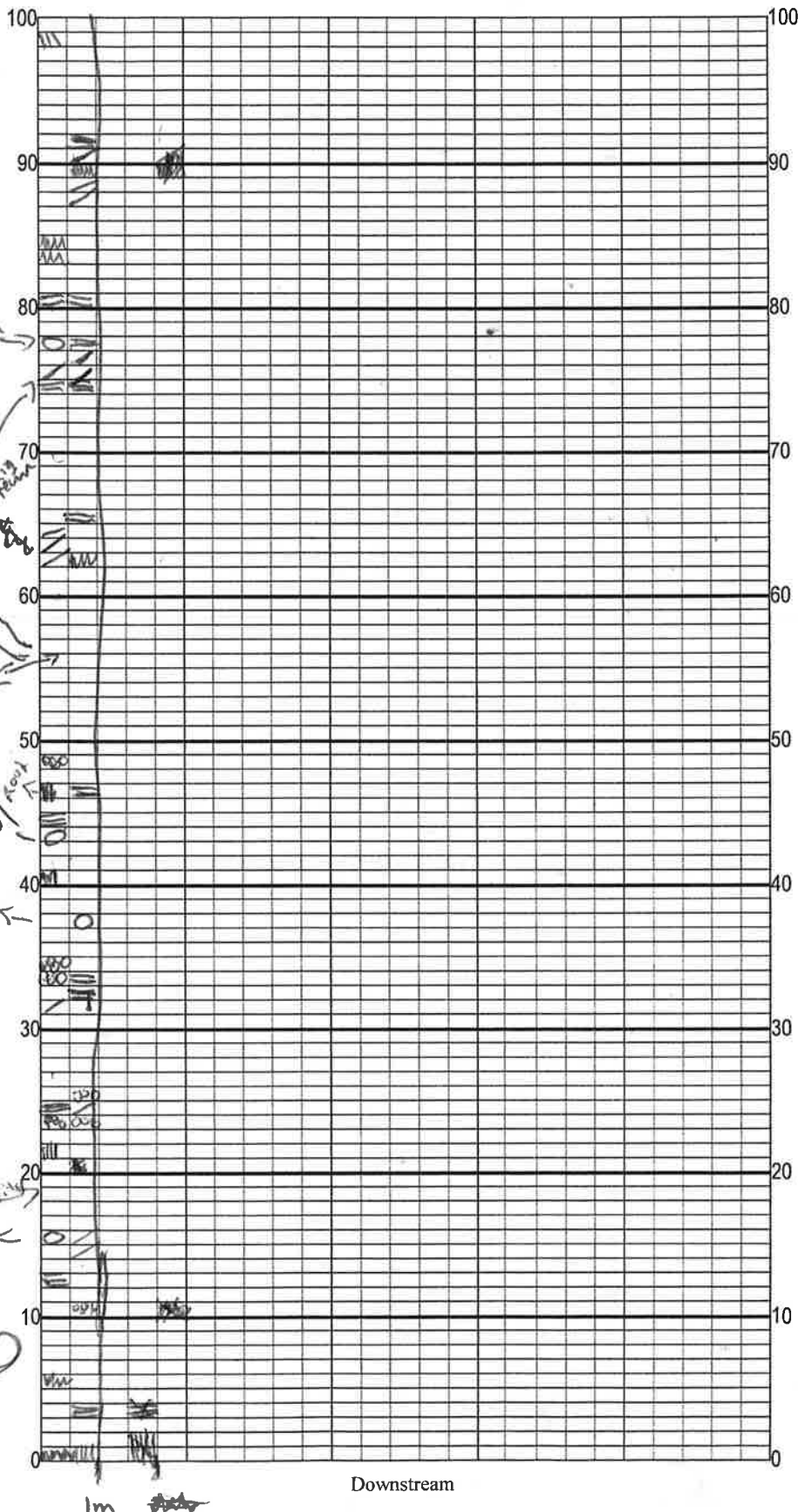
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>19</u>	20 <u>(19)</u> 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>13</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 <u>(13)</u> 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>15</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec <u>(15)</u> 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>18</u> ----- Primary Score <u>65</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 <u>(18)</u> 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>(20)</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>6</u> Left Bank <u>6</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 <u>(6)</u>	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>(10)</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>9</u> ----- Secondary Score <u>70</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 <u>(9)</u>	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

135

TOTAL SCORE

Date: <u>12/14/12</u>	Analyst: <u>Efrain Tavaraz</u>	Signature: <u>[Signature]</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Hong 45

Date: 12-14-12

Sampler: Efrin Tevaraz, Menger P.Hs

100 m: Latitude 29.69683°
Longitude 082.34533°

0 m: Latitude 29.69608°
Longitude 082.34490°

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	6.5
	Roots/undercut banks	4.0
	Leaf Packs (or mats)	7.0
	Aquatic Macrophytes	1.5
	Rocks	3.5
	Pools	
total # observed =		74
# range expected =		

Average width 2.0 m
Average depth 0.2 m

Velocity measured at 20 meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Vitis sp.
Sabal palm
Smilax
Fern
sweet gum
Acer rubrum
Poison Ivy

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELPS

SAMPLE ID: Hog Sink-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 1-25-2013 TIME: 0930

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Hogtown Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Hog Sink / Hogtown Creek RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>22%</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>58%</u>	<u>13%</u>	<u>5</u>	

Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >18 Right Bank: >18

High Water Mark: 1 + 0.4 = 1.4
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>0.33</u> m/s	<u>0.85</u> m/s	<u>0.33</u> m/s
<u>0.3</u> m deep	<u>0.4</u> m deep	<u>0.3</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☒ Slight ☐ Moderate ☐ Severe
 Silt Smothering: ☒ None ☐ Slight ☐ Moderate ☐ Severe
☒ Other (Specify): periphyton severe

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI

	% Coverage	# Times Sampled	# Times Sampled
Woody Debris (Snags)	<u>1.0</u>	<u>4</u>	
Undercut Banks / Roots	<u>1.5</u>	<u>4</u>	
Leaf Packs or Mat	<u>0.25</u>	<u>1</u>	
Aquatic Vegetation	<u>3.0</u>	<u>4</u>	
Rock or Shell Rubble..	<u>58.5</u>	<u>4</u>	
Sand.....	<u>10.0</u>	<u>3</u>	
Mud / Muck / Silt			
Other <u>periphyton smothering</u>	<u>25.75</u>		
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:							<u>0.6</u>
Mid-Depth:	<u>0.3</u>	<u>12.86</u>	<u>7.59</u>	<u>10.20</u>	<u>293</u>	<u>0.14</u>	☐ VOB
Bottom:							

Water Surface Oils: ☒ None ☐ Sheen ☐ Globs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity
☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Color
☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: AD deployed @ coordinates N29.62991, W082.41075 @ 0850

☐ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☒ No Algae samples preserved? ☐ Yes ☒ No

ABUNDANCE

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

SAMPLING TEAM: Efrain Tavaraz / Megan Putts **SIGNATURE:** _____ **DATE:** 1/25/2013

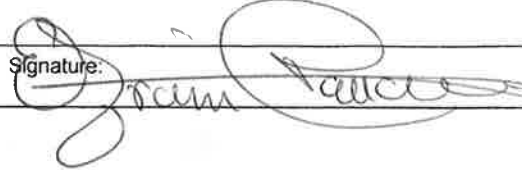
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>11/25/13</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>ALA</u>	LOCATION: <u>Hogtown Creek / Hog Sink</u>		FIELD ID/NAME: <u>Hog Sink / Hogtown Creek</u>

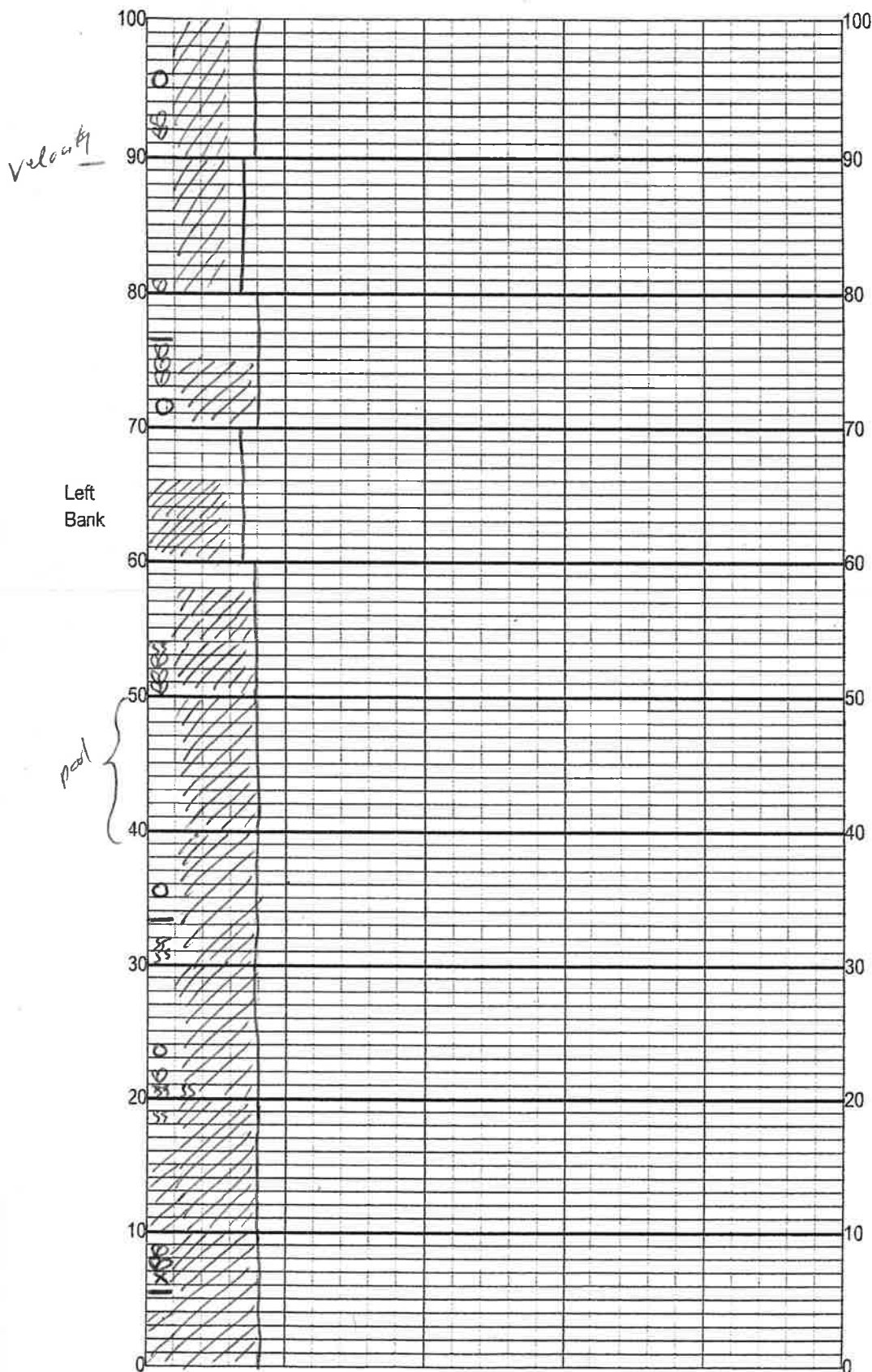
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>17</u>	20 19 18 <u>(17)</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>20</u>	Greater than 30% productive habitat present at site <u>(20)</u> 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>18</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 <u>(18)</u> 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>14</u> ----- Primary Score <u>69</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 <u>(14)</u> 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>20</u>	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. <u>(20)</u> 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. <u>(10)</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>(10)</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> ----- Secondary Score <u>80</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>(10)</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

149

TOTAL SCORE

Date: <u>11/25/13</u>	Analyst: <u>FRAIN TAVAREZ</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Hogtown Creek / sink
Date: 0930
Sampler: ET/IMP

100 m: Latitude N 29.63013°
Longitude W 082.41035°
0 m: Latitude N 29.62990°
Longitude W 082.41120°

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	3	1.0
	Roots/undercut banks	0	1.5
	Leaf Packs (or mats)	1	0.25
	Aquatic Macrophytes	12	3.0
	Rocks	234	58.5
	Pools	total # observed = 4 # range expected =	

Average width 4.0 m
Average depth 0.4 m

Velocity measured at 90 meter mark.

WQ & chemistry taken at 30 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability: Banks stable
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width: > 20 m
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:
Platanus trees (check Bioreson list)
Juncus
Sweetgum
Willows
Hydrocotyl
Bulrush
periphyton

Rock 1111 Leaf 1 roots 1111 Mac 1111 snag 1111 Scrub 1

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: LFC 329B ORG ID: _____

COUNTY: Alachua STORET #: _____

DATE: 1/30/13 TIME: _____

SITE NAME: Lake Forest Creek @ E university Ave SAMPLE COMPLETE? ☒

FIELD ID/NAME: LFC 329B RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>40</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>37</u>	<u>15</u>	<u>5</u>	

Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 18 Right Bank: 18

High Water Mark: 0.5 + 0.2 = 0.7
(m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☒ No ☐ Mostly recovered, more sinuous

Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

10s	8s	2.0	m wide
<u>0.1</u> m/s	<u>0.13</u> m/s	<u>0.11</u> m/s	
<u>0.1</u> m deep	<u>0.15</u> m deep	<u>0.2</u> m deep	

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge ☐ Sand Smothering: ☐ None ☐ Slight ☐ Moderate ☒ Severe
☐ Silt Smothering: ☐ None ☐ Slight ☐ Moderate ☒ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI

	% Coverage	# Times Sampled	INVERT	PERI
Woody Debris (Snags)	<u>7.55</u>			
Undercut Banks / Roots	<u>3.5</u>			
Leaf Packs or Mats	<u>7.0</u>			
Aquatic Vegetation	<u>4.5</u>			
Rock or Shell Rubble				
Sand	<u>38.71</u>			
Mud / Muck / Silt	<u>38.73</u>			
Other				
Other				

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:							<u>0.20</u>
Mid-Depth:	<u>0.1</u>	<u>18.40</u>	<u>7.19</u>	<u>7.22</u>	<u>179</u>	<u>0.6</u>	☐ VOB
Bottom:							

Water Surface Oils: ☐ None ☒ Sheen ☐ Globbs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

SYSTEM TYPE: ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Clarity
☐ Clear ☒ Slightly Turbid
☐ Turbid ☐ Opaque

Color
☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM: Efrain Tavaraz & Meagan Potts

SIGNATURE: Efrain Tavaraz

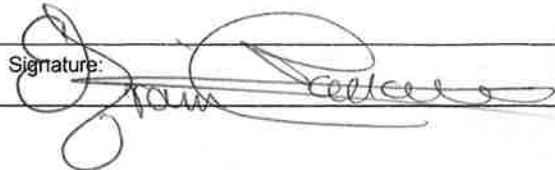
DATE: 1/30/2013

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

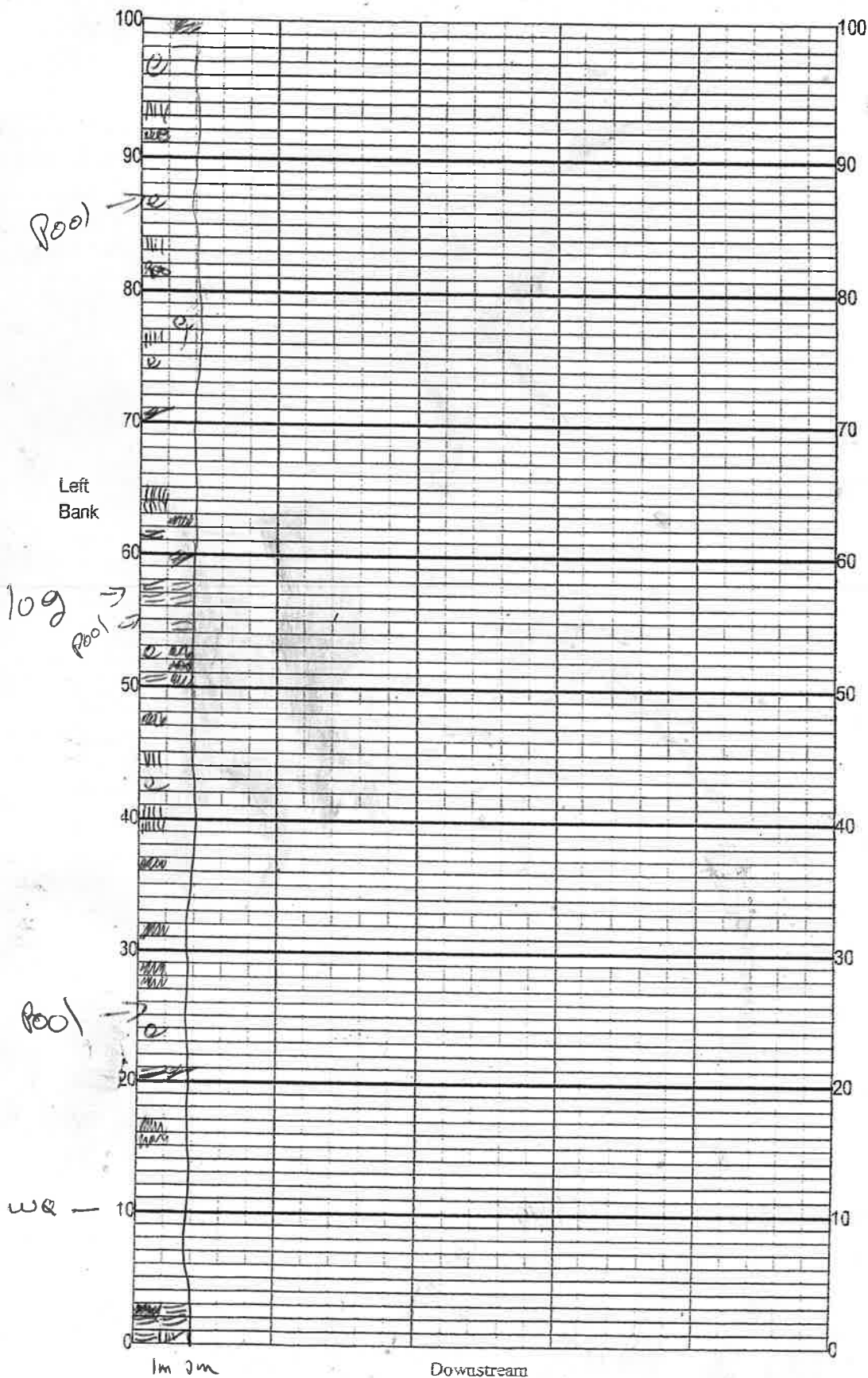
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YYYY): <u>11/30/13</u>	RECEIVING BODY OF WATER: <u>Newnans Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Lake Forest Creek</u>	FIELD ID/NAME: <u>LFC329B</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>17</u>	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 <u>(17)</u> 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability <u>14</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 <u>(14)</u> 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>11</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 <u>(11)</u>	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>12</u> Primary Score <u>54</u>	Adequate number of stable pools (1-2 per 12 times width) and < 25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and > 25% of habitats affected by sand or silt accumulation. 15 14 13 <u>(12)</u> 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (< 2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>20</u>	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. <u>(20)</u> 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (> 10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (> 2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. <u>(10)</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>(10)</u> 9	Width of vegetation > 12 to 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>8</u> Left Bank <u>8</u> Secondary Score <u>76</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	> 50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. <u>(8)</u> 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

130 **TOTAL SCORE**

Date: <u>1-30-2013</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: LFC 329B

Date: 1/30/13

Sampler: ET/MP

100 m. Latitude _____
Longitude _____

0 m. Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance.

	Snags	7.5
	Roots/undercut banks	3.5
	Leaf Packs (or mats)	7.0
	Aquatic Macrophytes	9.5
	Sand	
	Pools	
		total # observed =
		# range expected =

Average width 2 m

Average depth 0.5 m

Velocity measured at _____ meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Cypress
Blackberry
Acer rubrum
Tupelo
Royal Fern
Virginia willow
Sweet gum
Vitis sp.

Taro
Poison Ivy
Magnolia

Revised Date: June 2, 2011
Begger vix.

Length of grid represents 100 m. of stream (not linear meters).
Horizontal scale is double vertical scale. draw proportionately.

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: LHTNB-SCZ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 1-15-2013 TIME: 1130

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Little hatchet Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: LHTNB RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural 34% silviculture 12% Field/Pasture 0 Agricultural 0 Residential 12 Commercial 21 Industry 21 Other (Specify) _____

Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 18 Right Bank: 18

High Water Mark: 1.0 + 0.2 = 1.2
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded
☐ Yes ☒ No

Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

L 70.4 C 2 m wide
0.265 m/s 0.66 m/s 0.265 m/s
2.55 m 1.55 m 2.55 m
0.15 m deep 0.15 m deep 0.15 m deep

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☒ Slight ☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☐ Slight ☐ Moderate ☒ Severe
☐ Silt Smothering: ☒ None ☐ Slight ☐ Moderate ☐ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon

☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags) 1.5
 Undercut Banks / Roots 1.5
 Leaf Packs or Mat 1.75
 Aquatic Vegetation 0
 Rock or Shell Rubble.. 0
 Sand..... 9525
 Mud / Muck / Silt 0
 Other
 Other

WATER QUALITY

Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 0.1 18.99 6.80 9.05 230 0.11 0.2
 Bottom: _____

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

Clarity

☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Color

☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: Clear, warm

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

SAMPLING TEAM: Barry Vance / E. Tavaraz

SIGNATURE: Barry Vance

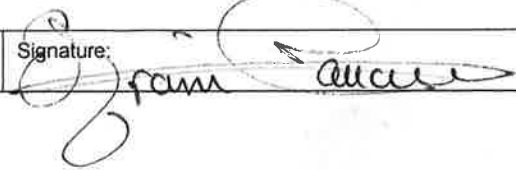
DATE: 1/15/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

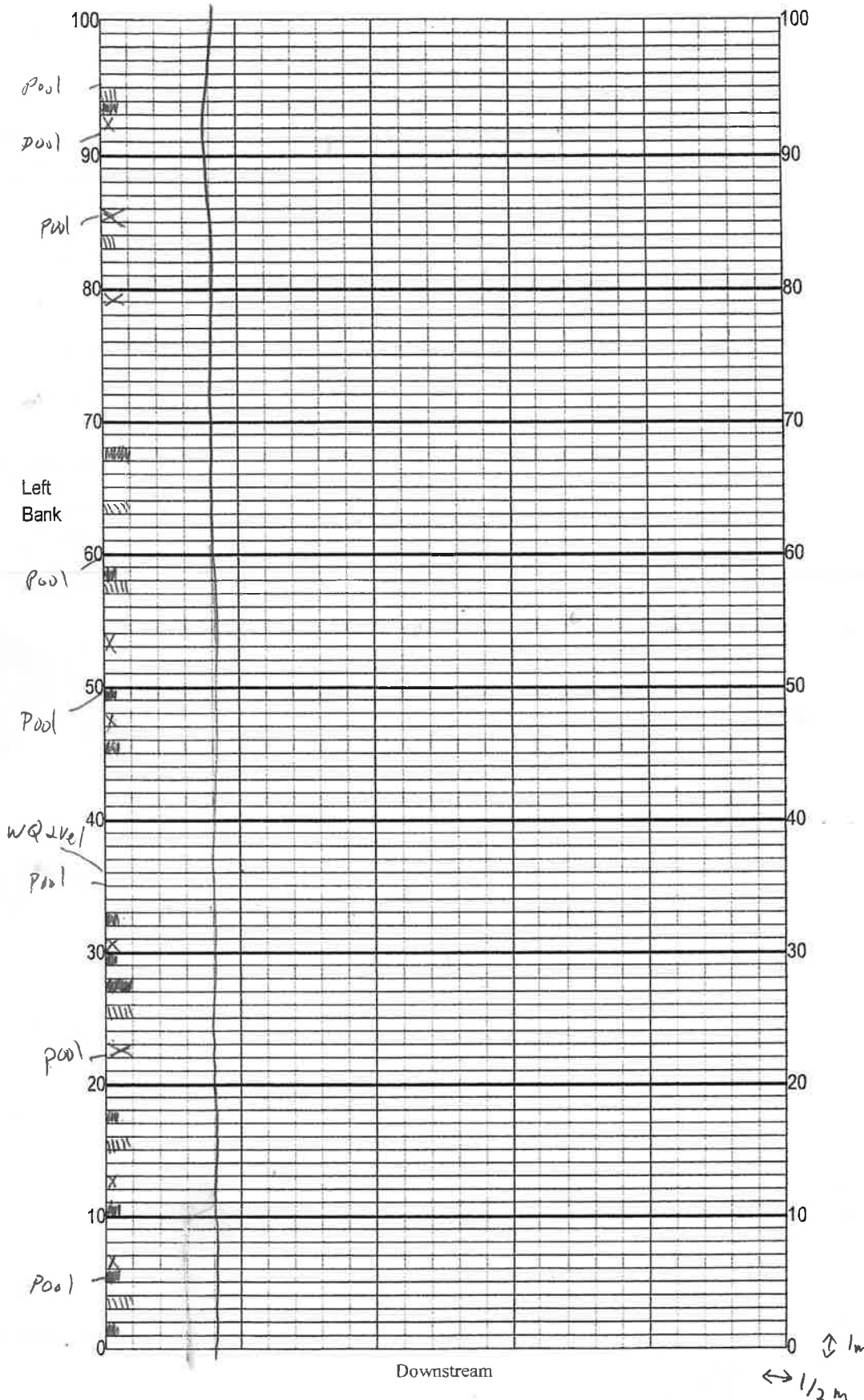
SUBMITTING AGENCY CODE: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YYYY): <u>1/15/2013</u>	RECEIVING BODY OF WATER: _____
SUBMITTING AGENCY NAME: _____				
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>LHTNB @ the airport (Gainesville)</u>	FIELD ID/NAME: <u>LHTNB</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>14</u>	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>4</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 <u>4</u> 3 2 1
Water Velocity <u>19</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 <u>19</u> 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>11</u> Primary Score <u>48</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 <u>11</u>	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>16</u>	20 19 18 17 <u>16</u>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>8</u> Left Bank <u>8</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. <u>8</u> 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>8</u> Left Bank <u>8</u> Secondary Score <u>68</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. <u>8</u> 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

116 **TOTAL SCORE**

Date: <u>1/15/2013</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: LHTNB Little Hatchet

Date: 1/15/13

Sampler: BLV/ET

100 m: Latitude N29.69373°
Longitude W082.26642°
0 m: Latitude N29.69330°
Longitude W082.26540°

Substrates: Code key, draw proportionate habitat abundance. %

Snags 3m 1.5

Roots/undercut banks 3m 1.5

Leaf Packs (or mats) 3.5m 1.75

Aquatic Macrophytes _____

Pools total # observed = 8
range expected = 4-5

Average width 2 m

Average depth 0.2 m

Velocity measured at 36 meter mark.

WQ & chemistry taken at 36 meter mark.

Habitat Smothering: Sand-Thorough
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Acer rubrum

Colocasia esculenta

Alfalfa (Alfalfa used)

Bow elder

Bald cypress

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID : _____ ORG ID : _____
 COUNTY : Alachua STORET # : _____
 DATE : 5/29/14 TIME : 1245
 SITE NAME : Little Hatcher Creek SAMPLE COMPLETE ? _____
 FIELD ID/NAME : LATNB RECEIVING BODY OF WATER : Newnans Lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
☐	☐	☐	☐	☐	☐	☐	☐

Local Watershed Erosion (select one) : ☐ None ☐ Slight ☒ Moderate ☐ Heavy
 Local Watershed NPS Pollution : ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank : >18 Right Bank : >18

High Water Mark : 1.0 + 0.2 = 1.2
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded : ☐ Yes ☒ No

Artificially : ☒ No ☐ Mostly recovered, more sinuous
Channelized : ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

3 S/m	3.4 S/m	2	m wide
0.33 m/s	0.29 m/s	0.17 m/s	
L	C	R	
0.2 m deep	0.1 m deep	0.1 m deep	

SEDIMENT / SUBSTRATE

Sediment Oils : ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic
☐ Other (Specify) : _____

Sediment Deposition : ☐ Sludge Sand Smothering : None Slight Moderate Severe
 Silt Smothering : None Slight Moderate Severe
☐ Other (Specify) : _____

SUBSTRATE TYPE
 Assessment Tool : ☐ SCI ☒ BioRecon ☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>2.1</u>		
Undercut Banks / Roots	<u>3.5</u>		
Leaf Packs or Mat	<u>0.5</u>		
Aquatic Vegetation			
Rock or Shell Rubble	<u>0.5</u>		
Sand			
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

Depth (M)	Temp (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top						<u>0.2</u>
Mid-Depth	<u>0.1</u>	<u>25.52</u>	<u>7.26</u>	<u>8.34</u>	<u>224</u>	☒ VOB
Bottom						

Water Surface Oils : ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify) : _____

Water Sample Taken ? ☐ Yes ☒ No
 Algae Sample Taken ? ☐ Yes ☒ No

Clarity : ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque
Color : ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) : _____

WEATHER CONDITIONS / NOTES :

Partly CL, calm, upper-80's
Pics @ 100m - 1867 (up) - 1868 (dn)
00m - 1869 (up) - 1870 (dn)

☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton	☒	☐	☒	☐
Fish	☐	☐	☒	☐
Aquatic Macrophytes	☐	☒	☐	☐
Iron/Sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM :

Bryan Vance / Efrain Tavares

SIGNATURE :

[Signature]

DATE :

5/29/14

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>05/29/14</u>	RECEIVING BODY OF WATER: <u>Newnans Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Little Hatchet North Branch</u>	FIELD ID/NAME: <u>LHTNB</u>	

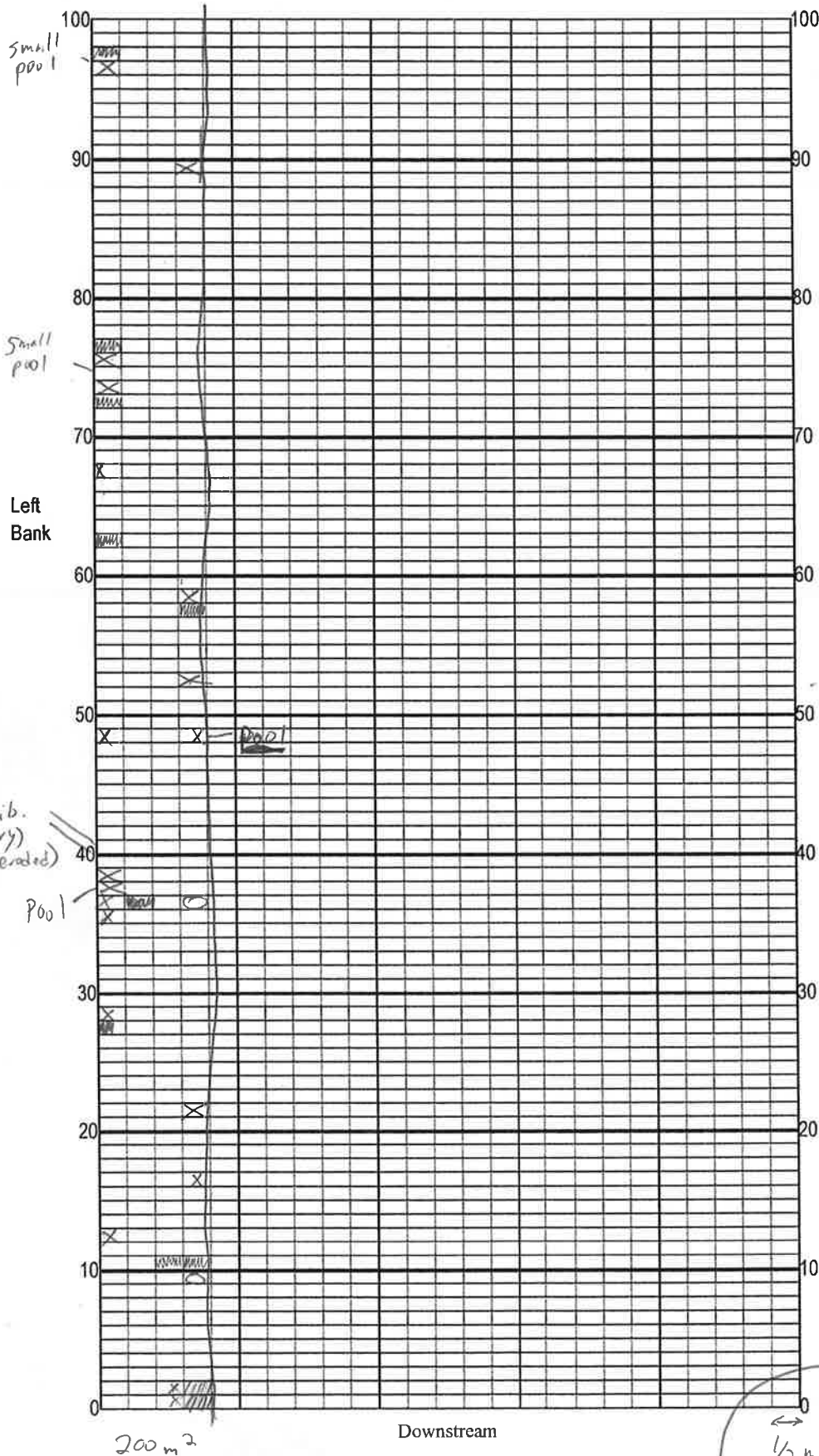
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1
Substrate Availability <u>6</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 <u>6</u>	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>20</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 <u>20</u> 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>9</u> ----- Primary Score <u>43</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 <u>9</u> 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>17</u>	20 19 18 <u>17</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>7</u> Left Bank <u>7</u>	10 9	<u>R & L</u> 8 <u>7</u> 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>10</u> Left Bank <u>9</u>	<u>R</u> <u>L</u> <u>10</u> <u>9</u>	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>8</u> Left Bank <u>8</u> ----- Secondary Score <u>66</u>	10 9	<u>R & L</u> <u>8</u> 7 6	5 4	3 2 1

109

TOTAL SCORE

Date: <u>5/29/14</u>	Analyst: <u>Barry Vane / Efrain Taveras</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: LH TNB

Date: 5/29/14

Sampler: E. Tavorer / H. Bedinger

100 m: Latitude N 29.69370
Longitude W 082.26640

0 m: Latitude N29.69324
Longitude W082.26542

Substrates: Code key, draw proportionate habitat abundance.	%
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Snags $4.2 S_m = \underline{2.1}$

☒ Roots/undercut banks $\bar{r}_m = 3.5$

☐ Leaf Packs (or mats) / m = 0.5

 Aquatic Macrophytes _____

 Rocks/Conc. 1m = 0.5

total # observed = 3
 # range expected = 4-5

Average width 2 m

Average depth _____ m

Velocity measured at 8 meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation
is altered or eliminated.

Plants observed / other notes:

Cephalanthus
Smartweed
Taro
Cyperus sp.
Sagittaria arifolia
Salix
Suaeda
Alligatorweed

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01
FS 7000 General Biological Community Sampling

Form FD 9000-1: Biorecon Field Sheet

STORET Station		Location <i>Little heart creek</i>
Latitude: N ° ' "	Longitude: W ° ' "	Watershed / Basin
Date/Time Collected		Collected, & Sorted By: <i>ET & BLV</i>
types of habitats sampled		QC'd By:

** Rare (1-3), Common (4-10), Abundant (11-100), Dominant (>100).

Taxa	Tally	Abun Code	Taxa	Tally	Abun Code	Taxa	Tally	Abun Code
Diptera			Tronbidiformes			Ephemeroptera		
Ceratopogonidae			Acarina			Acerpenna pygmaea		
Culicidae			Oligochaeta	1		Baetidae		
Empididae			Naiidae			Baetis sp.		
Chironomidae	1		Lumbriculidae			Baetisca sp.		
Simulium sp.	1		Tubificidae			Brachycercus sp.		
Stratiomyidae			Hirudinea			Caenis sp.		
Tipulidae	1		Pelecypoda			Callibaetis sp.		
			Corbicula fluminea			Centroptilum sp.		
			Elliptio sp.			Heptagenia sp.		
			Pisidiidae			Hexagenia sp.		
						Isorychnia sp.		
Gastropoda			Megaloptera			Leptophlebia sp.		
Ancylidae			Corydalis cornutus			Neophemera sp.		
Elimia sp.			Sialis sp.			Stenacron sp.		
Physella sp.						Stenonema sp.		
Pomacea sp.			Hemiptera			Tricorythodes sp.		
Planorbella sp.			Belostoma sp.					
Hydrobiidae			Corixidae					
Viviparus sp.			Gerridae			Plecoptera		
Melanoides tuberculata			Hydrometra sp.			Acroneuria sp.		
			Pelocoris sp.			Amphinemura sp.		
			Pleidae			Hydroperla sp.		
Odonata			Ranatra sp.			Isoperla sp.		
Argia sp.			Velidae			Leuctra sp.		
Aeschnidae						Neoperla sp.		
Boyeria vinosa			Other (name groups)			Paragnetina sp.		
Calopteryx sp.						Perlesta sp.		
Enallagma sp.						Perlinella sp.		
Epitheca sp.						Pteronarcys sp.		
Erythemis simplicicollis						Taeniopteryx sp.		
Gomphus sp.	1					Talioptera sp.		
Hetaerina sp.								
Ischnura sp.								
Libellulidae						Trichoptera		
Macromia sp.						Anisocentropus sp.		
Neurocordulia sp.						Brachycentrus sp.		
Progomphus sp.						Cernotina sp.		
Pachydiplax longipennis						Cheumatopsyche sp.		
			Decapoda			Chimarra sp.		
			Palaemonetes sp.			Diplectrona sp.		
Coleoptera			Procambarus sp.			Hydroptila sp.		
Ancyronyx variagata						Hydropsyche sp.		
Curculionidae						Lype diversa		
Dineutus sp.			Amphipoda			Macrostemum sp.		
Dubiraphia vittata			Gammarus sp.			Nectopsyche sp.		
Dytiscidae			Hyalella azteca			Oecetis sp.		
Gyretes sp.			Crangonyx sp.			Oxyethira sp.		
Microcylloepus pusillus						Polycentropus sp.		
Stenelmis sp.			Isopoda			Trienodes sp.		
			Caecidotea (Asellus) sp.					
Column Total: Taxa			Column Total: Taxa			Column Total: Taxa		

NOTE: The Biorecon field data sheet is to be used as an aid during sampling and organism field sorting. The calculated metrics should be retrieved from the Florida Statewide Biological Database or the same counting and collapsing procedures used, as described in LT 7100.

Revision Date: February 1, 2004

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID : WLC ORG ID : _____
 COUNTY : Alachua STORET # : _____
 DATE : 8/12/2014 TIME : 945
 Latitude : _____ Longitude : _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)
 SITE NAME : Little Lochloosa Creek (Bridge Crossing - upstream) SAMPLE COMPLETE ? yes
 FIELD ID/NAME : _____ RECEIVING BODY OF WATER : Loe

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>30</u>	<u>50</u>	<u>10</u>	<u>4</u>	<u>5</u>	<u>0</u>	<u>1</u>	<u>est. based on Lochloosa land use</u>

Local Watershed Erosion (select one) : ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution : ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank : 18 Right Bank : 18

High Water Mark : 0.5 + 0.4 = 0.9
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded : ☐ Yes ☒ No

Artificially : ☐ No ☒ Mostly recovered, more sinuous
 Channelized : ☐ Some recovery ☐ Recent, severe

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>2.5</u> m wide	<u>0.11</u> m/s	<u>0.1</u> m deep	<u>0.1</u> m deep
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Canopy Cover % : ☐ Open ☐ Lightly Shaded (11-45%)
☐ Heavily Shaded ☒ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils : ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☒ Anaerobic
☐ Other (Specify) : _____
Sediment Deposition : ☐ Sludge ☐ Sand Smothering ☒ None ☐ Slight ☐ Moderate ☐ Severe
☐ Silt Smothering ☒ None ☐ Slight ☐ Moderate ☐ Severe
☐ Other (Specify) : _____

SUBSTRATE TYPE
 Assessment Tool : ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>6</u>	<u>5</u>	
Undercut Banks / Roots	<u>7.23</u>	<u>5</u>	
Leaf Packs or Mat	<u>.4</u>	<u>.25</u>	
Aquatic Vegetation	<u>0</u>		
Rock or Shell Rubble	<u>3.8</u>	<u>5</u>	
Sand	<u>825</u>	<u>4.75</u>	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

Depth (M)	Temp (°C)	pH (SU)	D.O (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :						<u>0.35</u>
Mid-Depth :	<u>0.1</u>	<u>26.19</u>	<u>6.45</u>	<u>1.40</u>	<u>56</u>	<u>0.02</u>
Bottom :						

Water Surface Oils : ☐ None ☒ Sheen ☐ Globbs ☐ Slick
 Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify) : _____

Water Sample Taken ? ☐ Yes ☒ No
 Algae Sample Taken ? ☐ Yes ☒ No

SYSTEM TYPE : ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify) : _____

Clarity : ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque
Color : ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) : _____

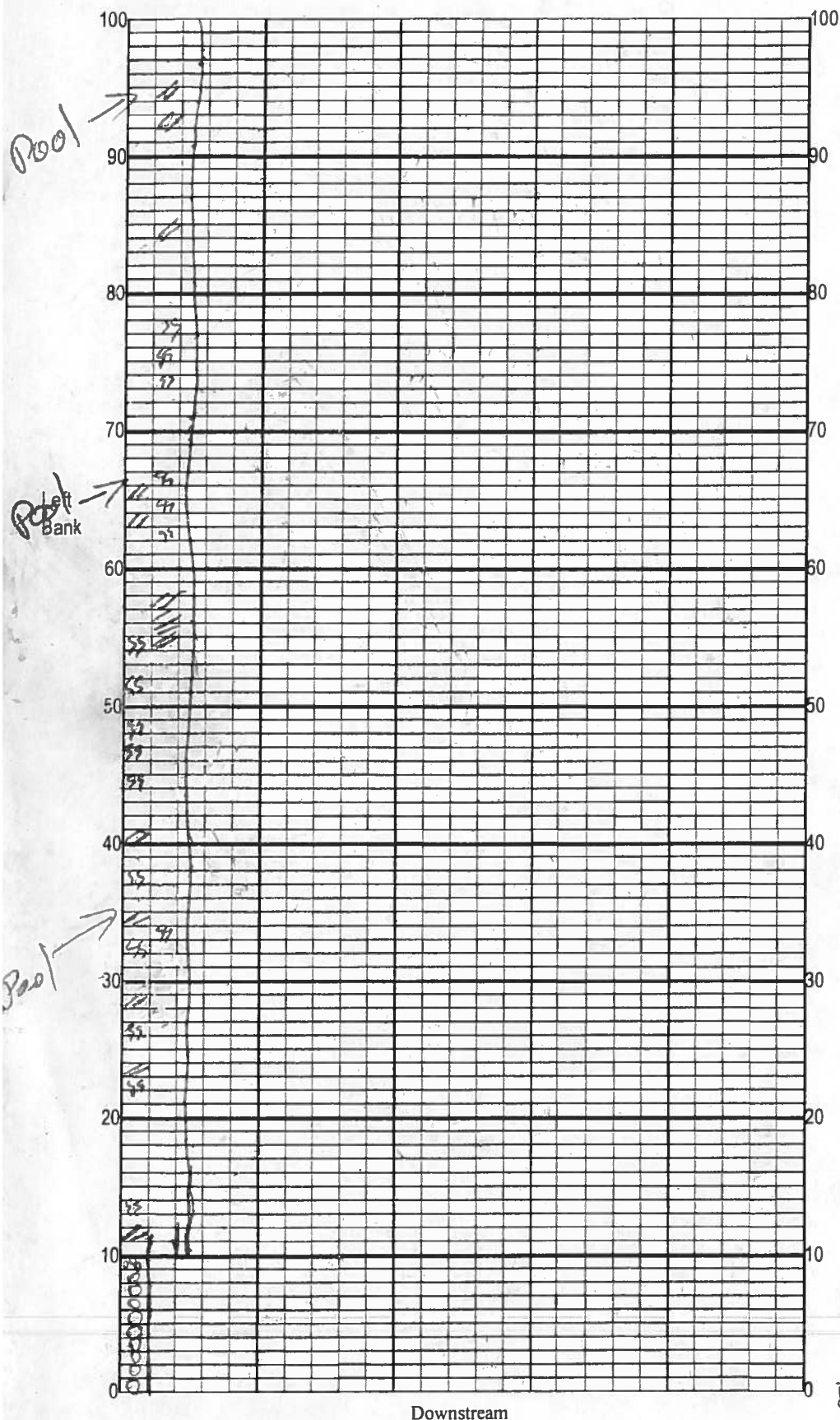
WEATHER CONDITIONS / NOTES : Total depth = 0.4m
☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton	☒	☐	☐	☐
Fish	☐	☐	☒	☐
Aquatic Macrophytes	☒	☐	☐	☐
Iron/Sulfur Bacteria	☒	☐	☐	☐

SAMPLING TEAM : Erin Tarax
 SIGNATURE : _____ DATE : 8/21/2014

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Little Lochloosa

Date: 8/21/2014

Sampler: E. Tavaraz / L. Bedinger

100-m: Latitude N29.59793°
 .007 Longitude W082.16274°

0 m: Latitude N29.59750°
 806 Longitude W082.16281°

Substrates: Code key, draw proportionate habitat abundance.	%
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100

 Snags ~~10~~ 6%

Roots/undercut banks 7-23

	Leaf Packs (or mats)	4%
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☐ Aquatic Macrophytes

0	ROCKS	3.8
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☒

total # observed = _____
range expected = _____

Average width ~~2.5~~ 2.5 in

Average depth 0.3 m

Velocity measured at 6m meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation
is altered or eliminated.

Plants observed / other notes:

Wader oak black be

Sweet gum Smilix

Zerns Red Flori

Cypress maple

Saga Palm

Laurel oak

Lower level Pine

Bottom buch

Revision Date: June 2, 2011

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

$$\begin{array}{r} 141 \\ \times 125 \\ \hline 705 \\ 2820 \\ 14100 \\ \hline 17625 \end{array}$$

Revision Date: June 2, 2011

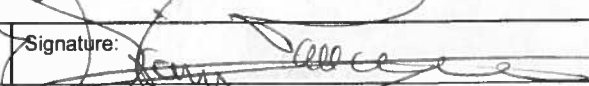
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>8/21/2014</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Little Lochloosa creek</u>		FIELD ID/NAME: <u>22C</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>14</u>	Greater than 30% major productive habitat present at site 20 19 18 17 <u>16</u>	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>11</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 <u>11</u>	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>17</u> ----- Primary Score <u>57</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 <u>17</u> 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>15</u>	20 <u>19</u> 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>10</u> Left Bank <u>10</u>	<u>10</u> 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>10</u> Left Bank <u>10</u>	<u>10</u> 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>10</u> Left Bank <u>10</u> ----- Secondary Score <u>75</u>	<u>10</u> 9	8 7 6	5 4	3 2 1

132

TOTAL SCORE

Date: <u>8/21/2014</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: 
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PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: LC-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 9-9-2013 TIME: 1500

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Lochloosa Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: LC / Lochloosa Creek RECEIVING BODY OF WATER: Lochloosa Lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>29%</u>	<u>49%</u>	<u>10</u>	<u>6</u>	<u>5</u>	<u>0</u>	<u>1</u>	

Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: 18 Right Bank: 18

High Water Mark: 0.6 + 0.4 = 1.0
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>0.25</u> m/s	<u>0.25</u> m/s	<u>0.25</u> m/s
<u>4</u> m deep	<u>4</u> m deep	<u>4</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☒ Slight ☐ Moderate ☐ Severe
☐ Silt Smothering: ☐ None ☒ Slight ☐ Moderate ☐ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>3.8</u>	<u>7</u>	
Undercut Banks / Roots	<u>5.4</u>	<u>7</u>	
Leaf Packs or Mat	<u>0.4</u>	<u>1</u>	
Aquatic Vegetation	<u>0.2</u>	<u>1</u>	
Rock or Shell Rubble	<u>0</u>		
Sand	<u>70.2</u>	<u>3</u>	
Mud / Muck / Silt	<u>20.0</u>	<u>1</u>	
Other			
Other			

WATER QUALITY

Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:						<u>0.5</u>
Mid-Depth:	<u>24.70</u>	<u>5.19</u>	<u>5.52</u>	<u>63</u>	<u>0.03</u>	☐ VOB
Bottom:						

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity: ☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE: ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Color: ☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: Partly sunny, warm

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

SAMPLING TEAM:

E. Tavaraz & R. Willems

SIGNATURE:

[Signature]

DATE:

9-9-2013

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>9/9/2013</u>	RECEIVING BODY OF WATER: <u>Lochloosa Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Lochloosa Creek</u>	FIELD ID/NAME: <u>LC / Lochloosa Creek</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1
Substrate Availability <u>8</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 <u>8</u> 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>17</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 <u>17</u> 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>18</u> ----- Primary Score <u>53</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 <u>18</u> 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. <u>10</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> ----- Secondary Score <u>80</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

133

TOTAL SCORE

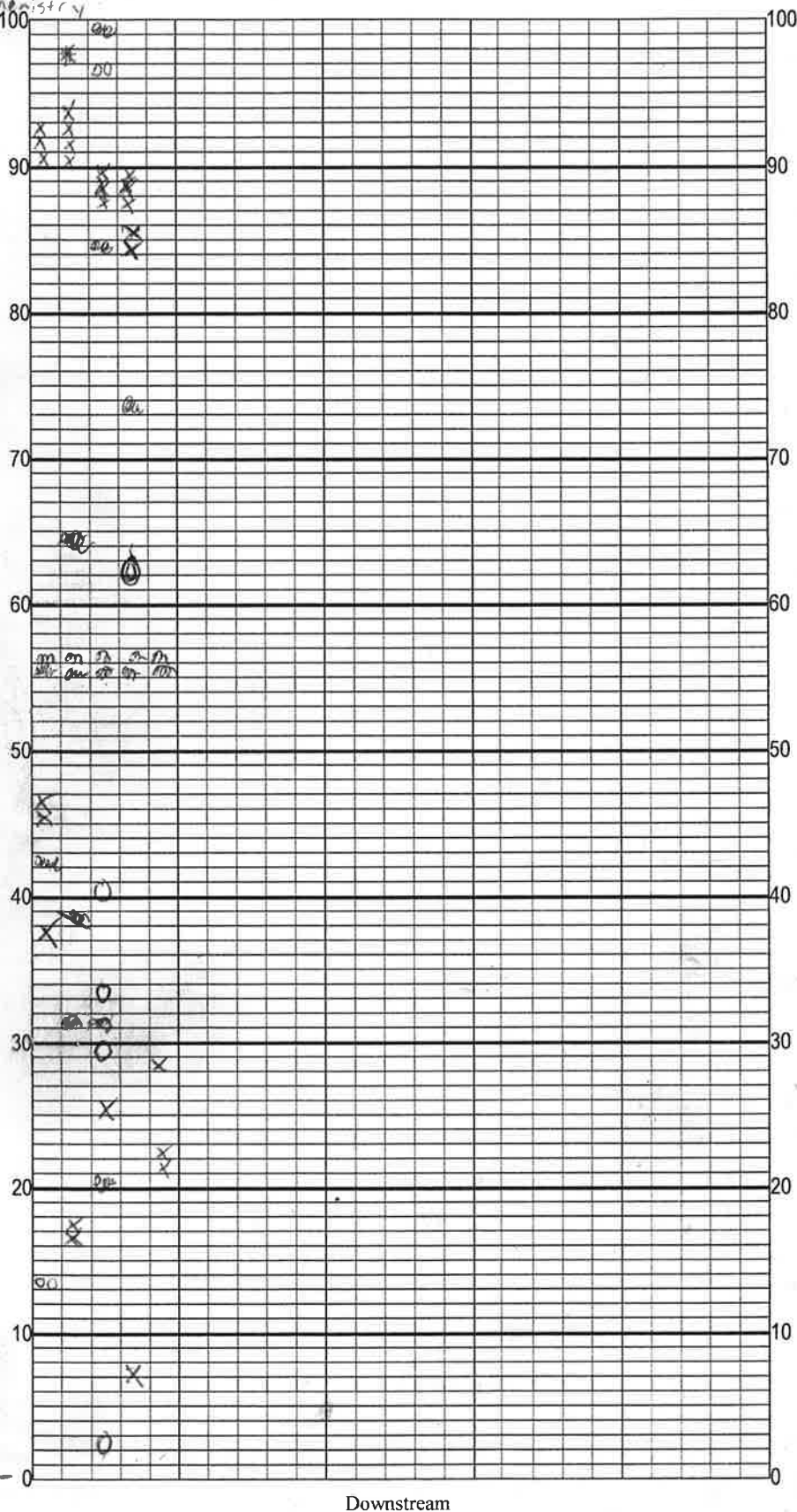
Date: <u>9/9/2013</u>	Analyst: <u>Efrain Tavoriz</u>	Signature: <u>Efrain Tavoriz</u>
-----------------------	--------------------------------	----------------------------------

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

WQ and Chemistry
Velocity

Left
Bank

Water
flow



Location: Lochloosa Creek
Date: 9/9/2013
Sampler: ET/RTW

100 m: Latitude N 29.56393
Longitude W 082.14032
0 m: Latitude N 29.56393
Longitude W 82.14094

Substrates: Code key, draw proportionate habitat abundance.

	Snags	<u>11</u>	<u>3.8</u>
	Roots/undercut banks	<u>11</u>	<u>5.4</u>
	Leaf Packs (or mats)	<u>0.4</u>	<u>0.4</u>
	Aquatic Macrophytes	<u>0.2</u>	<u>0.2</u>
	Pools	<u>5</u>	<u>5</u>

total # observed = 5
range expected = 5

Average width 5 m
Average depth 0.5 m

Velocity measured at 100 meter mark

WQ & chemistry taken at 100 meter mark

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Live oak
Cypress
Acer rubrum
Sweet gum

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID : M1101B ORG ID : _____
 COUNTY : Alachua STORET # : _____
 DATE : 8/12/2014 TIME : 1330

Latitude : _____ Longitude : _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME : Mill Creek^{at} Old Bellamy Rd SAMPLE COMPLETE ? Yes
 FIELD ID/NAME : M1101B RECEIVING BODY OF WATER : Santa Fe River (Mill Sink)

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>25</u>	<u>5</u>	<u>40</u>	<u>25</u>	<u>3</u>	<u>2</u>		

Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >18m Right Bank: >18m

High Water Mark: 0.4 + 0.15 = 0.55
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
2.6 m wide
0.5 m/s 0.33 m/s 0.25 m/s
0.2 m deep 0.1 m deep 0.1 m deep

SEDIMENT / SUBSTRATE

Sediment Oils: ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify): _____
Sediment Deposition: ☐ Sludge Sand Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
 Silt Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe ☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI
 % Coverage # Times Sampled # Times Sampled
 Woody Debris (Snags) 7.1 5
 Undercut Banks / Roots 8.6 5
 Leaf Packs or Mat 1.8 5
 Aquatic Vegetation
 Rock or Shell Rubble
 Sand 5
 Mud / Muck / Silt
 Other
 Other

WATER QUALITY
 Depth (M) Temp (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: 0.2
 Mid-Depth: 0.2 25.17 7.36 7.64 84 0.04 ☒ VOB
 Bottom:

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity: ☐ Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque
 Color: ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:
warm, humid overcast, pileated woodpeckers, frogs
high 80s, rain (moderate) ebony jewel wings
large live mussel

☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☒ Yes ☐ No

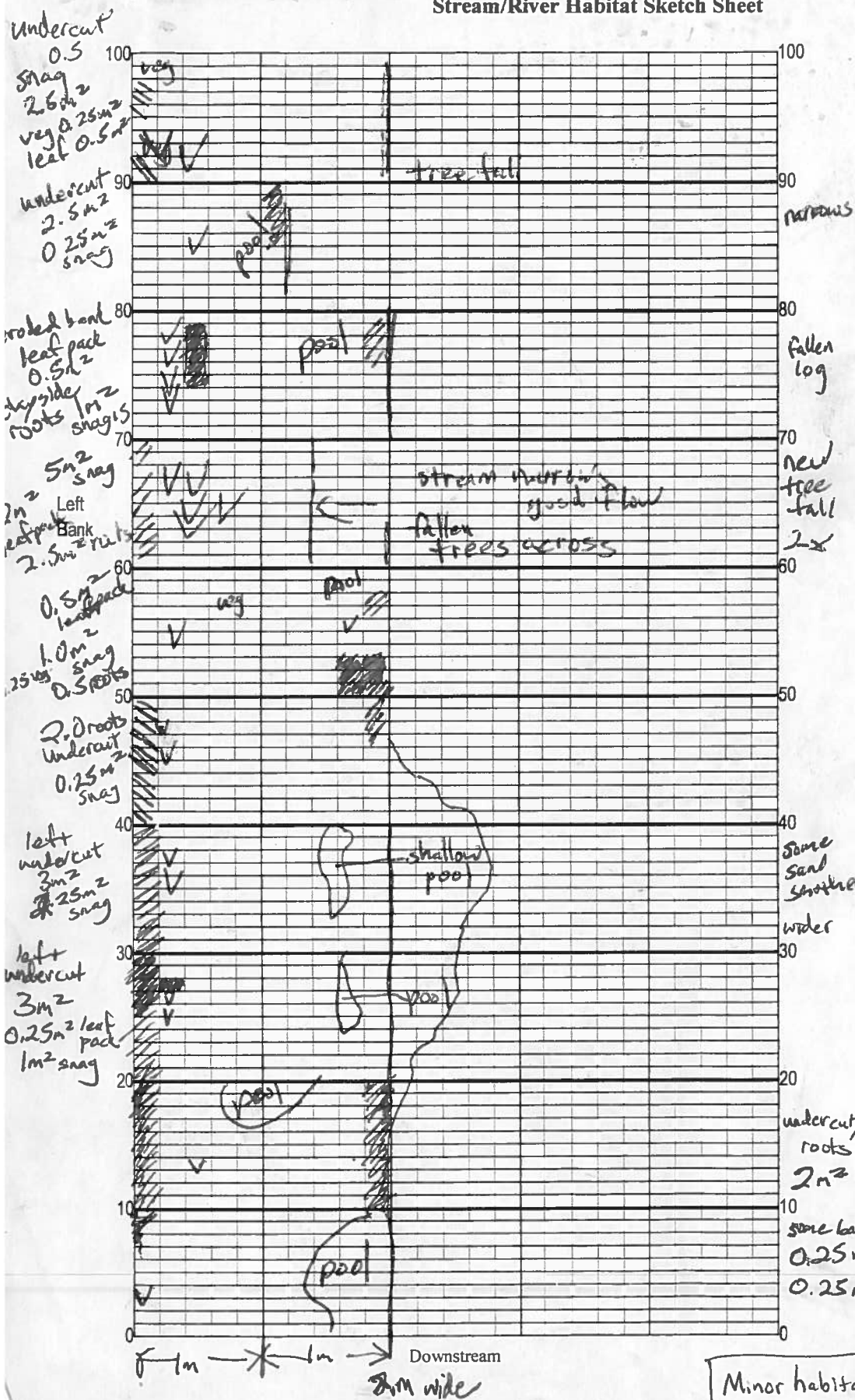
ABUNDANCE
 Absent Rare Common Abundant
 Periphyton: ☐ ☒ ☐ ☐
 Fish: ☐ ☒ ☐ ☐
 Aquatic Macrophytes: ☐ ☒ ☐ ☐
 Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐

SAMPLING TEAM: Efrain Tavaréz and Laura Bedinger
 SIGNATURE: _____ DATE: 8/12/2014

T25.52
 98.3 % DO
 D.O. 8.05 m/L
 62.5 DOCH

Aquatic macrophytes included in
 sand sweeps because of
 small areal extent.

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Mill Creek

Date: 8/12/2014

Sampler: Efrain Tavaréz/L. Bolmer

100m: Latitude N 29.84488

004 Longitude W 082.50143

100m: Latitude N 29.84545

Longitude W 082.5079

Substrates: Code key, draw proportionate habitat abundance.	%
---	---

☒ Snags 701

	Roots/undercut banks	8.6
---	----------------------	-----

Leaf Packs (or mats)	1.8
----------------------	-----

1128	Aquatic Macrophytes	0.25
------	---------------------	------

Page 1 of 1

[illegible]

total # observed = _____

Average width: 3.0 m

Average depth 0.2 m

Velocity measured at 25 meter mark.

WQ & chemistry taken at 25 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is

Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks

Riparian Buffer Width:
Note areas (on map) where natural vegetation

Note areas (on map) where natural vegetation is altered or eliminated. *Itea Virg*

Plants observed / other notes: 1515 of the
Liquidambar
Serpocaulon, ferns, moss, oak

~~Saba sp., grasses, maple, Sm~~
0.25m² snag / Acer negundo

carpinus coro
Aquatic macropl

only one species
~~probably~~ *Orontium*

2 roots

mostly	some	little
--------	------	--------

ts. Sand, hard clay, mud
acrophytes $< 2m^2$

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

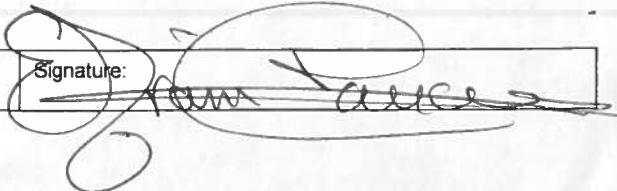
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>8/12/2014</u>	RECEIVING BODY OF WATER: <u>Santa Fe River</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Mill Creek at Old Bellamy R</u>	FIELD ID/NAME: <u>Mill Old B</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>14</u>	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 <u>14</u> 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability <u>12</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 <u>12</u> 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>18</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 <u>18</u> 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>18</u> Primary Score <u>62</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 <u>18</u> 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>20</u>	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. <u>20</u> 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank <u>9</u> Left Bank <u>8</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 <u>9</u>	Only meets 2 of the 3 requirements for optimal bank stability. <u>8</u> 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> Secondary Score <u>77</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

139

TOTAL SCORE

Date: <u>8/12/2014</u>	Analyst: <u>Efrain Tavaraz</u> and <u>Laura Bedinger</u>	Signature: 
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DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 3/11/13 TIME: 1000

Latitude: 29.67947 Longitude: 082.38189
 [degrees] [minutes] [seconds] [degrees] [minutes] [seconds]

SITE NAME: Monterey @ NW 38th Dr.

SAMPLE COMPLETE? ☒

FIELD ID/NAME: Montry RECEIVING BODY OF WATER: Hogtown

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural 10 silviculture 0 Field/Pasture 0 Agricultural 0 Residential 72% Commercial 14 Industry 4 Other (Specify) _____

Local Watershed Erosion (select one): ☐ None ☒ Slight ☒ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☒ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 16 Right Bank: 10

High Water Mark: 1.5 + 0.1 = 1.6
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded

☐ Yes ☒ No

Artificially ☒ No ☐ Mostly recovered, more sinuous

Channelized: ☐ Some recovery ☐ Recent, severe

Canopy Cover %: ☐ Open

☒ Lightly Shaded (11-45%)

☐ Heavily Shaded

☐ Moderate Shaded (46-80%)

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

11.7 m wide

0.17 m/s 0.17 m/s .1 m/s
 6 sec 6 sec 10

0.1 m deep .05 m deep .05 m deep

SEDIMENT / SUBSTRATE

Sediment Oils

☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

Sediment Odors

☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____

Sediment Deposition

☐ Sludge Sand Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
 Silt Smothering: ☒ None ☐ Slight ☐ Moderate ☐ Severe

☐ Other (Specify): _____

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon

☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags) 2 4 _____
 Undercut Banks / Roots 4.5 4 _____
 Leaf Packs or Mat 4.5 4 _____
 Aquatic Vegetation — _____
 Rock or Shell Rubble.. 4 4 _____
 Sand..... — 4 _____
 Mud / Muck / Silt _____
 Other _____
 Other _____

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:							<u>70.2</u>
Mid-Depth:	<u>0.2</u>	<u>14.56</u>	<u>7.24</u>	<u>8.55</u>	<u>171</u>	<u>0.10</u>	☐ VOB
Bottom:							

Water Surface Oils: ☒ None ☐ Sheen ☐ Globs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

Clarity

☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

Color

☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES: 60°s

Met Dr. Pinkson and his wife and grand daughter on site. I told him I would share the data IL

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☒ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM:

Laura Line Meagan Putts

SIGNATURE:

Laura Line
Meagan Putts

DATE:

3/11/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>3/1/13</u>	RECEIVING BODY OF WATER: <u>Possam → Hugtown Creek</u>
SUBMITTING AGENCY NAME: _____				
REMARKS:	COUNTY: <u>Alachua</u>	LOCATION: <u>up stream</u> <u>Montekey Creek @ NW 38 Dr.</u>	FIELD ID/NAME: <u>Mntry 38</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>14</u>	20 19 18 17 <u>16</u>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>10</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat <u>10</u> 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>13</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 <u>13</u> 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>13</u> ----- Primary Score <u>52</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 <u>13</u> 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>19</u>	20 <u>19</u> 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>12</u> Left Bank <u>12</u>	Bankfull > 60% of bank height. ✓ Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 <u>7</u> <u>6</u>	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>5</u> Left Bank <u>8</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation > 12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system <u>5</u> 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>5</u> Left Bank <u>8</u> ----- Secondary Score <u>59</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. <u>8</u> 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. <u>5</u> 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

111 149

TOTAL SCORE

Date: <u>3/1/13</u>	Analyst: <u>Laura Line</u> <u>Meagan Putts</u>	Signature: <u>Laura Line</u> <u>Meagan Putts</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

Location: Mntry

Date: 3/11/13

Sampler: LL/MP

100 m. Latitude N29.67947

Longitude W082.38189

0 m. Latitude _____

Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

 Snags 4m 2

 Roots/undercut banks 8m 4.5

 Leaf Packs (or mats) 8m 4.5

 Aquatic Macrophytes _____

 rock rubble 7 4%

 sand-minor 1

 Pools total # observed = _____
range expected = _____

Average width 21.7 m

Average depth 0.2 m

Velocity measured at 55 meter mark.

WQ & chemistry taken at 100 meter mark

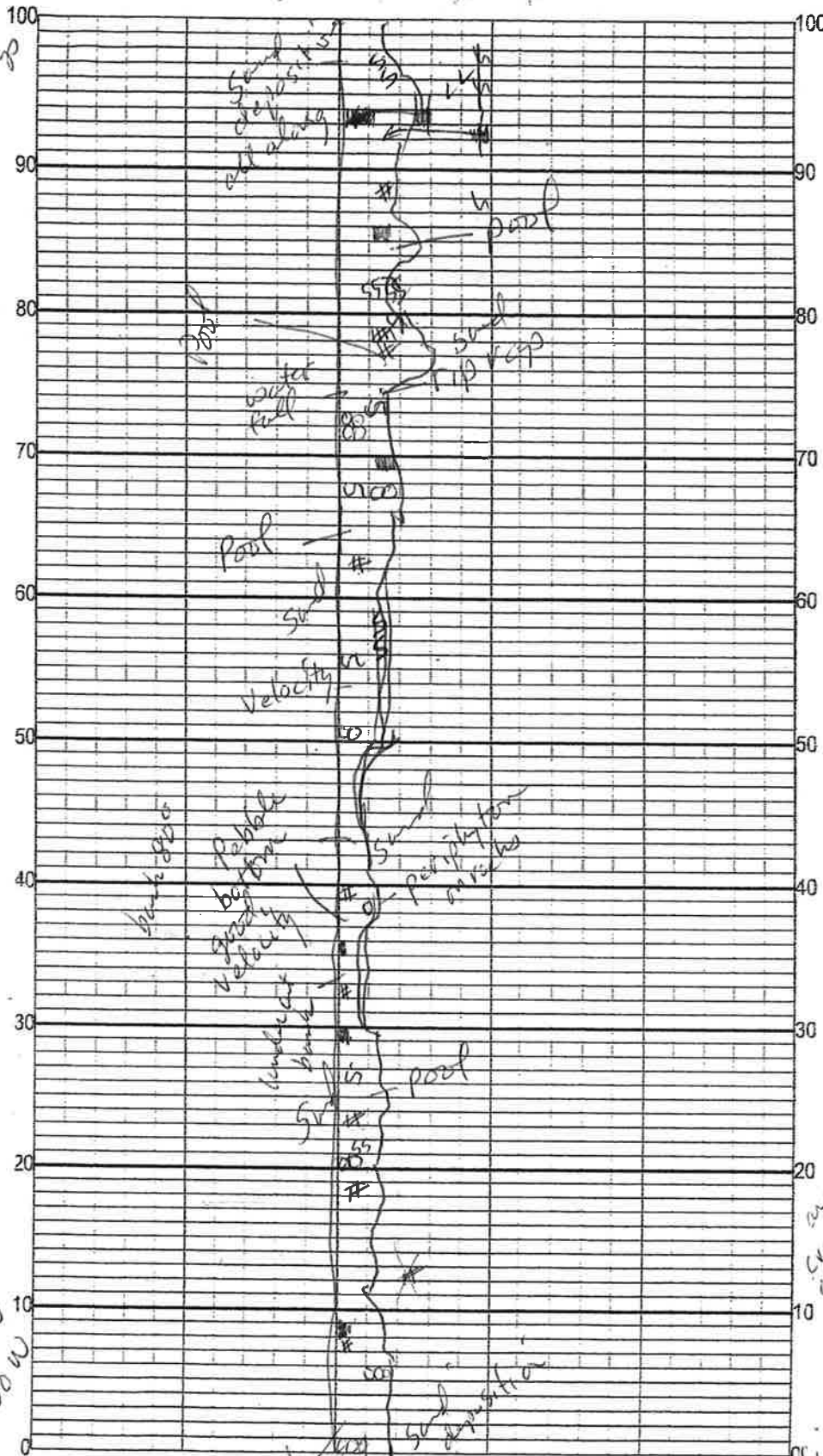
Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Met Dr. Pinkerton who owns the land
Poison ivy Magnolia
Itea virginica
Pinus taeda
Prunus caroliniana
Carpinus caroliniana
Ardisia crenata
Ilex colacasiensis
Quercus nigra
Viola
Liquidambar styraciflua
Euonymus



29.67947 N
082.38189 W
Ret
1111

Ret
1111
Snag
1111
Sand
1111
Rock
1111

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale. draw proportionately).

1.75 m wide x 100
175

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: Pos16 ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 2/4/2013 TIME: 0900

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Possum Creek @ NW 16th Ave

SAMPLE COMPLETE? yes

FIELD ID/NAME: Pos16

RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural silviculture Field/Pasture Agricultural Residential Commercial Industry Other (Specify)
12 2 1 0 73 9 3 _____

Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy

Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☒ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: 20 Right Bank: 0.0

High Water Mark: 1.0 + 0.1 = 1.1
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded

☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

1.0 m wide

0.25 m/s 0.33 m/s 0.25 m/s

0.1 m deep 0.1 m deep 0.1 m deep

Artificially ☐ No

☐ Mostly recovered, more sinuous

Canopy Cover %: ☒ Open

☒ Lightly Shaded (11-45%)

Channelized: ☒ Some recovery ☐ Recent, severe

☐ Heavily Shaded

☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils

☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

Sediment Odors

☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____

Sediment Deposition

☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: None Slight Moderate Severe
☒ Other (Specify): Periphyton (moderate)

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon

☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled

Woody Debris (Snags) 2.0 _____

Undercut Banks / Roots 5.0 _____

Leaf Packs or Mat 9.0 _____

Aquatic Vegetation 4.0 _____

Rock or Shell Rubble.. 4.0 _____

Sand..... 38 _____

Mud / Muck / Silt 38 _____

Other _____

Other _____

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:							<u>0.1</u>
Mid-Depth:	<u>0.05</u>	<u>10.28</u>	<u>7.77</u>	<u>11.98</u>	<u>256</u>	<u>0.17</u>	☐ VOB
Bottom:							

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

Clarity

☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Color

☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

☐ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

Absent Rare Common Abundant

Periphyton: ☐ ☐ ☐ ☒

Fish: ☐ ☐ ☒ ☐

Aquatic Macrophytes: ☐ ☐ ☒ ☐

Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐

SAMPLING TEAM:

Efrain Tavaraz / Megan Putts

SIGNATURE:

Efrain Tavaraz

DATE:

2/4/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>2/4/13</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Possum Creek @ NW 16th Ave</u>		FIELD ID/NAME: <u>Pos 16</u>

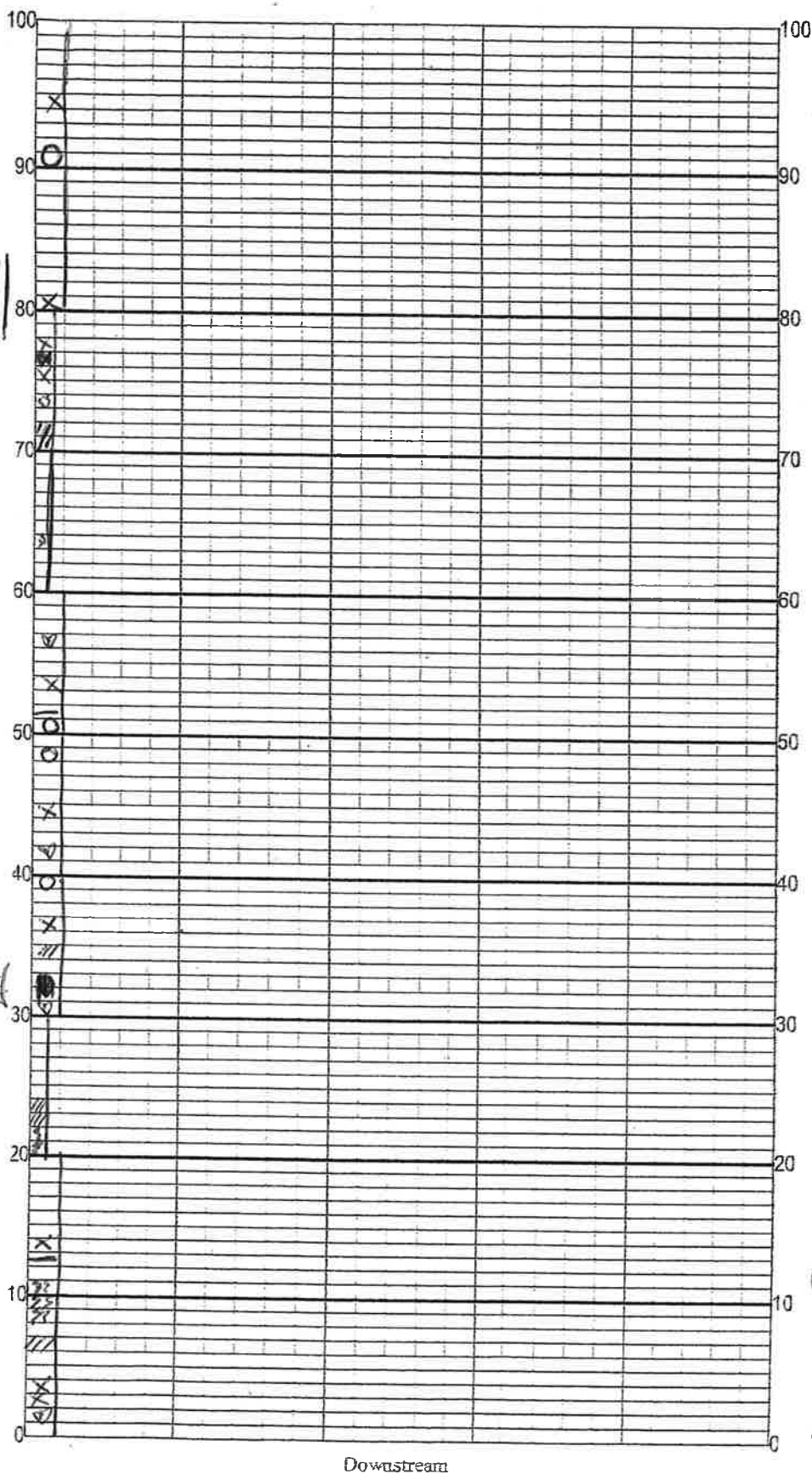
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>19</u>	20 19 <u>(18)</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>13</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 <u>(13)</u> 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>16</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 <u>(16)</u>	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>16</u> Primary Score <u>163</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 <u>(16)</u>	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>13</u>	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 <u>(13)</u> 12 11	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth. 5 4 3 2 1
Bank Stability Right Bank <u>5</u> Left Bank <u>5</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. <u>(5)</u> 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>1</u> Left Bank <u>1</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 <u>(1)</u>
Riparian Zone Vegetation Quality Right Bank <u>5</u> Left Bank <u>5</u> Secondary Score <u>35</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. <u>(5)</u> 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

98

TOTAL SCORE

Date: <u>2/4/13</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: <u>Efrain Tavaréz</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Pos 116

Date: 2/4/13

Sampler: ET/MP

100 m. Latitude N29.66763°

Longitude W082.36372

0 m. Latitude N29.66702°

Longitude W082.36391°

Substrates: Code key, draw proportionate habitat abundance.

Snags 2 2.0

Roots/undercut banks 5 5.0

Leaf Packs (or mats) 9 9.0

Aquatic Macrophytes 4 4.0

Rocks 4 4.0

Pools total # observed = 4
range expected =

Average width 1 m

Average depth 0.15 m

Velocity measured at meter mark.

WQ & chemistry taken at 2 meter mark

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Sabal palm
umbrella palm
(Taw) Colocasia esculenta
Smilax sp
Acer rubrum
sweet gum

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID : POS 53 ORG ID : _____
 COUNTY : Alachua STORET # : _____
 DATE : 12-14-2012 TIME : 0850

Latitude : _____ Longitude : _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME : Possum Creek @ NW 53rd AveSAMPLE COMPLETE ? YesFIELD ID/NAME : POS53RECEIVING BODY OF WATER : Hogtown Creek - Hauls Sink

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :							
Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>21%</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>56%</u>	<u>13%</u>	<u>8</u>	
Local Watershed Erosion (select one) : ☒ None ☐ Slight ☐ Moderate ☐ Heavy				Typical Width (m) Depth (m)/Velocity (m/sec) Transect			
Local Watershed NPS Pollution : ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy				_____ m wide			
Width of Riparian Vegetation (m) on Each Buffer Side				_____ m/s _____ m/s _____ m/s			
Left Bank : <u>720</u> Right Bank : <u>720</u>				_____ m deep _____ m deep _____ m deep			
High Water Mark : <u>0.2</u> + <u>0.15</u> = <u>0.35</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No			
Artificially ☒ No ☐ Mostly recovered, more sinuous				Canopy Cover % : ☐ Open ☐ Lightly Shaded (11-45%)			
Channelized : ☐ Some recovery ☐ Recent, severe				☐ Heavily Shaded ☒ Moderate Shaded (46-80%)			

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse		Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify) :		Sediment Deposition ☐ Sludge Sand Smothering : None <u>Slight</u> Moderate Severe Silt Smothering : None <u>Slight</u> Moderate Severe ☐ Other (Specify) :	
SUBSTRATE TYPE Assessment Tool : ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI INVERT PERI % # Times # Times Coverage Sampled Sampled		WATER QUALITY Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)			
Woody Debris (Snags) <u>7.0</u>		Top : _____			
Undercut Banks / Roots <u>2.5</u>		Mid-Depth : <u>0.1</u> <u>15.55</u> <u>7.22</u> <u>7.78</u> <u>120</u> <u>0.07</u> ☒ VOB			
Leaf Packs or Mat <u>12</u>		Bottom : _____			
Aquatic Vegetation <u>1.5</u>		Water Surface Oils : ☐ None ☒ Sheen ☐ Globbs ☐ Slick			
Rock or Shell Rubble.. _____		Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical			
Sand..... <u>77</u>		☐ Other (Specify) :			
Mud / Muck / Silt _____		Water Sample Taken ? ☐ Yes ☒ No		SYSTEM TYPE ☒ Stream ☐ Lake	
Other _____		Algae Sample Taken ? ☐ Yes ☒ No		☐ Wetland ☐ Estuary	
Other _____		Clarity ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque		Color <u>light</u> ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) :	
WEATHER CONDITIONS / NOTES : <u>Cloudy, 50°F</u>		ABUNDANCE Absent Rare Common Abundant			
☒ The antecedent hydrologic conditions have been met to my best knowledge.		Periphyton : ☒ ☐ ☐ ☐			
Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No		Fish : ☐ ☒ ☐ ☐			
SAMPLING TEAM : <u>E. Tavaréz / M. Putts</u>		Aquatic Macrophytes : ☐ ☒ ☐ ☐			
SIGNATURE : _____		Iron/Sulfur Bacteria : ☒ ☐ ☐ ☐			
DATE : <u>12-14-2012</u>					

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

100 m

100 meter mark is

Location: 32 M upstream of bridge @ pipe

Date: 12-14-2012 850 out flow

Sampler: E. Tavaraz / M. P. H. S.

100 m: Latitude 29.76233
Longitude 082.38165
0 m: Latitude 29.42103
Longitude 082.22930

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	7.1
	Roots/undercut banks	26.1
	Leaf Packs (or mats)	12.1
	Aquatic Macrophytes	1.5%
	Pools	total # observed = 5 # range expected =

Average width 200 m

Average depth 0.15 m

Velocity measured at _____ meter mark.

WQ & chemistry taken at 60 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

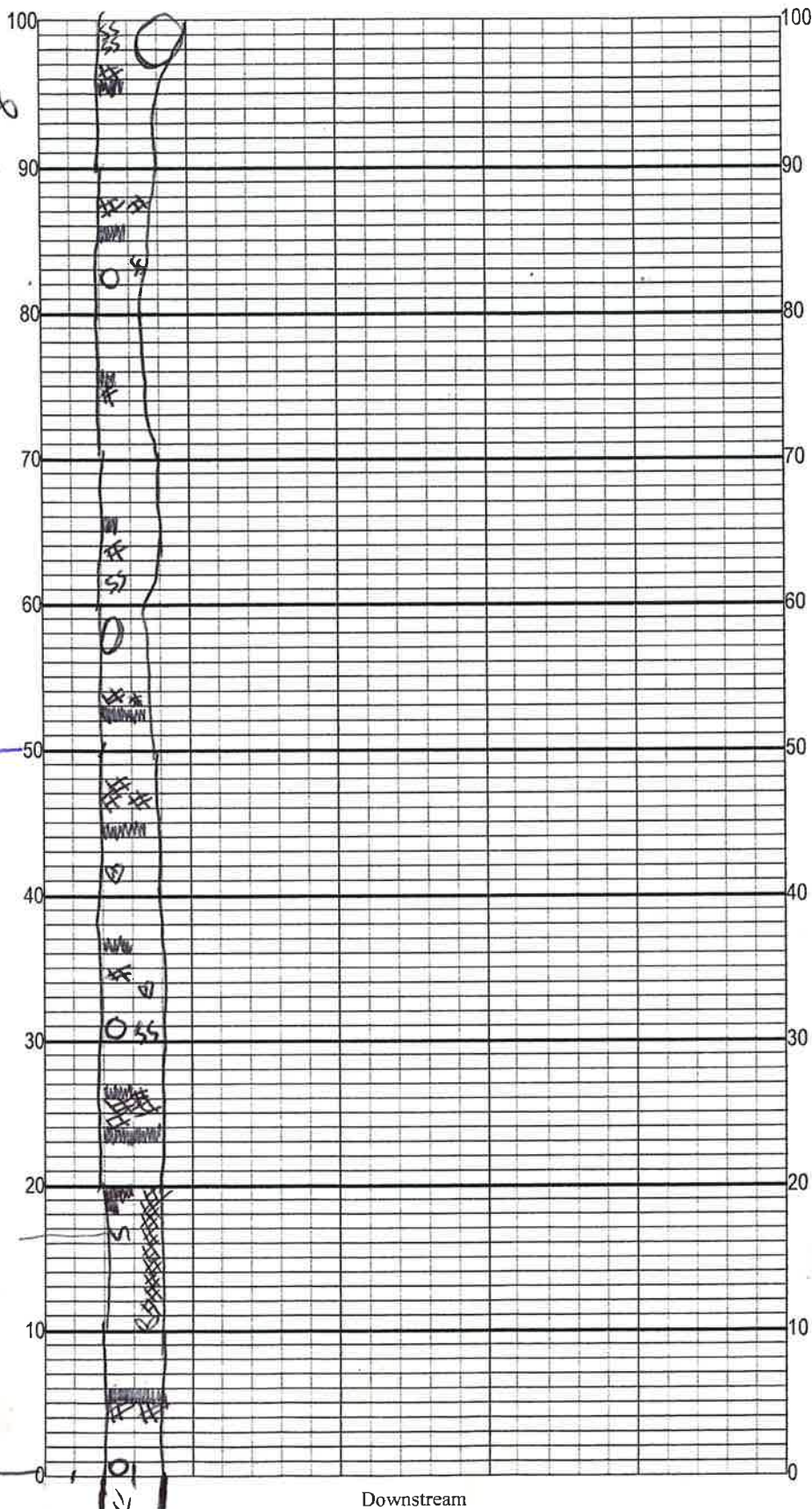
Plants observed / other notes:

Oreochloa aquatica
Ilex americana - American holly
Sensitive fern
OK Elderberry ~~but also toxic~~
LW Liquidambar styraciflua
Acer Rubrum - Red maple
Smilax spp.
Royal fern - Osmunda regalis
Lizard tail - Saururus cernuus
Hydrocotyl -
Vitis - Grape
Prunus caroliniana
Cherry laurel

Revision Date: June 2, 2011

Quercus nigra - Water oak

Itea virginica



3 veg
13.5 mag
23.5 mag
5 root

Left Bank

Photos
Down
up
right
left

1/2 m

Sand
||

Leaf
|||

Snag
|||

Veg
|||

Root
|||

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>12-14-12</u>	RECEIVING BODY OF WATER: <u>Hogtown</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Possum @ NW 53rd Ave</u>		FIELD ID/NAME: <u>Pos53</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>15</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent <u>15</u> 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>14</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 <u>14</u> 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>18</u> Primary Score <u>65</u> ^{vv}	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 <u>18</u> 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. <u>10</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>10</u> Left Bank <u>10</u> Secondary Score <u>80</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

vv 145 **TOTAL SCORE**

Date: <u>12-14-12</u>	Analyst: <u>Efrain Tavaroz, Lema Lina</u>	Signature: 
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PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: QC-SCI ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 5-20-2013 TIME: 1015

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Prairie Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: QC-SCI RECEIVING BODY OF WATER: Orange Lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>50</u>	<u>5</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>10</u>	<u>5</u>	

Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: 18 Right Bank: 18

High Water Mark: 0.75 + 0.70 = 1.45
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☐ No ☒ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>8.0</u> m wide		
<u>0.20</u> m/s	<u>0.25</u> m/s	<u>0.25</u> m/s
<u>0.3</u> m deep	<u>0.75</u> m deep	<u>1.0</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☐ Slight ☐ Moderate ☐ Severe
 Silt Smothering: ☐ None ☒ Slight ☐ Moderate ☐ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled

Woody Debris (Snags)	<u>6.86</u>	<u>5.0</u>	
Undercut Banks / Roots	<u>1.17</u>	<u>5.0</u>	
Leaf Packs or Mat			
Aquatic Vegetation	<u>1.96</u>	<u>5.0</u>	
Rock or Shell Rubble			
Sand	<u>20</u>	<u>2.5</u>	
Mud / Muck / Silt	<u>70.01</u>	<u>2.5</u>	
Other			
Other			

WATER QUALITY

Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:						<u>0.55</u>
Mid-Depth:	<u>0.75</u>	<u>28.16</u>	<u>6.80</u>	<u>1.12</u>	<u>111</u>	<u>0.05</u>
Bottom:						

Water Surface Oils: ☒ None ☐ Sheen ☐ Globs ☐ Slick
Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity
☐ Clear ☐ Slightly Turbid
☒ Turbid ☐ Opaque

SYSTEM TYPE ☐ Stream ☐ Lake
☐ Wetland ☐ Estuary
☒ Other (Specify): Channel

Color
☐ Tannic ☐ Green (Algae)
☐ Clear ☒ Other (Specify): Brownish Color

WEATHER CONDITIONS / NOTES: Partly cloudy, humid, hot

☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM: Efrain TAVAREZ and Barry Vance

SIGNATURE: Efrain TAVAREZ **DATE:** 5-20-2013

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>5-20-13</u>	RECEIVING BODY OF WATER: <u>Orange Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Downstream from bridge @ SR 20</u>		FIELD ID/NAME: <u>PC/Prairie Creek</u>

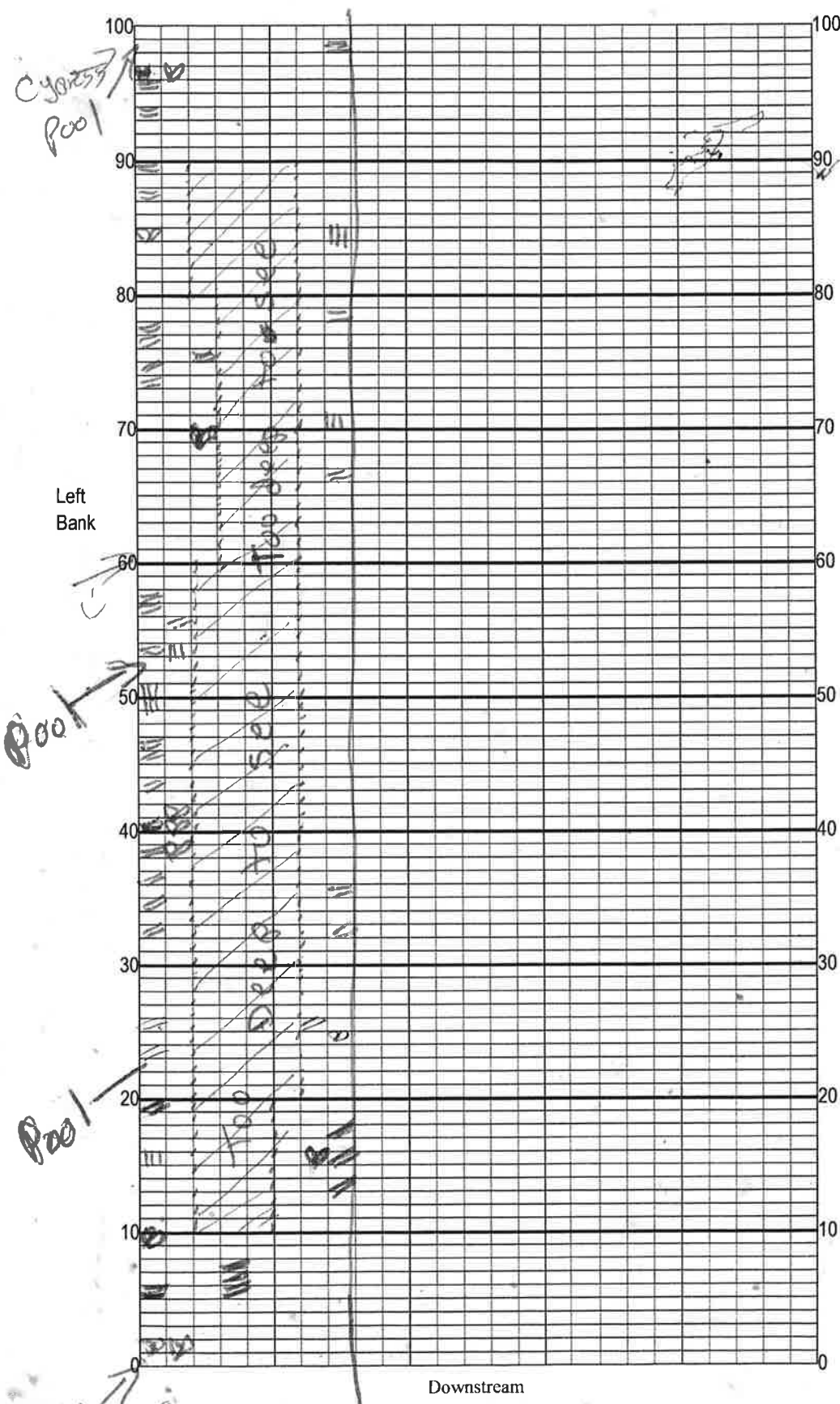
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>12</u>	20 19 18 17 16	15 14 13 <u>(12)</u> 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>8</u>	Greater than 30% productive habitat present at site	16% to 30% productive habitat, by aerial extent	6% to 15% productive habitat	Less than 5% productive habitat
	20 19 18 17 16	15 14 13 12 11	10 9 <u>(8)</u> 7 6	5 4 3 2 1
Water Velocity <u>15</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec	Max. observed at typical transect: >0.1 to 0.25 m/sec	Max. observed at typical transect: 0.05 to 0.1 m/sec	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec
	20 19 18 17 16	<u>(15)</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Habitat Smothering <u>13</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation.	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation.	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth).	Stable pools are absent. Most habitats affected by sand or silt accumulation.
Primary Score <u>48</u>	20 19 18 17 16	15 14 <u>(13)</u> 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>(8)</u> 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>10</u> Left Bank <u>10</u>	<u>(10)</u> 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities still close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>10</u> Left Bank <u>10</u>	<u>(10)</u> 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>8</u> Left Bank <u>9</u>	10 <u>(9)</u>	<u>(8)</u> 7 6	5 4	3 2 1
Secondary Score <u>65</u>				

113

TOTAL SCORE

Date: <u>5-20-2013</u>	Analyst: <u>Efrain Tavaraz & Barry Vane</u>	Signature: <u>[Signature]</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Prairie Creek

Date: 5/20/2013

Sampler: ET/BLV

100 m: Latitude N29.60939
Longitude W082.24870

0 m: Latitude N29.60856
Longitude W082.24843

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	<u>6.86</u> 35
	Roots/undercut banks	<u>1.17</u> 6
	Leaf Packs (or mats)	—
	Aquatic Macrophytes	<u>1.96</u> 10
	Pools	total # observed = <u>3</u> # range expected = —

Average width 8.0 m

Average depth 0.75 m

Velocity measured at 0 meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Cypress
alligator weed
Ceratophyllum
water lettuce
water hyacinth
Najas rubrum

~510m² of visible habitat

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID : _____ ORG ID : _____
 COUNTY : Alachua STORET # : _____
 DATE : 5/29/14 TIME : 0900

Latitude : _____ Longitude : _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME : _____ SAMPLE COMPLETE ? _____
 FIELD ID/NAME : Prairie Creek RECEIVING BODY OF WATER : Orange Lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category) :

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)

Local Watershed Erosion (select one) : ☒ None ☐ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution : ☐ No evidence ☐ Slight ☒ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank : >18 Right Bank : >18

High Water Mark : 0.5 + 1.3 = 1.8
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded : ☐ Yes ☒ No

Artificially : ☐ No ☒ Mostly recovered, more sinuous
Channelized : ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

6.3 s/m		2.3 s/m		12 m wide	
0.15 m/s	0.40 m/s	0.14 m/s			
R	C	L			
1.1 m deep	1.3 m deep	0.35 m deep			

SEDIMENT / SUBSTRATE

Sediment Oils : ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors : ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☒ Anaerobic ☐ Other (Specify) : _____
Sediment Deposition : ☐ Sludge Sand Smothering : ☒ None ☐ Slight ☐ Moderate ☐ Severe
 Silt Smothering : ☒ None ☐ Slight ☒ Moderate ☐ Severe
☒ Other (Specify) : Periphyton (moderate)

SUBSTRATE TYPE
 Assessment Tool : ☐ SCI ☒ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	16.2	3	
Undercut Banks / Roots	0.35	1.5	
Leaf Packs or Mat	0.30	1.5	
Aquatic Vegetation			
Rock or Shell Rubble			
Sand			
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top :							0.6
Mid-Depth :	1.0	28.12	7.06	3.05	87	0.04	☐ VOB
Bottom :	2.0						

Water Surface Oils : ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors : ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify) : _____

Water Sample Taken ? ☐ Yes ☒ No
 Algae Sample Taken ? ☐ Yes ☒ No

SYSTEM TYPE : ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify) : _____

Clarity : ☐ Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque
Color : ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify) : _____

WEATHER CONDITIONS / NOTES :

Clear, warm, low 80's
 Pics: 1865 (up)
 Taken 1866 (Down)
 100 m

☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved ? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved ? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM : Barry Vance / Efram Tavares **SIGNATURE :** [Signature] **DATE :** 5/29/14

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

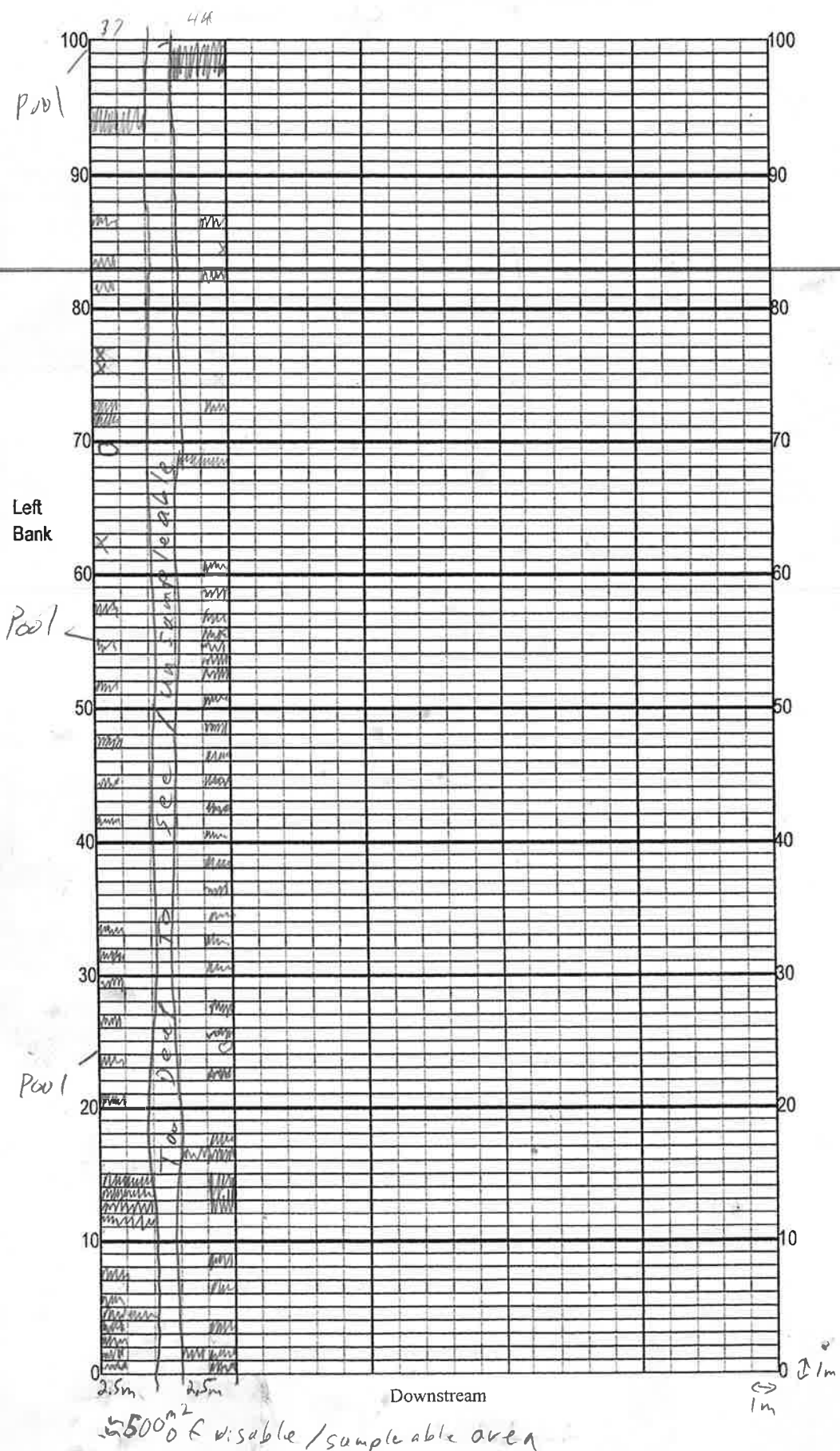
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YYYY): <u>5/29/14</u>	RECEIVING BODY OF WATER: <u>Orange Lake</u>
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Prairie Creek</u>	FIELD ID/NAME: _____	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>5</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	<u>5</u> 4 3 2 1
Substrate Availability <u>11</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 <u>11</u>	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>20</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 <u>20</u> 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>13</u> ----- Primary Score <u>49</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. <u>R/L</u> 15 <u>14</u> <u>13</u> 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>11</u>	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. 20 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 13 12 <u>11</u>	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank <u>10</u> Left Bank <u>10</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. <u>R/L</u> <u>10</u> 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>R/L</u> <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>9</u> ----- Secondary Score <u>69</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. <u>R/L</u> 10 <u>9</u>	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

118 **TOTAL SCORE**

Date: <u>5/29/14</u>	Analyst: <u>Barry Vance / Efrain Tavares</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Prairie Creek
Date: 5/29/14
Sampler: E. Tavoroz / B. Vance

100 m: Latitude N 29.60901
Longitude W 082.24875
0 m: Latitude N 29.60840
Longitude W 082.24831

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	8/m = 16.2%
	Roots/undercut banks	1.75/m = 0.35%
	Leaf Packs (or mats)	1.5/m = 0.3%
	Aquatic Macrophytes	
	Rock	
	Pools	total # observed = 3 # range expected =

Average width 12 m
Average depth 1.0 m

Velocity measured at 0 meter mark.

WQ & chemistry taken at 100 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:
Taxodium
Cephalanthus
Pop Ash
Sweetgum
Acer rubrum

DEP-SOP-001/01
FS 7000 General Biological Community Sampling

Form FD 9000-1: Biorecon Field Sheet

STORET Station		Location <i>PCAD</i>
Latitude: N ° ' ''	Longitude: W ° ' ''	Watershed / Basin
Date/Time Collected		Collected, & Sorted By:
types of habitats sampled		QC'd By:

** Rare (1-3), Common (4-10), Abundant (11-100), Dominant (>100).

Taxa	Tally	Abun Code	Taxa	Tally	Abun Code	Taxa	Tally	Abun Code
Diptera			Trombidiformes			Ephemeroptera		
Ceratopogonidae			Acarina			Acerpenna pygmaea		
Culicidae			Oligochaeta	1		Baetidae		
Empididae			Naiidae			Baetis sp.		
Chironomidae			Lumbriculidae			Baetisca sp.		
Simulium sp.			Tubificidae			Brachycercus sp.		
Stratiomyidae			Hirudinea			Caenis sp.	1	
Tipulidae			Pelecypoda			Callibaetis sp.		
			Corbicula fluminea			Centroptilum sp.		
			Elliptio sp.			Heptagenia sp.		
			Pisidiidae			Hexagenia sp.		
						Isonychia sp.		
Gastropoda	1		Megaloptera	11		Leptophlebia sp.		
Ancylidae			Corydalus cornutus			Neophemera sp.		
Elimia sp.			Sialis sp.			Stenacron sp.		
Physella sp.						Stenonema sp.		
Pomacea sp.			Hemiptera	111		Tricorythodes sp.		
Planorbella sp.			Belostoma sp.					
Hydrobiidae			Corixidae					
Viviparus sp.			Gerridae			Plecoptera		
Melanoides tuberculata			Hydrometra sp.			Acroeuria sp.		
<i>Planorbella</i>	1		Pelocoris sp.			Amphinemura sp.		
			Pleidiae			Hydropsyche sp.		
Odonata	1		Ranatra sp.	1		Isoperla sp.		
Argia sp.			Velidae			Leuctra sp.		
Aeschnidae						Neoperla sp.		
Boyeria vinosa.			Other (name groups)			Paragnetina sp.		
Calopteryx sp.						Perlesta sp.		
Enallagma sp.	1					Perlania sp.		
Epithea sp.						Pteronarcys sp.		
Erythemis simplicicollis						Taeniopteryx sp.		
Gomphus sp.						Talpoidea sp.		
Hetaerina sp.								
Ischnura sp.	111							
Libellulidae						Trichoptera		
Macromia sp.						Anisocentropus sp.		
Neurocordulia sp.						Brachycentrus sp.		
Progomphus sp.						Ceratomyza sp.		
Pachydiplax longipennis						Cheumatopsyche sp.	1	
			Decapoda			Chimarra sp.		
			Palaemonetes sp.	1		Diplectrona sp.		
Coleoptera	1		Procambarus sp.	1		Hydropsyche sp.		
Ancyronyx variagata						Lype diversa		
Curculionidae						Macrostemum sp.		
Dineutus sp.			Amphipoda	1		Nectopsyche sp.		
Dubiraphia vittata			Gammarus sp.			Oecetis sp.	111	
Dytiscidae			Hyalina azteca	111		Oxyethira sp.		
Gyretes sp.			Crangonyx sp.			Polycentropus sp.		
Microcylloepus pusillus						Triaenodes sp.		
Stenelmis sp.			Isopoda					
			Caecidotea (Asellus) sp.					
Column Total: Taxa			Column Total: Taxa			Column Total: Taxa		

NOTE: The Biorecon field data sheet is to be used as an aid during sampling and organism field sorting. The calculated metrics should be retrieved from the Florida Statewide Biological Database or the same counting and collapsing procedures used, as described in LT 7100.

Revision Date: February 1, 2004

PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

SAMPLE ID: Springstd ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 2/16/13 TIME: 0930^{ET} 1000
 Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)
 SITE NAME: Springstead Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Spring Springstd RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): 30% 20%
 Forest/Natural silviculture Field/Pasture Agricultural Residential Commercial Industry Other (Specify)
10% 1 0 0 40% 45% 12 _____
 Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☒ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy
 Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: 14 Right Bank: 2
 High Water Mark: 1.0 + 0.1 = 1.1 Artificially Impounded
 (m) (above present water level) (present depth) (above bed) ☐ Yes ☒ No
 Typical Width (m) Depth (m)/Velocity (m/sec) Transect
2.5 m wide
0.25 m/s 0.25 m/s 0.25 m/s
0.1 m deep 0.1 m deep 0.1 m deep
 Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe
 Canopy Cover %: ☐ Open ☒ Lightly Shaded (11-45%)
☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic
☐ Other (Specify): _____
Sediment Deposition ☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: None Slight Moderate Severe
☐ Other (Specify): _____
SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI
 % Coverage # Times Sampled # Times Sampled
 Woody Debris (Snags) 2.0 _____
 Undercut Banks / Roots 1.6 _____
 Leaf Packs or Mat 7.6 _____
 Aquatic Vegetation 0.2 _____
 Rock or Shell Rubble.. 5.2 _____
 Sand..... 80.0 _____
 Mud / Muck / Silt 3.4 _____
 Other _____
 Other _____
WATER QUALITY
 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 0.2 17.09 7.29 8.03 250 0.14 70.2
 Bottom: _____
 Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____
 Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No
Clarity ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque
Color ☐ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify): _____
SYSTEM TYPE ☒ Stream ☐ Lake ☐ Wetland ☐ Estuary
☐ Other (Specify): _____
WEATHER CONDITIONS / NOTES:
☐ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No
SAMPLING TEAM: Efrain tavaréz / Meagan Potts
SIGNATURE: _____
DATE: 2/16/13
ABUNDANCE
 Absent Rare Common Abundant
 Periphyton: ☐ ☐ ☐ ☒
 Fish: ☐ ☐ ☒ ☐
 Aquatic Macrophytes: ☐ ☒ ☐ ☐
 Iron/Sulfur Bacteria: ☐ ☒ ☐ ☐

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____		STORET STATION NUMBER: _____	DATE (mm/dd/yyyy): <u>2/7/13</u>	RECEIVING BODY OF WATER: _____
SUBMITTING AGENCY NAME: _____				
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Springstead Creek</u>	FIELD ID/NAME: <u>Springstd</u>	

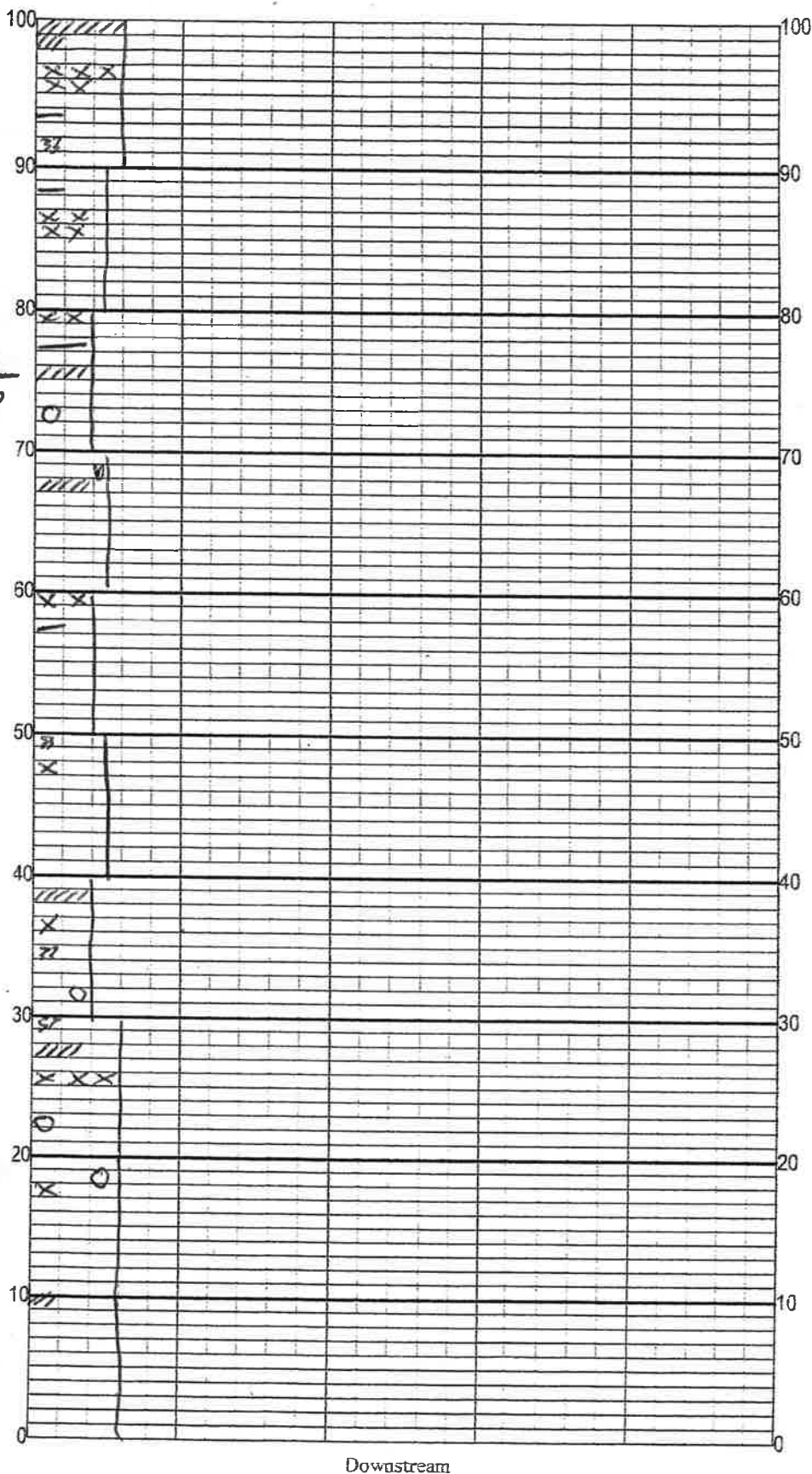
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>11</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 <u>11</u>	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>14</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 <u>16</u>	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>13</u> ----- Primary Score <u>58</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 <u>13</u> 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>19</u>	20 <u>19</u> 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>3</u> Left Bank <u>5</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. <u>5</u> 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. <u>3</u> 2 1
Riparian Buffer Zone Width Right Bank <u>2</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation > 12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 <u>2</u> 1
Riparian Zone Vegetation Quality Right Bank <u>4</u> Left Bank <u>7</u> ----- Secondary Score <u>50</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 <u>7</u> 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 <u>4</u>	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

108

TOTAL SCORE

Date: <u>2/7/13</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: <u>Efrain Tavaréz</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Springstead

Date: 2/16/13

Sampler: ET Imp

100 m. Latitude N29.685250

Longitude W082.339420

0 m. Latitude N29.685090

Longitude W082.340230

Substrates: Code key, draw proportionate habitat abundance. %

— Snags 5 2.0

33 Roots/undercut banks 4 1.6

X Leaf Packs (or mats) 7 7.0

W Aquatic Macrophytes 1/2 0.2

/// Rocks 13 5.2

□ 16.6

○ Pools total # observed = 4
range expected =

Average width 2.5 m

Average depth 0.1 m

Velocity measured at 25 meter mark.

WQ & chemistry taken at 75 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

English Ivy
Ruellia
Androsace
Air potatoe
Catmelto
magnolia
Elderberry
Water oak
Carpinus Caroliniana

Length of grid represents 100 m of stream (not linear meters).
Horizontal scale is double vertical scale. draw proportionately.

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

EL-5

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 2-21-12 TIME: 1616
 SITE NAME: SWEETWATER BRANCH SAMPLE COMPLETE? Y
 FIELD ID/NAME: REF1 RECEIVING BODY OF WATER: paynes prairie

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
 Forest/Natural ☐ silviculture ☐ Field/Pasture ☐ Agricultural ☐ Residential ☒ Commercial ☒ Industry ☐ Other (Specify) ☐

Local Watershed Erosion (select one): ☐ None ☐ Slight ☐ Moderate ☒ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: ~10 Right Bank: ~15m

High Water Mark: 1.5 + 0.2 = 1.7
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded ☒ Yes ☐ No
ROCK DAM CO TRAIL

Artificially ☐ No ☐ Mostly recovered, more sinuous
 Channelized: ☒ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
10 SEC 9 SEC 10 SEC AVG 3 m wide
0.1 m/s 0.1 m/s 0.1 m/s
0.05 m deep 0.2 m deep 0.05 m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
☐ Silt Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
☒ Other (Specify): ALGAE

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	<u>1</u>	<u>1</u>	
Undercut Banks / Roots	<u>1</u>	<u>5</u>	
Leaf Packs or Mat	<u>3</u>	<u>5</u>	
Aquatic Vegetation			
Rock or Shell Rubble..	<u>2</u>	<u>5</u>	
Sand.....	<u>90</u>	<u>4</u>	
Mud / Muck / Silt	<u>3</u>		
Other			
Other			

WATER QUALITY
 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: 0.1 16.1 8.2 9.56 344
 Mid-Depth:
 Bottom:

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☐ No

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Clarity
☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

Color
☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

overcast, 60's, calm Hydro Score - 8
* Conductivity verification failure - very low bias (~150 umhos)
☒ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH < 2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE	Absent	Rare	Common	Abundant
Periphyton:	☐	☐	☐	☒
Fish:	☐	☐	☒	☐
Aquatic Macrophytes:	☐	☒	☐	☐
Iron/Sulfur Bacteria:	☐	☒	☐	☐

SAMPLING TEAM: Jackson, O'Neal, Wellendorf, Cox SIGNATURE: JA [Signature] DATE: 2-21-12

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>2.21.12</u>	RECEIVING BODY OF WATER: _____
SUBMITTING AGENCY NAME: _____				
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Sweetwater branch</u>	FIELD ID/NAME: <u>REF1</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>11</u>	20 19 18 17 16	15 14 13 12 <u>11</u>	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>6</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>10</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>13</u> Primary Score <u>40</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>15</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>5</u> Left Bank <u>5</u>	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>7</u> Left Bank <u>5</u>	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>7</u> Left Bank <u>6</u> Secondary Score <u>30</u>	10 9	8 7 6	5 4	3 2 1

90

TOTAL SCORE

Date: <u>2-21-12</u>	Analyst: <u>Joy Jackson</u>	Signature: <u>Joy Jackson</u>
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet

REF 2/21/12

Substrates: Code key, draw proportionate habitat abundance.

Snags

SS Roots/undercut banks

AA Leaf Packs (or mats)

□ Aquatic Macrophytes

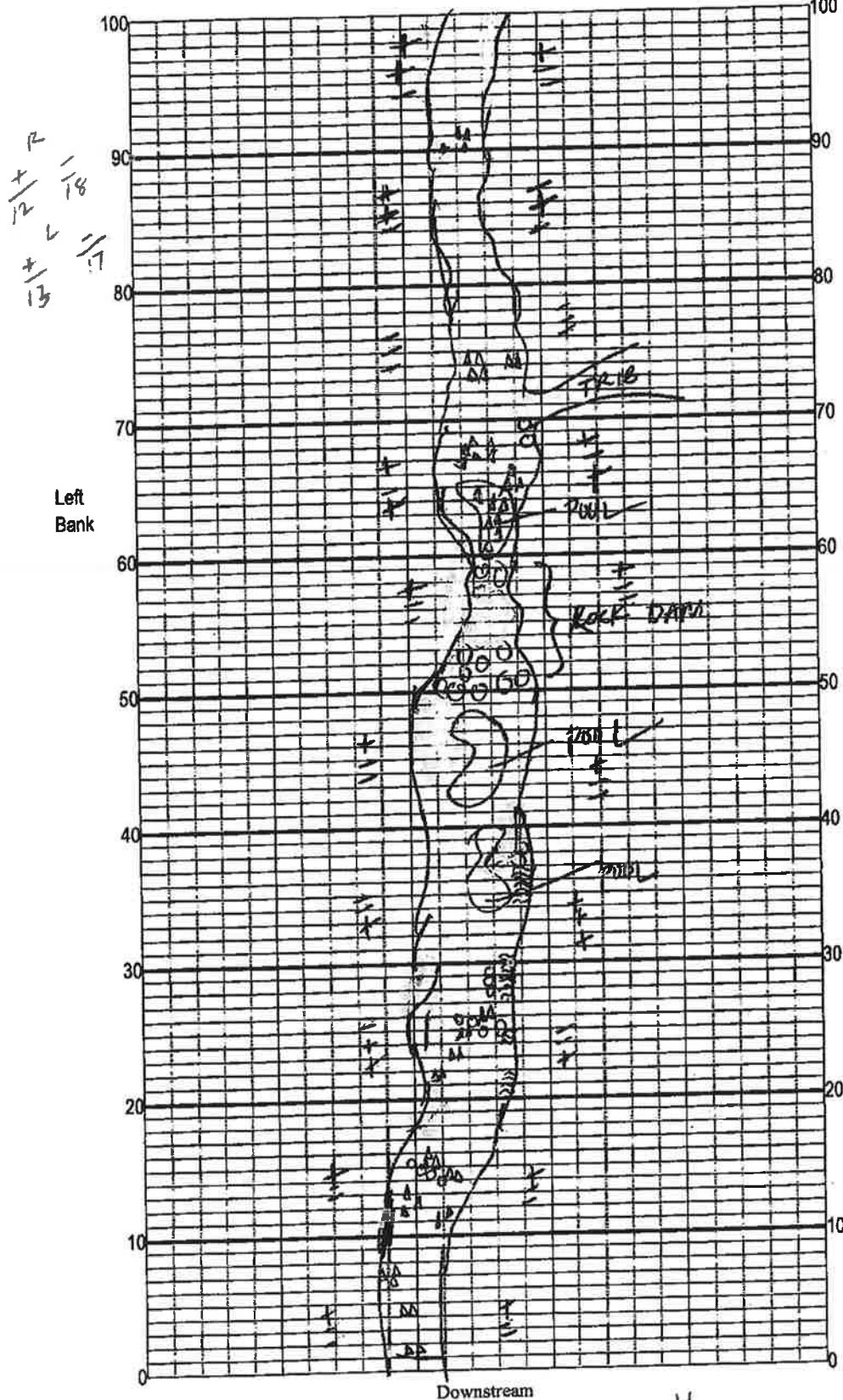
OO Rock

Velocity:
Note where velocity measures were taken.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.



Sweetwater branch

Ref 1

2.21.12

Post - 2/1/12

SNAGS - 21%

LEAF - 3%

ROCK - 2%

lots of algal smothering

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: September 10, 2008

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

EL-5

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 9/11/12 TIME: 1515
 SITE NAME: Sweetwater Branch SAMPLE COMPLETE? _____
 FIELD ID/NAME: Ref1 RECEIVING BODY OF WATER: Paynes Prairie

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
☐	☐	☐	☐	☐	☐	☐	☐

Local Watershed Erosion (select one): ☐ None ☐ Slight ☐ Moderate ☒ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: ☐ Right Bank: ☐

High Water Mark: ☐ + ☐ = ☐
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☐ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☒ Recent, severe *only some portion*

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>34</u> m wide	<u>0.10</u> m/s	<u>0.14</u> m/s	<u>0.13</u> m/s
<u>0.1</u> m deep	<u>0.3</u> m deep	<u>0.3</u> m deep	

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
☐ Silt Smothering: ☐ None ☐ Slight ☒ Moderate ☐ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	☐	<u>2</u>	☐
Undercut Banks / Roots	☐	<u>7</u>	☐
Leaf Packs or Mat	☐	<u>1</u>	☐
Aquatic Vegetation	☐	<u>0</u>	☐
Rock or Shell Rubble	☐	<u>7</u>	☐
Sand	☐	<u>3</u>	☐
Mud / Muck / Silt	☐	☐	☐
Other	☐	☐	☐
Other	☐	☐	☐

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top: both	<u>0.5m</u>	<u>26.05</u>	<u>7.78</u>	<u>7.36</u>	<u>471</u>	☐	☐
Mid-Depth: <i>New</i>	<u>0.1m</u>	<u>26.05</u>	<u>7.79</u>	<u>7.33</u>	<u>470</u>	☐	☐
Bottom:	☐	☐	☐	☐	☐	☐	☐

☐ VOB *on mark*

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick

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

Water Sample Taken? ☐ Yes ☒ No

Algae Sample Taken? ☐ Yes ☒ No

SYSTEM TYPE: ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Clarity: ☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

Color: ☒ Tannic ☐ Green (Algae)
☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

partly cloudy
 Lots of trash. Clear day - 80°
 heavy rain in past month but water level now normal

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM: Cox, Wellendorf, O'Neal, VANDAM SIGNATURE: Nigel Wellendorf DATE: _____

Revision Date: September 5, 2008

*taken @ 80m * .2m deep*
above rock fall

26.18°C
481 umhos
7.34 mg/L

7.87 su
81100
7.1100

1.0
10/100

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>9/11/12</u>	RECEIVING BODY OF WATER: _____
SUBMITTING AGENCY NAME: _____				
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>SWB</u>	<u>Ref 1</u>	FIELD ID/NAME: _____

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>8</u>	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock) 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed <u>rocks, rock</u> 10 9 <u>(8)</u> 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability <u>8</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 <u>(8)</u> 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>12</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 <u>(12)</u> 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>14</u> Primary Score <u>42</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 <u>(14)</u> 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization <u>13</u>	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. 20 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered. 15 14 <u>(13)</u> 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability Right Bank <u>(5)</u> Left Bank <u>(5)</u> <u>added from Feb HA</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>(7)</u> Left Bank <u>(5)</u>	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>(7)</u> Left Bank <u>(6)</u> Secondary Score <u>48</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 <u>(6)</u>	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

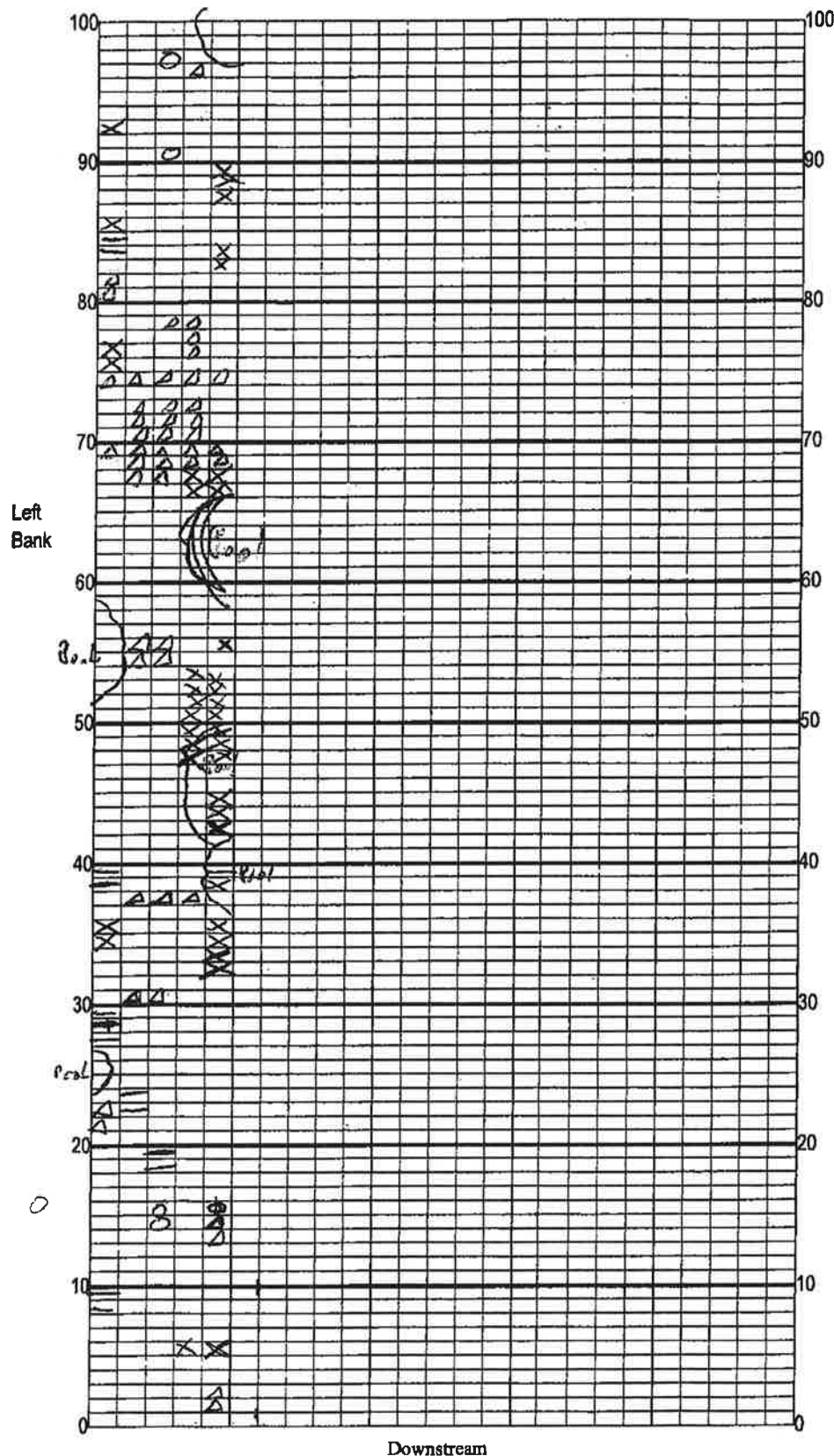
90

TOTAL SCORE

Date: <u>9/11/12</u>	Analyst: <u>VANDAM Cox</u>	Signature: _____
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Practice HA for Ramona Bryce Major change since Feb 2012 was
Form FD 9000-5 absence of Revision Date: December 19, 2011

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: SW B Reference
Date: 9/11/12
Sampler: Bryce, Kara, Nia, Ashlee

100 m: Latitude _____
Longitude _____

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	_____
	Roots/undercut banks	_____
	Leaf Packs (or mats)	_____
	Aquatic Macrophytes	_____
	<u>Rock</u>	_____
	Pools	total # observed = _____ # range expected = _____

Average width _____ m
Average depth _____ m

Velocity measured at _____ meter mark.

WQ & chemistry taken at _____ meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

1 block = 0.5 m

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 12/14/12 TIME: 1215
 SITE NAME: Three lake creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Three22 RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
 Forest/Natural 10% silviculture 0 Field/Pasture 0 Agricultural 0 Residential 82% Commercial 8 Industry 2 Other (Specify) _____

Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >18 Right Bank: >18 - Road 15

High Water Mark: 1.4 + 0.05 = 1.9
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded
☐ Yes ☒ No

Artificially ☒ No ☐ Mostly recovered, more sinuous
Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
1.5 m wide
0.2 m/s 0.14 m/s 0.2 m/s
0.05 m deep 0.05 m deep 0.05 m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: None Slight Moderate Severe
 Silt Smothering: None Slight Moderate Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI INVERT PERI
 % # Times # Times
 Coverage Sampled Sampled

Woody Debris (Snags) 5
 Undercut Banks / Roots 12
 Leaf Packs or Mat 4
 Aquatic Vegetation 0
 Rock or Shell Rubble.. 5
 Sand 69
 Mud / Muck / Silt 1
 Other
 Other

WATER QUALITY
 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____
 Mid-Depth: 0.25 15.54 7.29 8.49 319 0.15 ☐ VOB
 Bottom: _____

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity
☒ Clear ☐ Slightly Turbid
☐ Turbid ☐ Opaque

Color
☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:
☐ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE
 Absent Rare Common Abundant
 Periphyton: ☒ ☐ ☐ ☐
 Fish: ☐ ☐ ☒ ☐
 Aquatic Macrophytes: ☒ ☐ ☐ ☐
 Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐

SAMPLING TEAM: Erin Tavaraz Meagan Pitts
 SIGNATURE: _____ DATE: 12-14-12

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>12/14/12</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Three Lake Creek</u>		FIELD ID/NAME: <u>Three LV</u>

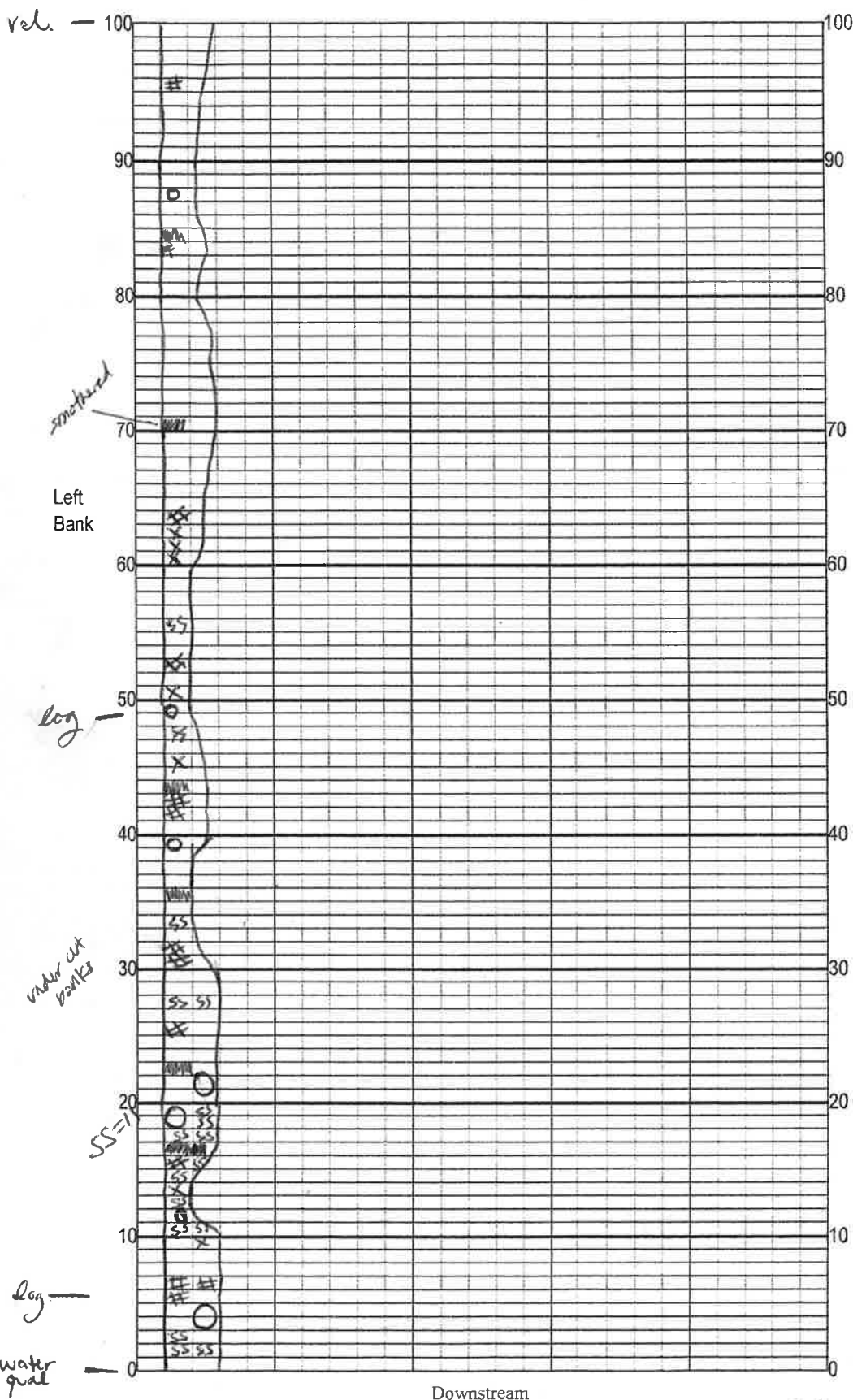
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>15</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent <u>15</u> 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>14</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 <u>14</u> 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>19</u> Primary Score <u>66</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 <u>19</u> 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>5</u> Left Bank <u>5</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. <u>5</u> 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m <u>road</u> <u>8</u> 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>9</u> Left Bank <u>10</u> Secondary Score <u>67</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. <u>10</u> <u>9</u>	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

133

TOTAL SCORE

Date: <u>12-14-12</u>	Analyst: <u>Efrain Tevaroz</u> <u>Meagan Pitts</u>	Signature:
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Three lake Creek
Date: 10/14/12
Sampler: E. Tavaréz / M. Putts

100 m: Latitude N 21.168357°
Longitude W 082.36996
0 m: Latitude N 29.68298°
Longitude W 082.37021°

Substrates: Code key, draw proportionate habitat abundance. %

☒ WW	Snags	7	5%
☒ SS	Roots/undercut banks	7	10%
☒ #	Leaf Packs (or mats)	80	19%
☐	Aquatic Macrophytes		
☒ X	Pebbles/Rocks	7	5%
☐			
☒ O	Pools		
		total # observed =	87
		# range expected =	

Average width 1.5 m
Average depth 0.05 m

Velocity measured at 100 meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Virginia creeper
Chamaelirium
Taro
Red maple
Elm-sweet gum
Quercus virginiana
Smilax
loblolly pine
Violet
Iris
Coral ardisia
magnolia

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale. draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELES

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 1-10-2013 TIME: 1030
 SITE NAME: Turnblin Creek SAMPLE COMPLETE? yes
 FIELD ID/NAME: Turn 14 RECEIVING BODY OF WATER: Bivens arm lake

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): 53% 2%
 Forest/Natural 10% silviculture 0 Field/Pasture 0 Agricultural 0 Residential 44% Commercial 45% Industry 4 Other (Specify) _____
 Local Watershed Erosion (select one): ☐ None ☒ Slight ☒ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☒ Moderate ☐ Heavy
 Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: 18m Right Bank: 10
 High Water Mark: 1.5 + 0.5 = 1.05 Artificially Impounded ☐ Yes ☒ No
 (m) (above present water level) (present depth) (above bed)
 Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe
 Canopy Cover %: ☐ Open ☒ Lightly Shaded (11-45%)
☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
13 15 20
0.08 m/s 0.07 m/s 0.05 m/s
0.15 m deep 0.15 m deep 0.15 m deep

SEDIMENT / SUBSTRATE

Sediment Oils
☒ Absent ☐ Slight
☐ Moderate ☐ Profuse

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

Sediment Deposition
☐ Sludge Sand Smothering: ☐ None ☒ Slight ☒ Moderate ☐ Severe
 Silt Smothering: ☐ None ☒ Slight ☒ Moderate ☐ Severe
☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon
☐ LCI ☐ LVI INVERT PERI
 % Coverage # Times Sampled # Times Sampled
 Woody Debris (Snags) 2.5 4 _____
 Undercut Banks / Roots 5.2 4 _____
 Leaf Packs or Mat 5.6 4 _____
 Aquatic Vegetation 0.0 _____
 Rock or Shell Rubble.. 8.4 4 _____
 Sand..... 78.3 4 _____
 Mud / Muck / Silt _____
 Other _____
 Other _____

WATER QUALITY
 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M)
 Top: _____ _____ _____ _____ _____ _____ 0.3
 Mid-Depth: 0.15 19.80 7.71 8.32 424 0.2 ☐ VOB
 Bottom: _____ _____ _____ _____ _____ _____ _____

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☒ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

SYSTEM TYPE ☒ Stream ☐ Lake
☐ Wetland ☐ Estuary
☐ Other (Specify): _____

Clarity
☐ Clear ☒ Slightly Turbid
☐ Turbid ☐ Opaque

Color
☐ Tannic ☐ Green (Algae)
☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

Sunny & warm

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

SAMPLING TEAM:

E. Alvarez & M. Putts

SIGNATURE:

[Signature]

DATE:

1-10-13

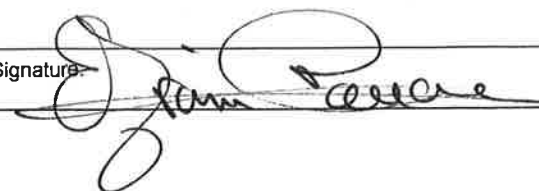
DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>1-10-2013</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Tumblin Creek</u>	FIELD ID/NAME: <u>Tum 14</u>	

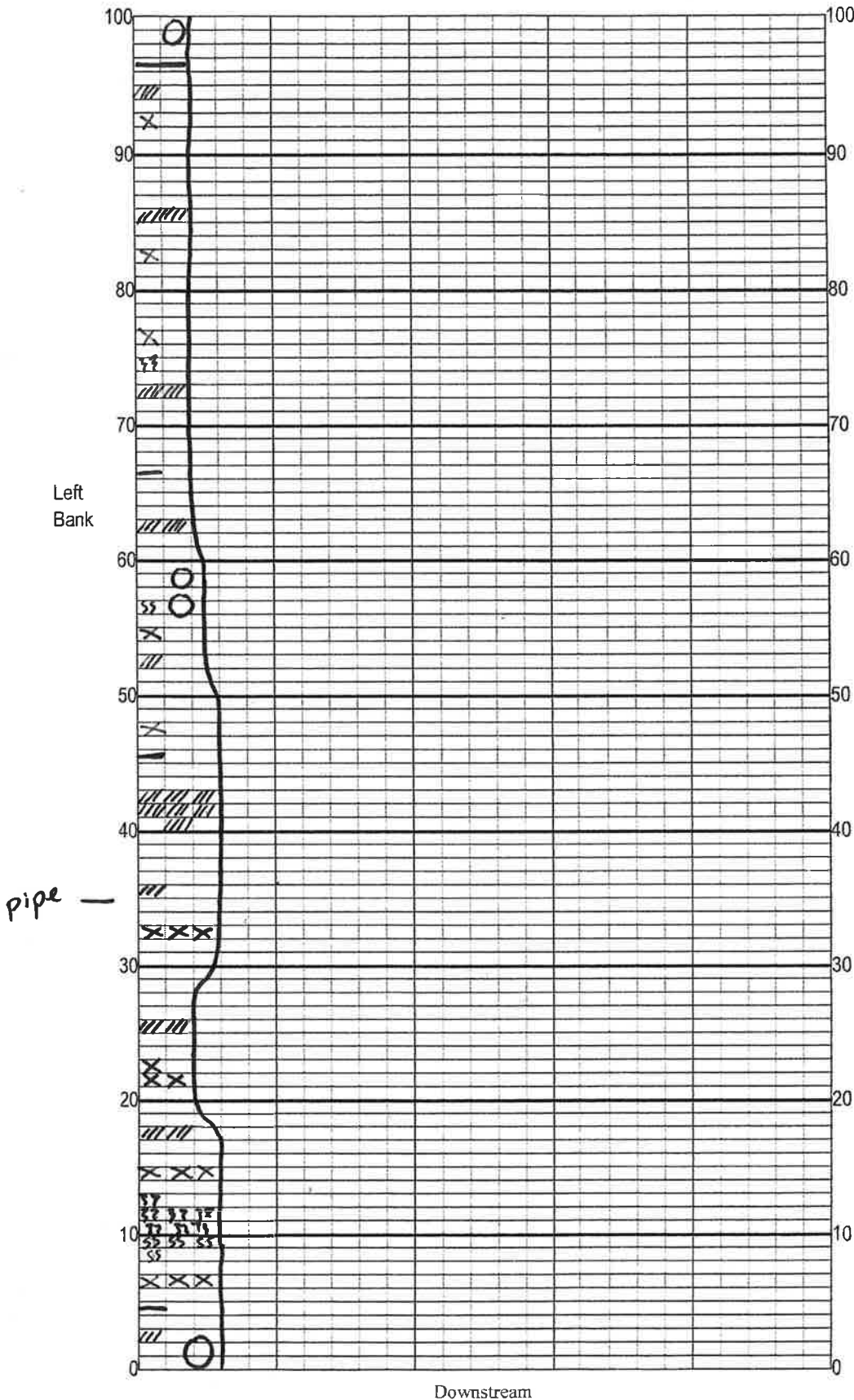
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>12</u>	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 <u>12</u> 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>9</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 <u>9</u> 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>17</u> Primary Score <u>56</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 <u>17</u> 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>5</u> Left Bank <u>5</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. <u>5</u> 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>5</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>10</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system <u>5</u> ~~4~~	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>3</u> Left Bank <u>3</u> Secondary Score <u>49</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). <u>3</u> 2 1

105

TOTAL SCORE

Date: <u>1/10/13</u>	Analyst: <u>Efrain Tavaréz</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Tum 14 (Tumblin Creek)

Date: 1/10/13

Sampler: ET / MRP

100 m: Latitude N 29.63881°
Longitude W 082.33805°

0 m: Latitude N 29.63809°
Longitude W 082.33825°

Substrates: Code key, draw proportionate habitat abundance. %

Snags (5) 2.5

Roots/undercut banks (13) 5.2

Leaf Packs (or mats) (14) 5.6

Aquatic Macrophytes (~~21~~) 0

Rocks (21) 8.4

Pools total # observed = 4
range expected = 4

Average width 2.5 m

Average depth 0.15 m

Velocity measured at 1.07 meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Japanese climbing fern
loblolly pine
cherry laurel
sweet gum
laurel oak
Betula nigra
Red cedar
Sugarberry
Smilax
Catclaw
loguout
Palmetto
white oak

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

ELFS

SAMPLE ID: _____ ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 2/7/13 TIME: 1330

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Tumblin Creek

SAMPLE COMPLETE? yes

FIELD ID/NAME: TomlWd RECEIVING BODY OF WATER: _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>5%</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>36%</u>	<u>54%</u>	<u>5</u>	

Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☐ Moderate ☒ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >18 Right Bank: >18

High Water Mark: 0.6 + 0.1 = 0.7
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Artificially ☒ No ☐ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>0.17</u> m/s	<u>0.17</u> m/s	<u>0.17</u> m/s
<u>0.1</u> m deep	<u>0.1</u> m deep	<u>0.1</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☒ Anaerobic ☐ Other (Specify): _____
Sediment Deposition ☐ Sludge Sand Smothering: ☐ None ☒ Slight ☐ Moderate ☒ Severe
 Silt Smothering: ☐ None ☒ Slight ☐ Moderate ☒ Severe ☐ Other (Specify): _____

SUBSTRATE TYPE
 Assessment Tool: ☒ SCI ☐ BioRecon ☐ LCI ☐ LVI
 % Coverage INVERT # Times Sampled PERI # Times Sampled

Woody Debris (Snags)	<u>6</u>		
Undercut Banks / Roots	<u>13</u>		
Leaf Packs or Mat	<u>15</u>		
Aquatic Vegetation			
Rock or Shell Rubble	<u>1</u>		
Sand	<u>57</u>		
Mud / Muck / Silt	<u>10</u>		
Other			
Other			

WATER QUALITY

Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:						<u>>0.2</u>
Mid-Depth:	<u>30.24</u>	<u>8.28</u>	<u>10.74</u>	<u>367</u>	<u>0.19</u>	☐ VOB
Bottom:						

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

Color ☐ Tannic ☐ Green (Algae) ☒ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES :

☐ The antecedent hydrologic conditions have been met to my best knowledge.
 Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

ABUNDANCE

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

SAMPLING TEAM: Efrain Tavaréz / Meagan Potts

SIGNATURE: _____

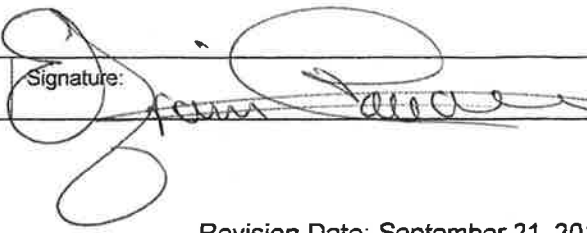
DATE: 2/7/13

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

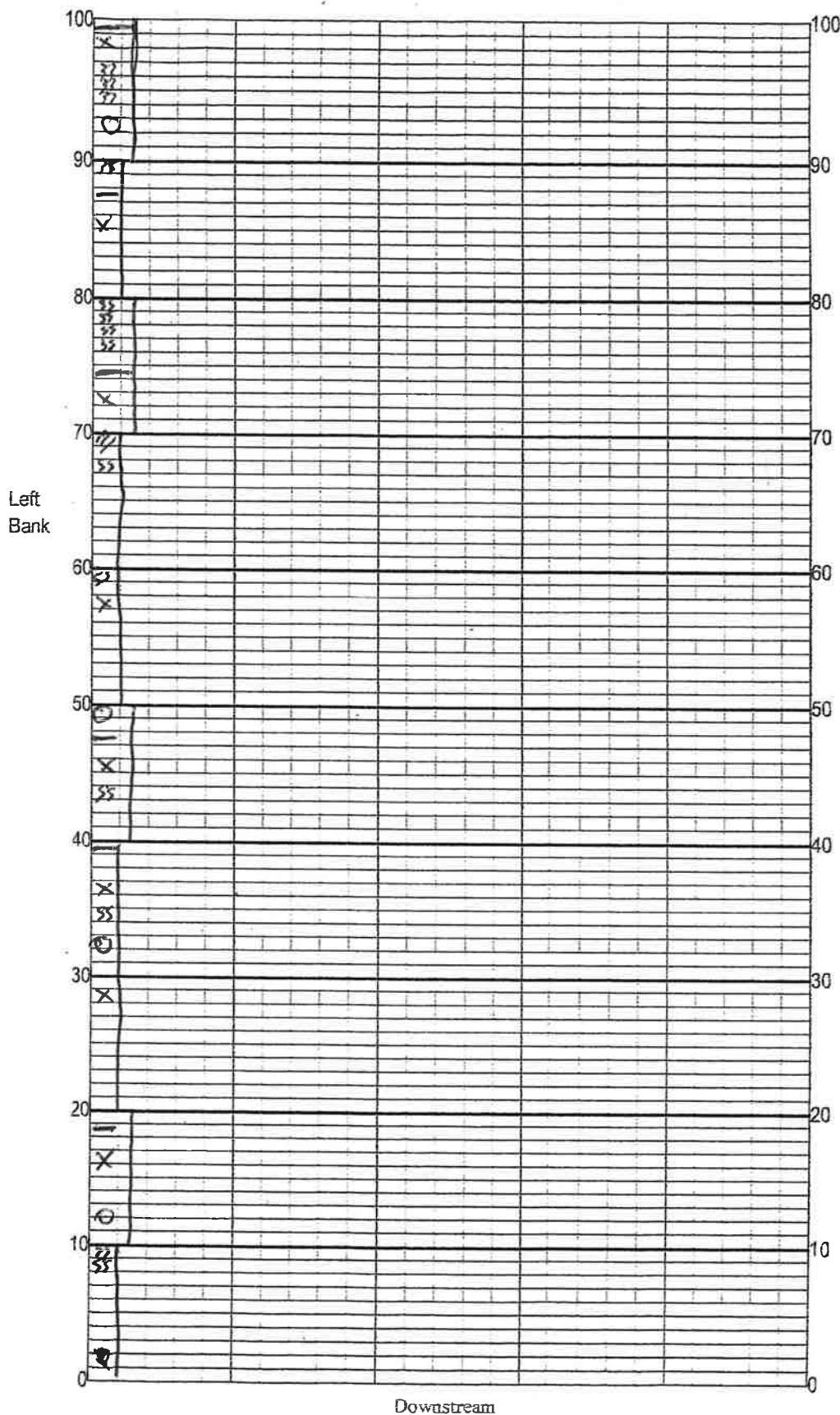
SUBMITTING AGENCY CODE: _____ SUBMITTING AGENCY NAME: _____		STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>2/7/13</u>	RECEIVING BODY OF WATER: _____
REMARKS: _____	COUNTY: <u>Alachua</u>	LOCATION: <u>Tumblin Creek</u>		FIELD ID/NAME: <u>TumWd</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock]	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>13</u>	20 19 18 17 16	15 14 <u>(13)</u> 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>18</u>	Greater than 30% productive habitat present at site 20 19 <u>(18)</u> 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity <u>13</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: > 0.1 to 0.25 m/sec 15 14 <u>(13)</u> 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering <u>10</u> ----- Primary Score <u>54</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). <u>(10)</u> 9 8 7 6	Stable pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components	Good sinuosity. No evidence of dredging or artificial straightening. No spoil banks. Diversity of depths.	Good sinuosity within old channelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered.	Some sinuosity developed within channelized area or some diversity of depth, but typically no pools (>2 times prevailing depth) present.	Straightened with spoil banks. Box-cut, monotypic depth.
Artificial Channelization <u>17</u>	20 19 18 <u>(17)</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>7</u> Left Bank <u>7</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60°. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 <u>(7)</u> 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u>	Width of vegetation greater than 18 m <u>(10)</u> 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>5</u> Left Bank <u>5</u> ----- Secondary Score <u>61</u>	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. <u>(5)</u> 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

115 **TOTAL SCORE**

Date: <u>2/7/13</u>	Analyst: <u>Efrain Tovar</u>	Signature: 
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DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Tom Wal

Date: 2/7/13

Sampler: ET/MP

100 m. Latitude N29.62995°
Longitude W082.34313°

0 m. Latitude N29.62955°
Longitude W082.34349°

Substrates: Code key, draw proportionate habitat abundance. %

	Snags	7	<u>6</u>
	Roots/undercut banks	13	<u>11</u>
	Leaf Packs (or mats)	8	<u>15</u>
	Aquatic Macrophytes	0	<u>0</u>
	Rocks	1	<u>1</u>
	Pools	total # observed = <u>4</u> # range expected = <u> </u>	

Average width 185 m

Average depth m

Velocity measured at 100 meter mark.

WQ & chemistry taken at 95 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Acer negundo
Sabal palmetto
Carya glabra
Smilax sp.
Pinus taeda
Toxicodendron radicans
Sambucus canadensis
Acer rubrum
Taro
Tradescantia fluminensis
Ruellia brittoniana
Dioscorea bulbifera

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-3
PHYSICAL/CHEMICAL CHARACTERIZATION ELECTRONIC FIELD SHEET

EL-3

SAMPLE ID: Turkey Creek ORG ID: _____
 COUNTY: Alachua STORET #: _____
 DATE: 1/21/2015 TIME: 1330

Latitude: _____ Longitude: _____
 (degrees) (minutes) (seconds) (degrees) (minutes) (seconds)

SITE NAME: Turkey Creek in Turkey Creek hammock Preserve SAMPLE COMPLETE? yes
 FIELD ID/NAME: Turkey Creek RECEIVING BODY OF WATER: Aquifer via split Rock
and San Felasco

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

Forest/Natural	silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)
<u>42</u>	<u>16</u>	<u>9</u>	<u>5</u>	<u>13</u>	<u>6</u>	<u>9</u>	

Local Watershed Erosion (select one): ☐ None ☐ Slight ☒ Moderate ☐ Heavy
 Local Watershed NPS Pollution: ☒ No evidence ☒ Slight ☐ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
 Left Bank: >15 Right Bank: >15

High Water Mark: 0.9 + 0.3 = 1.2
 (m) (above present water level) (present depth) (above bed)

Artificially Impounded: ☐ Yes ☒ No

Artificially: ☐ No ☒ Mostly recovered, more sinuous
 Channelized: ☐ Some recovery ☐ Recent, severe

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

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

<u>2.0</u> m wide		
<u>0.22</u> m/s	<u>0.25</u> m/s	<u>0.22</u> m/s
<u>4.5</u> m deep	<u>4.0</u> m deep	<u>4.5</u> m deep
<u>0.1</u> m deep	<u>0.1</u> m deep	<u>0.1</u> m deep

SEDIMENT / SUBSTRATE

Sediment Oils: ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify): _____
Sediment Deposition: ☐ Sludge Sand Smothering: ☐ None ☒ Slight ☐ Moderate ☐ Severe
 Silt Smothering: ☐ None ☒ Slight ☒ Moderate ☐ Severe

SUBSTRATE TYPE: Assessment Tool: ☐ SCI ☒ BioRecon
☐ LCI ☐ LVI ☐ INVERT ☐ PERI
 % Coverage # Times Sampled # Times Sampled

Woody Debris (Snags)	<u>1.5</u>	<u>1.33</u>	
Undercut Banks / Roots	<u>6</u>	<u>1.33</u>	
Leaf Packs or Mat	<u>3.5</u>	<u>1.33</u>	
Aquatic Vegetation			
Rock or Shell Rubble			
Sand	<u>80</u>	<u>-</u>	
Mud / Muck / Silt	<u>9</u>	<u>-</u>	
Other			
Other			

WATER QUALITY: Depth (M) Temp (°C) pH (SU) D.O. (MG/L) Cond (UMHO/CM) Salinity (PPT) SECCHI (M)

Top:							<u>0.3</u>
Mid-Depth:	<u>0.15</u>	<u>14.16</u>	<u>6.81</u>	<u>10.80</u>	<u>286</u>	<u>0.14</u>	☒ VOB
Bottom:							

Water Surface Oils: ☒ None ☐ Sheen ☐ Globbs ☐ Slick
 Water Odors: ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical
☐ Other (Specify): _____

Water Sample Taken? ☐ Yes ☒ No
 Algae Sample Taken? ☐ Yes ☒ No

Clarity: ☒ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque
 Color: ☒ Tannic ☐ Green (Algae) ☐ Clear ☐ Other (Specify): _____

WEATHER CONDITIONS / NOTES:

Sunny & cool

ABUNDANCE

Absent Rare Common Abundant

Periphyton:	☒	☐	☐	☐
Fish:	☐	☒	☐	☐
Aquatic Macrophytes:	☒	☐	☐	☐
Iron/Sulfur Bacteria:	☒	☐	☐	☐

☒ The antecedent hydrologic conditions have been met to my best knowledge.

Water samples preserved? ☐ Yes ☐ pH<2 ☐ No Algae samples preserved? ☐ Yes ☐ No

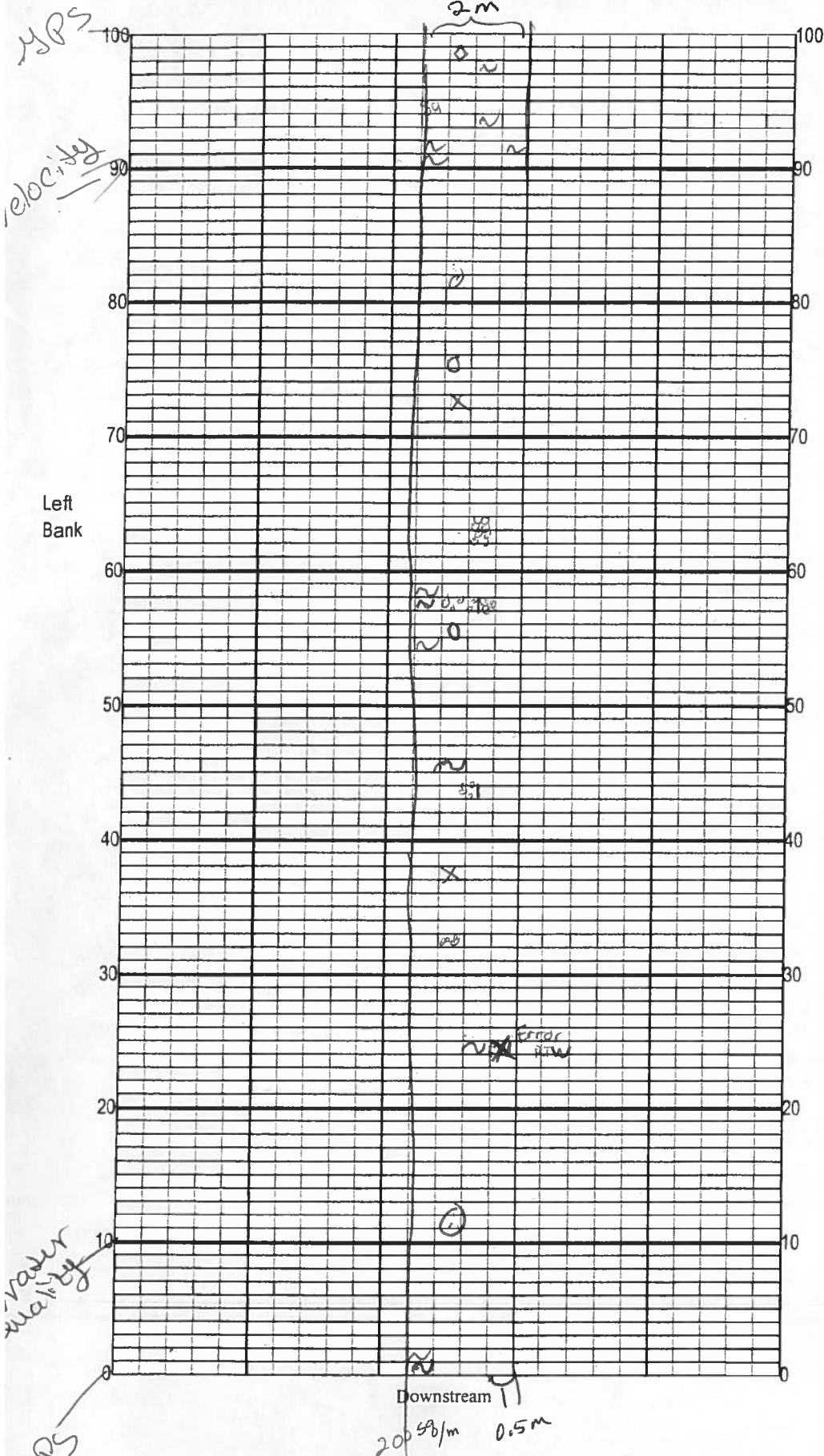
SAMPLING TEAM:

E. Tavaraz & R. Willems

SIGNATURE: _____

DATE: 1/21/2015

DEP-SOP-001/01 Form FD 9000-4
Stream/River Habitat Sketch Sheet



Location: Turkey Creek
Date: 1/21/2015
Sampler: ET/RW

100 m: Latitude 29.74791°
Longitude 082.41059°
0 m: Latitude 29.74879°
Longitude 082.41096°

Substrates: Code key, draw proportionate habitat abundance.		%
☒ X	Snags	<u>1.5</u>
☒ ~	Roots/undercut banks	<u>6</u>
☒ %%	Leaf Packs (or mats)	<u>3.5</u>
☐	Aquatic Macrophytes	<u> </u>
☒ ◇	<u>Pebbles</u>	<u> </u>
☐	<u> </u>	<u> </u>
☒ ○	Pools	total # observed = <u>4</u> # range expected = <u>5</u>

Average width 2.0 m

Average depth 0.3 m

Velocity measured at 90 meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Sweet gum
Florida maple
Swamp chestnut
Carpinus caroliniana
Water oak
Cypress
Slash pine - only exotic -
all others removed
bamboo

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Revision Date: June 2, 2011

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: _____	STORET STATION NUMBER: _____	DATE (MM/DD/YY): <u>1/22/2015</u>	RECEIVING BODY OF WATER: <u>Agua de San Felipe</u>
SUBMITTING AGENCY NAME: _____		FIELD ID/NAME: <u>Turkey Creek</u>	
REMARKS: _____		COUNTY: <u>Alachua</u>	LOCATION: <u>Turkey Creek Hammock Preserve</u>

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability <u>8</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 <u>8</u> 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>16</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 17 <u>16</u>	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>14</u> ----- Primary Score <u>51</u>	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 <u>14</u> 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>14</u>	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas.	Only meets 2 of the 3 requirements for optimal bank stability.	Only meets 1 of the 3 requirements for optimal bank stability.	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas.
Right Bank <u>5</u> Left Bank <u>5</u>	10 9	8 7 6	<u>5</u> 4	3 2 1
Riparian Buffer Zone Width	Width of vegetation greater than 18 m	Width of vegetation >12 to 18m	Width of vegetation 6 to 12 m. human activities close to system	Less than 6 m of buffer zone due to intensive human activities
Right Bank <u>10</u> Left Bank <u>10</u>	<u>10</u> 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance.	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed.	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious.	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions).
Right Bank <u>10</u> Left Bank <u>10</u> ----- Secondary Score <u>64</u>	<u>10</u> 9	8 7 6	5 4	3 2 1

115 TOTAL SCORE

Date: <u>1/21/2015</u>	Analyst: <u>Efrain Ibarra</u>	Signature: <u>[Signature]</u>
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DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID Turkey Creek ORG ID _____ LATITUDE 29.75855 100 meter
 COUNTY Alachua STORET # _____ LONGITUDE 082.422345 mark
 DATE 12/16/14 TIME 1400 SAMPLING AGENCY Water & Air
 SITE NAME Turkey Creek at NW 71st Way
 FIELD ID/NAME Turkey Creek 71 RECEIVING BODY OF WATER Aquifer via Sink in Split Rock San Felasco

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural <u>42</u> Silviculture <u>14</u> Field/Pasture <u>9</u> Agricultural <u>5</u> Residential <u>13</u> Commercial <u>6</u> Industry <u>9</u> Other (Specify) _____								Landscape Development Intensity Index (LDI) _____
Local Watershed Erosion (select one): ☐ None ☒ Slight ☐ Moderate ☐ Heavy				Typical Width (m) <u>2.4</u> Depth (m) _____ Velocity (m/sec) _____ Transect _____				
Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☒ Moderate ☐ Heavy				Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>20</u> Right Bank: <u>20</u> <u>upstream</u>				
Hydrologic Modification Score (per FT 3101) _____				High Water Mark: <u>0.5</u> + <u>0.1</u> = <u>0.6</u> (m) (above present water level) (present depth) (above bed)				
Artificially Impounded ☐ Yes ☒ No				Canopy Cover % ☐ Open ☒ Lightly Shaded (11-45%) ☐ Heavily Shaded ☐ Moderate Shaded (46-80%)				
Artificially ☒ No ☐ Mostly recovered, more sinuous Channelized: ☐ Some recovery ☐ Recent, severe								

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse		Sediment Odors ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify): _____		Smothering of Substrates Sand Smothering: None ☐ Slight ☐ Moderate ☒ Severe ☐ Silt Smothering: None ☐ Slight ☒ Moderate ☐ Severe ☐ Algae Smothering: None ☐ Slight ☒ Moderate ☐ Severe ☐	
SUBSTRATE TYPE Assessment Tool: ☒ SCI ☐ RPS ☐ LVS ☐ LCI ☐ BioRecon		WATER QUALITY Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) D.O. Sat (%) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M) Top: _____ Mid: <u>.04</u> <u>15.48</u> <u>6.91</u> <u>9.77</u> <u>98.0</u> <u>262</u> ☒ VOB Bottom: <u>0.08</u> _____ Meter ID: <u>YS105-000 07C1267AA</u> <u>0.08</u>			
Woody Debris (Snags) <u>3.4</u> <u>7</u> Undercut Banks / Roots <u>21</u> Leaf Packs or Mat <u>129</u> <u>7</u> Aquatic Vegetation <u>0</u> Rock or Shell Rubble.. <u>21</u> <u>6</u> Sand..... <u>82</u> <u>6</u> Mud / Muck / Silt Other <u>epi-sammic</u> <u>21</u> Other		Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐ Water Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☒ No Lot Number: _____ Exp: _____		Water Surface Oils Normal ☐ Sheen ☒ Globbs ☐ Slick ☐ Other ☐ <u>decomposing leaves</u> Color Tannic ☒ Green (Algae) ☐ <u>Slight</u> Clear ☒ Other (Specify) _____	
ABUNDANCE Not Obs. Rare Common Abundant Periphyton: ☐ ☐ ☒ ☐ Fish: ☐ ☒ ☐ ☐ Aquatic Plants: ☐ ☒ ☐ ☐ Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐		System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) _____ AMBIENT FIELD CONDITIONS / NOTES: <u>Blue-green algae on sand 70's partly cloudy</u> <u>Sandy bottom Comphids Riparian buffer good except at 95-100 meter mark</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.		Clarity Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque ☐	

SAMPLING TEAM

Laura Line, Laura Badinger

SIGNATURE:

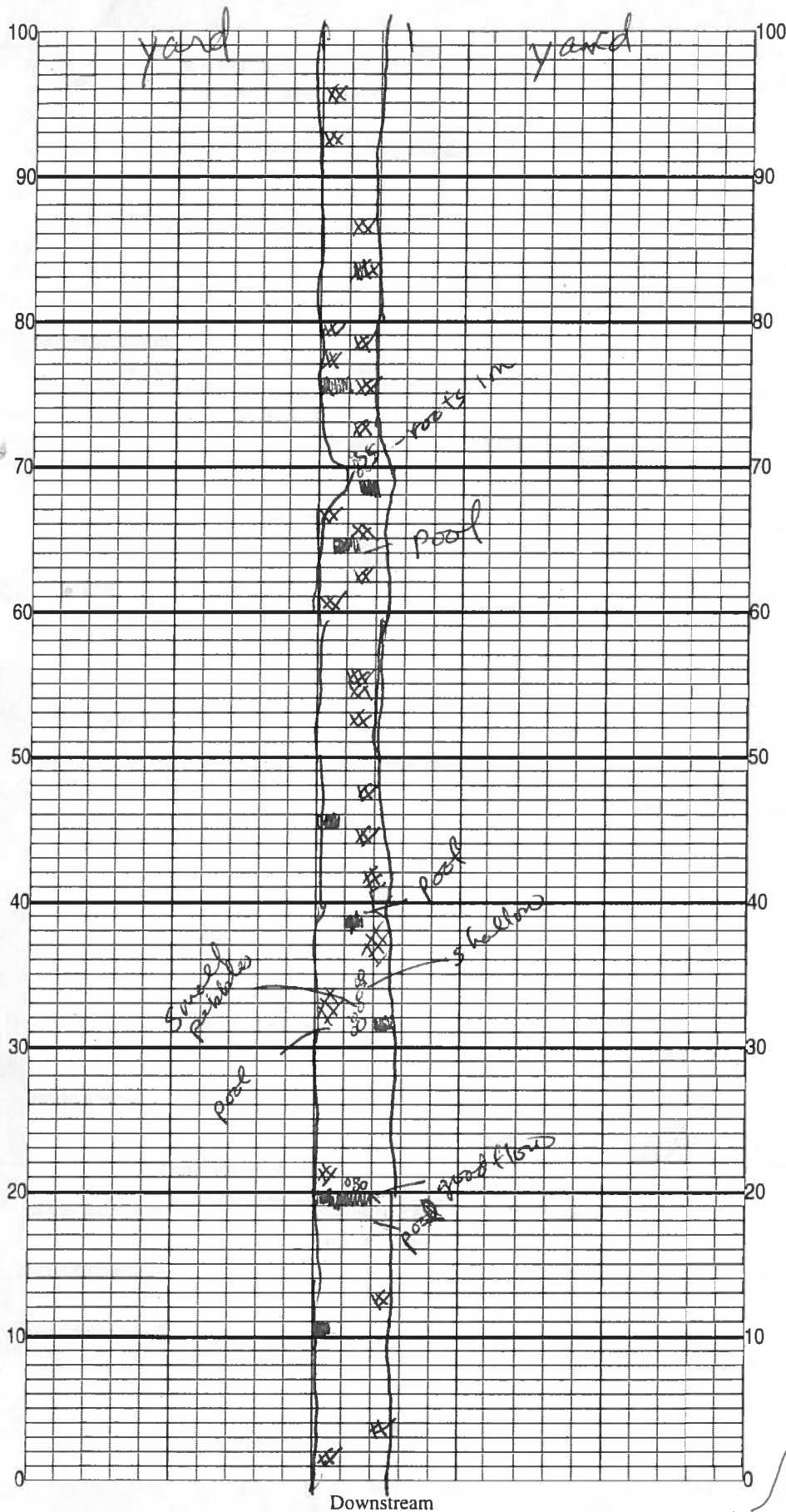
Laura Line

DATE:

12/16/14

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet

Left Bank



Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

Location: 11401 NW 71st Way
Turkey Creek
Date: 12/16/14
Sampler: L. Line/L. Beelinger

100 m: Latitude 29.75855
Longitude 082.42235
0 m: Latitude 29.75889
Longitude 082.42310

Substrates: Code key, draw proportionate habitat abundance.	%
Snags	<u>3.6%</u>
~~roots~~ 1m Roots/undercut banks	<u><1</u>
Leaf Packs (or mats)	<u>12%</u>
Aquatic Macrophytes	_____
<u>sand</u>	_____
<u>small, pebbles</u> <u>stones - minor</u>	_____
Pools	total # observed = _____ # range expected = _____

Average width 2.25 m
Average depth 0.08 m

Velocity measured at 90 meter mark.

WQ & chemistry taken at 100 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

Nyssa @ 100 m (Florida myrtle)
Sweet gum woodwardia
swamp chestnut oak virginica
cypress all along duckweed
Arundinaria tecta - bamboo
Tradescantia - exotic water oak
good roots out of water
filamentous algae violet
ironwood Carpinus caroliniana
ground cover on rt bank

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY): 12/16/14	RECEIVING BODY OF WATER: Split Rock Sink in San Francisco
REMARKS:	COUNTY: Alachua	LOCATION: 11401 NW 71st Way Turkey Creek off Creek Dr.		FIELD ID/NAME: Turkey Cr. 71

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock)	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1
Substrate Availability <u>11</u>	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 <u>11</u>	6% to 15% major productive habitat 10 9 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>17</u>	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 20 19 18 <u>17</u> 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering <u>13</u> ----- Primary Score <u>54</u> ✓	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 <u>18</u> 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 <u>13</u> 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks.	Good sinuosity within old channelized area. Evidence of dredging in the past (>25 yrs) but mostly recovered.	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area.	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks.
Artificial Channelization <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability Right Bank <u>7</u> Left Bank <u>7</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 <u>7</u> 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>9</u> Left Bank <u>9</u>	Width of vegetation greater than 18 m 10 <u>9</u>	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank <u>7</u> Left Bank <u>7</u> ----- Secondary Score <u>66</u> ✓	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 <u>7</u> 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

117 TOTAL SCORE

Date: 12/16/14	Analyst: Laura Line	Signature: <i>Laura Line</i>
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Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog16	Hog45	HogSink	LHTNB	LHTNB	LFC329B	LtLchCrk	LchCrk	Mntry38
Sample Type	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI
Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Ablabesmyia mallochi	-	1	2	8	5	2	1	-	-	-	3	1	-	4
Ablabesmyia rhamphe group Epler	1	-	-	-	1	-	-	-	-	-	-	-	-	-
Ablabesmyia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Acariformes (LPIL)	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Acentrella	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acentrella alachua	-	-	-	-	-	2	-	4	3	1	1	-	-	2
Aeshnidae (LPIL)	-	1	1	-	-	-	-	-	-	-	-	1	-	1
Ancylidae	-	-	-	-	25	-	-	-	-	-	-	-	-	-
Ancyronyx variegatus	-	-	-	-	-	-	-	-	6	5	-	-	-	3
Argia sedula	-	-	5	-	-	-	-	-	-	-	-	-	-	-
Argia sp.	-	-	8	3	4	-	6	-	3	-	-	-	-	-
Argia tibialis	-	-	1	2	7	17	15	1	-	-	-	-	-	12
Atrichopogon sp.	-	1	1	-	-	-	1	1	-	-	1	3	-	1
Aulodrilus pigueti	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Baetidae	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Belostoma lutarium	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belostoma testaceum	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Belostomatidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Bezzia-Palpomysia complex Brigham	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Bivalvia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boyeria vinosa	-	-	-	-	-	-	-	-	-	7	-	-	-	-
Brachyremna sp.	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Bratislavia unidentata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caecidotea sp.	55	-	-	-	-	-	-	-	-	-	2	47	-	-
Caenis diminuta	-	-	-	-	-	-	-	-	-	14	19	-	-	-
Caenis sp.	-	-	-	-	-	1	-	1	-	-	-	-	-	-
Calopterygidae (LPIL)	-	1	-	-	-	-	2	-	-	-	-	-	-	-
Calopteryx dimidiata	-	-	1	-	-	4	-	-	-	1	-	-	-	3
Calopteryx maculata	-	-	-	6	7	-	-	-	-	-	-	-	-	2
Calopteryx sp.	-	1	1	-	-	2	1	-	1	-	-	-	-	-
Cambaridae (LPIL)	-	-	-	-	1	-	-	-	-	-	-	8	-	-
Cecidomyiidae (LPIL)	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Ceratopogonidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cernotina sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chauliodes rastricornis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chauliodes sp.	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chelorchestia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheumatopsyche sp.	9	59	13	19	28	7	15	54	44	15	1	-	41	44
Chimarra sp.	-	-	-	-	24	-	1	-	-	-	-	-	5	-
Chironomidae (LPIL)	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Chironomus sp.	1	-	1	-	-	-	-	-	-	-	-	3	-	-
Choroterpes basalis	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Cladotanytarsus sp. I Epler	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Clinotanypus sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Coleoptera (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Collembola (LPIL)	-	1	-	-	2	-	2	-	-	-	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

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Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog16	Hog45	HogSink	LHTNB	LHTNB	LFC329B	LtLchCrk	LchCrk	Mntry38
Sample Type	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI
Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Conchapelopia sp.	15	-	-	-	-	-	-	-	-	-	-	-	-	-
Corbicula fluminea	-	-	9	2	-	-	6	2	2	3	-	-	-	-
Corbicula sp.	-	-	-	-	-	-	3	-	-	-	-	-	-	-
Corydalis cornutus	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Corynoneura lobata	-	-	3	-	-	-	-	-	-	-	4	-	-	-
Corynoneura sp.	-	3	4	2	-	1	-	1	-	-	6	1	-	-
Corynoneura sp. G Epler	-	-	-	3	-	-	-	-	-	-	-	-	-	-
Crambidae (LPIL)	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Crangonyx sp.	1	-	-	-	14	-	-	-	-	-	-	46	2	-
Cricotopus bicinctus group Epler	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Cryptochironomus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Culex sp.	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Cyphon sp.	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Cyrnellus fraternus	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Dero digitata complex Milligan	1	-	-	-	1	-	-	-	-	-	-	21	-	-
Dero pectinata	1	-	-	-	-	-	-	-	-	-	-	1	-	-
Dero sp.	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Dero vaga	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Desmopachria sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Desserobdella phalera	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes neomodestus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes simpsoni	10	-	-	-	-	-	-	-	-	-	-	24	-	-
Dineutus carolinus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dineutus sp.	-	-	-	-	-	-	-	-	-	4	-	-	3	-
Djalmabatista pulchra variant Epler	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dolichopodidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dromogomphus armatus	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Dryopidae (LPIL)	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Dubiraphia vittata	-	-	-	-	-	2	15	8	1	-	4	-	-	2
Dytiscidae (LPIL)	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Eclipidrilus palustris	-	-	1	-	20	-	-	-	-	-	-	-	-	-
Eclipidrilus sp.	1	1	-	-	-	-	-	-	-	-	-	-	3	1
Enallagma cardenium	1	-	-	-	-	-	3	-	-	3	2	-	-	-
Enallagma divagans	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enallagma signatum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enallagma sp.	-	-	-	-	-	-	-	2	4	-	-	-	-	-
Enchytraeidae (LPIL)	-	-	-	-	3	-	-	-	-	-	-	1	1	-
Endochironomus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurylophella doris	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Ferrissia fragilis	-	-	-	2	-	-	-	-	-	-	11	31	22	2
Galba cubensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glossiphoniidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Glyptotendipes	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glyptotendipes meridionalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goeldichironomus carus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goeldichironomus sp.	1	-	-	-	-	-	-	-	-	-	-	-	-	-

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Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Gomphidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haemonais waldvogeli	-	-	-	-	-	-	-	-	-	-	-	3	-	-
Hagenius brevistylis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hebetancylus excentricus	-	-	-	10	-	-	6	-	-	-	-	-	-	-
Helichus fastigiatus	-	-	-	-	-	-	-	-	3	-	-	-	-	-
Helichus lithophilus	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Helichus sp.	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helochares sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hemerodromia sp.	-	1	16	2	2	2	-	-	-	-	-	-	-	1
Hetaerina titia	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Hirudinea (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hyalella azteca complex LeCroy	-	-	1	-	-	1	-	28	2	-	-	-	-	-
Hydra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocanthus sp.	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochara sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrodromia sp.	-	-	-	-	11	-	-	-	-	-	-	-	-	-
Hydropsyche decalda	-	-	-	-	28	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL)	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Hydroptila sp.	-	-	-	-	-	-	-	5	-	-	-	-	-	-
Hydrovatus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hygrobatas sp.	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Ischnura posita	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Ischnura ramburii	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnura sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Labiobaetis ephippiatus	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Labiobaetis frondalis	-	-	-	-	-	-	-	6	-	-	-	-	2	-
Labiobaetis propinquus	-	1	3	3	-	8	-	5	1	6	-	-	-	5
Labrundinia pilosella	-	-	2	2	-	2	2	2	-	-	3	-	-	1
Labrundinia sp.	-	-	-	2	-	-	-	-	-	-	-	3	-	-
Laevapex fuscus	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Larsia decolorata	2	-	-	-	-	-	-	-	-	-	-	1	-	-
Lepidoptera	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptoceridae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Libellula auripennis	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Libellula incesta	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Libellula semifasciata	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Libellula sp.	-	-	-	-	-	-	-	-	-	-	-	13	-	-
Limnodrilus hoffmeisteri	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnophila sp.	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Limonia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limoniinae (LPIL)	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Lopescladius sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lumbriculidae (LPIL)	-	-	-	-	-	-	-	-	-	2	-	1	-	-
Lumbriculus sp.	11	1	-	-	-	-	-	-	-	-	-	-	1	-

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Lymnaeidae (LPIL)	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Maccaffertium smithae	-	39	-	20	18	27	52	17	56	15	-	-	126	2
Macromia sp.	-	-	-	-	2	-	-	-	-	1	-	-	-	-
Macronychus glabratus	-	-	5	-	-	1	1	1	-	-	-	-	-	-
Megascolecidae (LPIL)	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Melanoides sp.	-	-	-	15	-	-	8	-	-	-	-	-	-	-
Melanoides turricula	-	-	18	-	-	-	6	-	-	-	-	-	-	-
Mesovelia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microcylloepus pusillus	-	4	23	26	1	37	77	1	46	6	15	-	-	55
Micromenetus dilatatus	-	1	-	33	-	-	5	3	-	-	-	1	2	-
Micromenetus floridensis	-	-	-	-	-	-	-	-	-	-	-	-	8	-
Micromenetus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microvelia sp.	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Mideopsis sp.	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Mooreobdella sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mooreobdella tetragon	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Myxosargus sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Naididae (LPIL)	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Naidinae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais communis	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Nais communis complex Milligan	-	-	-	-	1	-	-	1	3	-	1	-	1	3
Nais pardalis	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Nais sp.	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Nanocladius crassicornus/cf. rectinervis Epler	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nanocladius sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nectopsyche sp.	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Neoporus clypealis	-	-	-	-	-	-	11	-	-	-	-	-	-	-
Neoporus sp.	-	-	-	3	2	-	-	-	-	-	-	-	-	-
Neurocordulia virginienensis	-	-	-	-	4	-	-	-	-	-	-	-	-	-
Notonecta irrorata	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Odontomyia sp.	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Oecetis cinerascens	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Oecetis georgia	-	-	4	-	-	-	-	-	3	-	-	-	-	-
Oecetis inconspicua complex Pescador	-	-	-	-	1	-	-	-	-	-	-	3	-	-
Oecetis nocturna	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Oecetis persimilis	-	-	-	-	-	-	-	-	-	9	-	-	-	-
Oecetis sp.	-	1	-	-	1	2	-	-	-	-	-	-	-	-
Oligochaeta (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthoclaadiinae (LPIL)	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Orthotrichia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Palaemonetes paludosus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus carinatus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus tenuicaudatus complex Epler	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma nereis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paramerina sp.	-	-	-	7	-	-	-	-	-	-	-	-	-	2

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog16	Hog45	HogSink	LHTNB	LHTNB	LFC329B	LtLchCrk	LchCrk	Mntry38
Sample Type	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI
Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Parametriochnemus sp.	-	2	2	1	-	-	1	-	-	-	-	-	-	1
Paraphaenocladus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parapoynx sp.	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus dissimilis	52	-	3	1	-	-	1	-	-	-	106	-	-	5
Paratanytarsus sp.	-	-	-	1	-	1	-	1	-	-	-	-	-	1
Peltodytes sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentaneura inconspicua	-	3	15	2	-	11	2	-	-	-	5	-	-	5
Pericoma sp.	-	-	1	-	-	1	-	-	-	-	-	-	-	-
Physa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physella cubensis	-	-	-	23	-	-	1	-	-	-	-	-	1	-
Physella sp.	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Physidae (LPIL)	-	-	-	-	-	-	3	-	-	-	-	-	-	-
Pisidium casertanum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pisidium sp.	-	1	8	2	1	-	-	-	-	-	-	-	-	-
Planorbella duryi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Planorbella scalaris	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Planorbella sp.	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Planorbidae (LPIL)	-	-	1	-	-	-	-	-	-	-	6	-	-	1
Plumatella sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum aviceps	-	20	-	2	-	-	-	-	-	-	-	-	-	-
Polypedilum beckae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum fallax	-	-	1	-	-	-	-	-	-	-	1	-	-	1
Polypedilum flavum	-	1	3	25	4	14	1	84	27	-	2	-	16	47
Polypedilum halterale group Epler	-	-	1	-	-	1	-	-	-	-	-	-	-	-
Polypedilum illinoense group Epler	-	2	2	10	1	1	-	2	2	-	5	3	-	2
Polypedilum illinoense grp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum scalaenum group Epler	3	1	1	1	-	-	-	1	-	-	-	-	-	1
Polypedilum scalaenum grp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Polypedilum trigonus	1	-	-	-	2	-	-	-	-	-	-	-	-	-
Polypedilum tritum	1	-	-	-	1	1	-	-	-	-	-	1	-	-
Pomacea insularum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porifera (LPIL)	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Pristina aequisetata	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina leidy	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Pristina longisoma	3	-	-	-	4	-	-	-	-	-	-	1	-	-
Pristina sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina synclytes	-	-	-	-	2	-	-	-	-	-	-	2	-	-
Procambarus sp.	-	-	1	-	-	-	5	-	-	-	-	-	-	1
Progomphus alachuensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Progomphus obscurus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Progomphus sp.	-	-	-	-	-	1	1	-	-	1	-	-	-	-
Prostoma sp.	-	-	1	2	-	-	-	-	-	-	1	-	1	1
Psychoda sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Psychodidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ranatra buenoi	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog16	Hog45	HogSink	LHTNB	LHTNB	LFC329B	LtLchCrk	LchCrk	Mntry38
Sample Type	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI
Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Ranatra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhagovelia choreutes	-	-	-	4	-	-	2	-	-	-	-	-	-	-
Rhagovelia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Rheocricotopus robacki	-	-	3	-	-	2	-	-	-	-	-	-	-	-
Rheosmittia arcuata	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Rheosmittia sp.	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Rheotanytarsus exiguus group Epler	112	2	94	1	3	4	1	11	-	-	9	2	27	9
Rheotanytarsus exiguus grp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rheotanytarsus pellucidus	-	12	7	22	-	4	2	-	1	-	30	-	-	3
Rheotanytarsus sp.	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Saetheria sp. 1	-	-	3	-	-	-	-	-	-	-	-	-	-	-
Scathophagidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scirtes sp.	-	1	-	-	8	-	-	-	-	-	-	1	-	-
Scirtidae (LPIL)	8	-	-	-	-	-	-	-	-	-	1	-	1	-
Simulium sp.	-	117	17	16	-	118	8	41	84	1	14	-	15	42
Sisyr apicalis	-	-	-	-	-	-	-	-	-	-	-	20	-	-
Sisyr vicaria	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	2	-	1	1	-	-	2	-	-	2	1	3	-
Sminthuridae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaeriidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium striatinum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella fimbriata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stempellinella leptocelloides	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stenelmis hungerfordi	-	-	-	-	-	-	6	-	-	-	-	-	-	-
Stenelmis sp.	-	-	-	2	4	-	5	-	2	11	-	-	-	-
Stenochironomus sp.	-	-	4	-	10	-	-	-	-	-	1	3	3	2
Tabanidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsini (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus messersmithi	-	-	-	-	-	-	-	-	-	-	-	22	-	-
Tanytarsus sepp	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. A Epler	-	1	2	-	-	-	-	-	-	-	3	-	-	-
Tanytarsus sp. C Epler	-	-	-	-	-	1	1	-	-	-	2	-	-	2
Tanytarsus sp. D Epler	-	-	-	14	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. F Epler	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. G Epler	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. L Epler	-	-	-	-	1	-	1	-	-	-	8	-	1	-
Tanytarsus sp. L Epler complex	-	-	-	5	-	-	-	-	-	-	-	1	-	-
Tanytarsus sp. M Epler	7	1	2	-	-	-	-	-	-	-	-	1	5	-
Tanytarsus sp. T Epler	-	-	-	-	-	-	5	-	-	-	-	-	-	-
Tanytarsus sp. U Epler	-	-	-	-	-	16	3	-	-	-	2	-	-	12
Thienemanniella lobapodema	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Thienemanniella sp.	-	-	1	-	1	-	-	3	-	-	2	-	-	-
Thienemanniella xena	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Thienemannimyia group sp. Epler	-	1	-	1	16	3	2	-	-	-	2	5	4	2
Tipula (Nippotipula) sp.	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Tipula (Yamatotipula) sp.	-	-	-	-	-	-	4	-	-	1	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	BTCBalu	Blues71	Boulwr	Cellon	HatBBay	Hog16	Hog45	HogSink	LHTNB	LHTNB	LFC329B	LtLchCrk	LchCrk	Mntry38
Sample Type	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI
Taxon	09/09/2013	01/25/2013	01/30/2013	12/16/2014	09/19/2013	02/04/2013	12/14/2012	01/25/2013	01/15/2013	5/29/2014	01/30/2013	8/22/2014	09/09/2013	03/01/2013
Tipula sp.	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Trienodes ignitus	-	-	-	-	2	2	-	1	-	14	-	-	-	3
Trienodes sp.	-	-	-	1	-	3	-	1	1	-	-	-	-	-
Tribelos fuscicorne	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Tribelos jucundum	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Tribelos sp.	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Tribelos/Phaenopsectra group Epler	-	-	-	-	-	-	-	-	-	-	4	5	-	-
Tubificoid Naididae imm. w/ hair setae (LPIL)	-	1	-	-	-	-	-	-	-	-	1	-	-	1
Tubificoid Naididae imm. w/o hair setae (LPIL)	1	1	2	1	10	-	-	-	-	-	1	14	2	1
Turbellaria (LPIL)	-	-	5	2	-	-	1	-	-	-	-	1	-	6
Unionicola sp.	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Wormaldia moesta	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xenochironomus xenolabis	10	-	-	-	-	-	-	1	-	-	-	-	-	-
Total Number of Organisms	314	295	307	319	303	305	298	300	300	125	292	314	302	302
Total Number of Taxa	30	39	50	51	57	37	45	37	25	24	44	46	30	47

LPIL = Lowest Practical Taxonomic Level

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsrv
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Ablabesmyia mallochi	2	-	7	-	-	3	-	-	3	-	-	1	-
Ablabesmyia rhamphe group Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Ablabesmyia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Acariformes (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Acentrella	-	-	-	-	-	5	7	-	-	-	-	-	-
Acentrella alachua	-	11	-	-	-	-	-	9	2	-	-	7	-
Aeshnidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ancylidae	-	-	-	-	-	3	10	-	-	-	-	-	-
Ancyronyx variegatus	14	-	-	-	-	-	-	1	2	-	-	-	2
Argia sedula	-	2	-	-	-	-	53	2	27	33	27	-	-
Argia sp.	4	-	-	-	-	9	-	2	-	-	-	-	-
Argia tibialis	-	-	-	-	-	-	-	1	24	-	5	-	6
Atrichopogon sp.	-	1	2	-	-	3	-	-	1	-	2	-	-
Aulodrilus pigueti	-	-	-	-	-	-	-	-	-	-	-	-	-
Baetidae	-	-	-	-	-	4	-	-	-	-	-	-	-
Belostoma lutarium	-	-	-	-	6	-	-	-	-	-	-	-	-
Belostoma testaceum	-	-	-	-	-	-	-	-	-	-	-	-	-
Belomatidae (LPIL)	-	-	-	1	-	-	-	-	-	-	-	-	-
Bezzia-Palpomyia complex Brigham	-	-	-	-	-	-	-	-	-	-	-	-	-
Bivalvia	-	-	-	-	-	2	-	-	-	-	-	-	-
Boyeria vinosa	6	-	1	-	-	-	-	-	-	-	-	-	3
Brachypremna sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Bratislavia unidentata	-	-	-	1	-	-	-	-	-	-	-	-	-
Caecidotea sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Caenis diminuta	-	-	-	-	1	-	-	-	-	-	-	-	-
Caenis sp.	-	-	-	1	-	-	-	-	-	-	-	-	-
Calopterygidae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-
Calopteryx dimidiata	-	-	-	-	-	-	-	-	-	-	-	-	-
Calopteryx maculata	16	-	-	-	-	-	-	-	-	-	-	-	5
Calopteryx sp.	-	3	5	-	-	-	-	-	4	-	-	-	-
Cambaridae (LPIL)	1	1	-	-	-	-	-	-	-	2	-	-	1
Cecidomyiidae (LPIL)	1	-	-	-	-	-	-	-	-	-	-	-	-
Ceratopogonidae (LPIL)	-	-	-	2	-	-	-	-	-	-	-	-	-
Cernotina sp.	-	-	-	-	-	-	-	-	-	-	-	-	8
Chauliodes rastricornis	-	-	-	-	3	-	-	-	-	-	-	-	-
Chauliodes sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Chelorchestia	-	-	-	-	-	-	1	-	-	-	-	-	-
Cheumatopsyche sp.	9	15	22	-	15	85	36	16	60	67	45	23	15
Chimarra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Chironomidae (LPIL)	-	-	-	-	10	-	-	-	-	-	-	-	5
Chironomus sp.	-	-	-	-	-	-	-	1	5	2	-	-	-
Choroterpes basalis	-	-	-	-	-	-	-	-	-	-	-	-	-
Cladotanytarsus sp. I Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Clinotanypus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Coleoptera (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Collembola (LPIL)	1	1	1	-	-	-	-	-	-	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

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Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsr
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Conchapelopia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Corbicula fluminea	-	-	1	-	-	-	3	-	-	-	-	7	4
Corbicula sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Corydalis cornutus	1	-	-	-	-	-	-	-	-	-	-	1	1
Corynoneura lobata	-	5	2	-	-	-	-	5	5	-	-	-	-
Corynoneura sp.	-	5	6	-	-	2	-	2	2	-	4	7	-
Corynoneura sp. G Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Crambidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Cricotopus bicinctus group Epler	-	3	-	-	-	1	-	-	-	6	7	-	-
Cryptochironomus sp.	1	-	-	-	-	-	-	-	-	-	-	-	-
Culex sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyphon sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyrnellus fraternus	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero digitata complex Milligan	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero pectinata	-	-	-	-	-	-	-	-	-	-	-	-	-
Dero sp.	-	-	1	-	-	-	-	-	1	-	-	-	-
Dero vaga	-	-	-	1	-	-	-	-	-	-	-	-	-
Desmopachria sp.	-	-	-	-	1	-	-	-	-	-	-	-	-
Desserobdella phalera	-	-	-	-	2	-	-	-	-	-	-	-	-
Dicrotendipes neomodestus	-	-	-	-	-	30	28	-	-	-	-	-	-
Dicrotendipes simpsoni	-	-	-	2	-	-	-	-	-	-	-	-	-
Dineutus carolinus	-	-	-	-	5	-	-	-	-	-	-	-	-
Dineutus sp.	1	-	-	-	-	-	-	-	-	-	-	-	-
Djalmabatista pulchra variant Epler	2	-	-	-	-	-	-	-	-	-	-	-	-
Dolichopodidae (LPIL)	-	-	-	-	-	-	-	-	-	-	1	-	-
Dromogomphus armatus	-	-	-	-	-	-	-	-	-	-	-	-	-
Dryopidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Dubiraphia vittata	-	-	8	-	-	-	-	2	-	-	-	-	2
Dytiscidae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-
Eclipidrilus palustris	5	-	-	-	1	-	-	-	-	-	-	-	-
Eclipidrilus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Enallagma cardenium	-	-	2	-	-	-	-	-	-	-	-	-	-
Enallagma divagans	-	-	-	-	-	-	-	-	-	-	-	-	3
Enallagma signatum	-	-	-	-	13	-	-	-	-	-	-	-	-
Enallagma sp.	-	-	-	4	-	-	-	1	-	2	-	-	-
Enchytraeidae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-
Endochironomus sp.	-	-	-	1	-	-	-	-	-	-	-	-	-
Eurylophella doris	-	-	-	-	-	-	-	-	-	-	-	-	-
Ferrissia fragilis	-	-	-	-	-	-	-	-	-	-	-	-	-
Galba cubensis	-	-	-	-	-	-	-	-	-	1	-	-	-
Glossiphoniidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Glyptotendipes	-	-	-	-	-	1	0	-	-	-	-	-	-
Glyptotendipes meridionalis	-	-	-	39	-	-	-	-	-	-	-	-	-
Goeldichironomus carus	-	-	-	27	-	-	-	-	-	-	-	-	-
Goeldichironomus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
Data Provided by Water & Air Research, Inc. - Gainesville, Florida

Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsr
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Gomphidae (LPIL)	-	-	1	-	-	-	-	-	-	-	-	-	-
Haemonais waldvogeli	-	-	-	1	-	-	-	-	-	-	-	-	-
Hagenius brevistylis	1	-	-	-	-	-	-	-	-	-	-	-	-
Hebetancylus excentricus	-	1	3	-	-	-	-	-	-	3	-	-	-
Helichus fastigiatus	3	-	-	-	-	-	-	-	-	-	-	-	2
Helichus lithophilus	-	-	-	-	-	-	-	-	-	-	-	-	-
Helichus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis	-	-	-	7	3	-	-	-	-	-	-	-	-
Helochares sp.	-	-	-	-	1	-	-	-	-	-	-	-	-
Hemerodromia sp.	-	4	-	-	-	19	1	1	1	-	-	1	-
Hetaerina titia	-	-	-	-	-	-	-	-	-	-	-	-	-
Hirudinea (LPIL)	-	-	-	-	1	-	-	-	-	1	-	-	-
Hyalella azteca complex LeCroy	7	-	2	165	15	-	-	3	-	62	7	-	-
Hydra sp.	-	-	-	1	1	-	-	-	-	-	-	-	-
Hydrocanthus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochara sp.	-	-	-	-	-	-	-	-	-	-	-	-	1
Hydrochus sp.	-	-	-	1	-	-	-	-	-	-	-	-	-
Hydrodroma sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydropsyche decalda	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroptila sp.	-	-	-	-	-	4	1	-	-	1	-	-	-
Hydrovatus sp.	-	-	-	1	1	-	-	-	-	-	-	-	-
Hygrobatas sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ischnura posita	-	-	-	-	6	-	-	-	-	-	-	-	-
Ischnura ramburii	-	-	-	-	2	-	-	-	-	-	-	-	-
Ischnura sp.	-	-	-	6	-	-	-	-	-	-	-	-	-
Labiobaetis ephippiatus	-	-	-	-	-	-	-	-	-	-	-	-	-
Labiobaetis frondalis	-	-	-	-	-	-	-	-	-	-	-	-	1
Labiobaetis propinquus	6	3	9	-	-	-	-	17	6	-	1	10	-
Labrundinia pilosella	-	-	4	-	-	-	-	-	-	-	-	-	-
Labrundinia sp.	-	-	1	-	-	-	-	-	1	-	-	-	-
Laevapex fuscus	-	-	-	-	-	-	-	2	-	-	-	-	-
Larsia decolorata	-	-	-	-	-	-	-	-	-	-	-	-	-
Lepidoptera	-	-	-	-	-	1	0	-	-	-	-	-	-
Leptoceridae (LPIL)	-	-	2	-	-	-	-	-	-	-	-	-	-
Libellula auripennis	-	-	-	-	-	-	-	-	-	-	-	-	-
Libellula incesta	-	-	-	-	-	-	-	-	-	-	-	-	-
Libellula semifasciata	-	-	-	-	-	-	-	-	-	-	-	-	-
Libellula sp.	1	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus hoffmeisteri	5	-	-	1	-	-	-	2	-	-	-	-	-
Limnophila sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Limonia	-	-	-	-	-	0	1	-	-	-	-	-	-
Limoniinae (LPIL)	2	-	2	-	-	-	-	-	-	-	-	-	-
Lopescladius sp.	-	-	-	-	-	-	-	-	1	-	-	-	-
Lumbriculidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Lumbriculus sp.	-	-	-	-	-	-	-	-	3	-	3	-	-

Appendix B: Raw Macroinvertebrate Data

Stream Bioassessment Report, Alachua County, 2012-2014
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Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsrv
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Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Lymnaeidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Maccaffertium smithae	18	7	11	-	-	-	-	17	8	-	-	8	15
Macromia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Macronychus glabratus	26	1	-	-	-	-	-	-	5	-	-	-	-
Megascolecidae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Melanoides sp.	-	-	-	-	-	-	8	-	-	-	1	-	-
Melanoides turricula	-	-	-	-	-	-	-	-	-	34	-	-	-
Mesovelgia sp.	-	-	-	-	-	-	-	-	-	1	-	-	-
Microcyllopus pusillus	38	6	37	-	-	24	106	47	25	12	3	2	9
Micromenetus dilatatus	-	-	-	-	-	-	-	-	-	-	-	-	1
Micromenetus floridensis	-	-	-	-	-	-	-	-	-	1	-	-	-
Micromenetus sp.	-	-	-	-	-	-	-	-	-	-	-	1	-
Microvelia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Mideopsis sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Mooreobdella sp.	2	-	-	-	-	-	-	-	-	-	-	-	-
Mooreobdella tetragon	-	-	-	-	1	-	-	-	3	-	-	-	-
Myxosargus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Naididae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Naidinae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-
Nais communis	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais communis complex Milligan	1	6	1	-	-	-	-	1	-	-	-	-	-
Nais pardalis	-	-	-	-	-	-	-	1	-	-	-	-	-
Nais sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Nanocladius crassicornus/cf. rectinervis Epler	-	-	2	1	-	-	-	-	-	-	-	-	-
Nanocladius sp.	-	-	-	-	-	-	-	-	-	-	1	-	-
Nectopsyche sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Neoporus clypealis	-	-	-	-	-	-	-	-	-	-	-	-	-
Neoporus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Neurocordulia virginienensis	-	-	-	-	-	-	-	-	-	-	-	-	-
Notonecta irrorata	-	-	-	-	-	-	-	-	-	-	-	-	-
Odontomyia sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis cinerascens	-	-	-	-	3	-	-	-	-	-	-	-	-
Oecetis georgia	4	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis inconspicua complex Pescador	2	-	-	-	2	-	-	-	-	-	-	-	-
Oecetis nocturna	-	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis persimilis	12	-	-	-	-	-	-	-	-	-	-	-	-
Oecetis sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Oligochaeta (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	1
Orthocladinae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Orthotrichia sp.	-	-	-	1	-	-	-	-	-	-	-	-	-
Palaemonetes paludosus	-	-	-	-	1	-	-	-	-	-	-	-	-
Parachironomus carinatus	-	-	-	1	-	-	-	-	-	-	-	-	-
Parachironomus tenuicaudatus complex Epler	-	-	-	3	-	-	-	-	-	-	-	-	-
Paracladopelma nereis	-	-	-	-	-	-	-	1	-	-	-	-	-
Paracladopelma sp.	-	-	-	-	-	-	-	-	-	-	2	-	-
Paramerina sp.	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix B: Raw Macroinvertebrate Data

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Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsr
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Parametrioconemus sp.	-	-	-	-	-	-	-	-	-	-	1	-	-
Paraphaenocladus sp.	2	-	-	-	-	-	-	-	-	-	-	-	-
Parapoynx sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus dissimilis	-	-	49	-	-	-	-	-	1	-	2	-	-
Paratanytarsus sp.	-	-	-	-	-	-	3	-	-	-	2	-	-
Peltodytes sp.	-	-	-	-	-	1	-	-	1	-	-	-	-
Pentaneura inconspicua	1	3	5	-	-	3	6	1	3	-	-	1	-
Pericoma sp.	-	1	-	-	-	-	-	1	1	-	-	-	-
Physa	-	-	-	-	-	13	0	-	-	-	-	-	-
Physella cubensis	8	-	-	3	-	-	-	1	-	14	1	-	4
Physella sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Physidae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	1	-
Pisidium casertanum	-	-	2	-	-	-	-	-	-	-	-	-	-
Pisidium sp.	15	-	-	-	-	-	-	-	-	-	-	-	-
Planorbella duryi	-	-	-	1	1	-	-	-	-	-	-	-	-
Planorbella scalaris	-	-	-	1	-	-	-	-	-	-	-	-	-
Planorbella sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Planorbidae (LPIL)	-	-	1	1	-	-	-	2	6	-	-	-	-
Plumatella sp.	-	-	-	-	1	-	-	-	-	-	-	-	-
Polypedilum aviceps	5	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum beckae	-	-	-	1	-	-	-	-	-	-	-	-	-
Polypedilum fallax	-	-	2	-	-	-	-	-	-	-	-	-	-
Polypedilum flavum	-	27	17	-	-	2	-	3	2	46	120	74	-
Polypedilum halterale group Epler	-	-	-	-	-	-	-	1	1	-	-	-	-
Polypedilum illinoense group Epler	5	2	1	-	-	-	-	1	-	-	2	8	-
Polypedilum illinoense grp.	-	-	-	-	-	17	26	-	-	-	-	-	-
Polypedilum scalaenum group Epler	-	-	1	-	-	-	-	1	-	4	-	1	-
Polypedilum scalaenum grp.	-	-	-	-	-	1	0	-	-	-	-	-	-
Polypedilum sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum trigonus	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum tritum	-	-	-	-	-	-	-	-	-	-	1	-	-
Pomacea insularum	-	-	-	2	-	-	-	-	-	-	-	-	-
Porifera (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina aequisetata	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina leidy	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina longisoma	-	-	-	-	-	-	-	-	-	-	-	-	-
Pristina sp.	2	-	-	-	-	-	-	-	-	-	-	-	-
Pristina synclites	-	-	-	-	-	-	-	-	-	-	-	-	-
Procamburus sp.	-	-	-	-	1	-	-	1	3	-	-	-	-
Progomphus alachuensis	2	-	-	-	-	-	-	-	-	-	-	-	-
Progomphus obscurus	-	-	-	-	-	-	-	-	-	-	-	-	3
Progomphus sp.	-	2	-	-	-	1	-	-	4	-	-	1	-
Prostoma sp.	1	-	-	-	-	-	-	-	-	-	-	-	-
Psychoda sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Psychodidae	-	-	-	-	-	1	0	-	-	-	-	-	-
Ranatra buenoi	-	-	-	-	2	-	-	-	-	-	-	-	-

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Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsr
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Ranatra sp.	-	-	-	1	-	-	-	-	-	-	-	-	-
Rhagovelia choreutes	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhagovelia sp.	1	-	-	-	-	-	-	-	1	-	-	-	-
Rheocricotopus robacki	-	13	-	-	-	35	-	8	2	-	2	-	-
Rheosmittia arcuata	-	-	-	-	-	-	-	-	-	-	-	-	-
Rheosmittia sp.	-	-	-	-	-	-	-	-	-	-	1	-	-
Rheotanytarsus exiguus group Epler	-	-	31	17	-	-	-	3	10	-	15	-	-
Rheotanytarsus exiguus grp.	-	-	-	-	-	2	1	-	-	-	-	-	-
Rheotanytarsus pellucidus	-	5	5	-	-	-	-	-	2	-	-	2	-
Rheotanytarsus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Saetheria sp. 1	-	-	-	-	-	-	-	-	-	-	-	-	-
Scathophagidae (LPIL)	-	-	-	-	-	-	-	-	1	-	-	-	-
Scirtes sp.	3	-	-	-	1	-	-	-	1	-	-	-	-
Scirtidae (LPIL)	1	-	-	-	-	-	-	-	-	-	-	-	-
Simulium sp.	4	133	16	-	-	8	-	136	17	5	16	142	3
Sisyra apicalis	-	-	-	-	-	-	-	-	-	-	-	-	-
Sisyra vicaria	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata	-	-	-	1	-	-	-	-	2	-	-	-	-
Sminthuridae (LPIL)	-	-	-	-	-	-	-	1	-	-	-	-	-
Sphaeriidae (LPIL)	-	-	1	-	-	-	-	-	-	-	-	-	-
Sphaerium striatinum	-	-	-	-	1	-	-	-	-	-	-	-	-
Stempellinella fimbriata	-	-	1	-	-	-	-	-	-	-	-	-	-
Stempellinella leptocelloides	3	-	-	-	-	-	-	-	-	-	-	-	-
Stenelmis hungerfordi	-	-	-	-	-	-	-	-	-	-	-	-	-
Stenelmis sp.	16	-	2	-	-	-	-	3	-	-	-	-	8
Stenochironomus sp.	5	-	-	-	-	-	2	1	-	-	-	-	-
Tabanidae (LPIL)	1	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsini (LPIL)	1	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus messersmithi	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sepp	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. A Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. C Epler	-	-	16	-	-	-	-	-	2	-	1	-	-
Tanytarsus sp. D Epler	-	-	-	-	-	-	-	-	-	-	-	10	-
Tanytarsus sp. F Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. G Epler	-	-	-	2	-	-	-	-	-	-	-	-	-
Tanytarsus sp. L Epler	-	-	3	1	-	-	-	-	4	1	-	-	-
Tanytarsus sp. L Epler complex	-	-	-	-	-	-	-	-	-	-	-	3	-
Tanytarsus sp. M Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. T Epler	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp. U Epler	-	32	5	-	-	11	-	2	14	15	27	-	-
Thienemanniella lobapodema	-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemanniella sp.	-	2	-	-	-	-	-	-	-	-	-	-	-
Thienemanniella xena	-	3	-	-	-	-	-	4	-	-	1	2	-
Thienemannimyia group sp. Epler	-	4	-	-	-	-	-	1	3	-	-	-	-
Tipula (Nippotipula) sp.	-	-	-	-	-	-	-	-	3	-	-	-	2
Tipula (Yamatotipula) sp.	-	-	-	-	-	-	-	-	1	-	1	-	-

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Station	MillOldB	Pos16	Pos53	PrrCrk	PrrCrk	SWBSE4	SWBSE4	Sprstd441	ThreeLk	Tum14	TumWd	TrkCrk	TrkPrsrv
Sample Type	SCI	SCI	SCI	SCI	BioRecon	SCI	SCI	SCI	SCI	SCI	SCI	SCI	BioRecon
Taxon	8/12/2014	02/04/2013	12/14/2012	05/20/2013	5/29/2014	2/21/2012	9/11/2012	02/07/2013	12/14/2012	01/10/2013	02/07/2013	12/16/2014	1/21/2015
Tipula sp.	-	3	-	-	-	-	-	1	8	-	-	-	-
Trienodes ignitus	3	-	-	-	-	-	-	-	-	-	-	-	13
Trienodes sp.	-	-	-	-	-	-	-	1	-	-	-	-	-
Tribelos fuscicorne	-	-	-	-	-	-	-	-	-	-	-	-	-
Tribelos jucundum	-	-	-	-	-	-	-	-	4	-	-	-	-
Tribelos sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Tribelos/Phaenopsectra group Epler	10	1	-	-	-	-	-	-	-	-	-	-	-
Tubificoid Naididae imm. w/ hair setae (LPIL)	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoid Naididae imm. w/o hair setae (LPIL)	1	-	1	5	-	-	-	-	5	1	-	-	-
Turbellaria (LPIL)	3	-	-	-	-	-	-	-	1	-	2	2	1
Unionicola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Wormaldia moesta	1	-	-	-	-	-	-	-	-	-	-	-	-
Xenochironomus xenolabis	-	-	1	-	-	-	-	-	-	-	-	-	-
Total Number of Organisms	286	306	293	304	101	291	293	307	297	314	304	315	119
Total Number of Taxa	52	31	43	34	28	29	22	41	53	22	30	23	26

LPIL = Lowest Practical Taxonomic Level

Macroinvertebrate Results SCI Indices (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014
Region: Peninsula

SCI Indices

Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Total Taxa Raw Metric	27	34	38	36	27	32	18	16	15	20
Total Taxa Score	4.4	7.2	8.8	8	4.4	6.4	0.8	0	0*	1.6
Ephemeroptera Taxa Raw Metric	2	2	2	3	1	1	0	0	3	3
Ephemeroptera Taxa Score	4	4	4	6	2	2	0	0	6	6
Trichoptera Taxa Raw Metric	1	2	1	1	2	1	1	2	3	3
Trichoptera Taxa Score	1.43	2.86	1.43	1.43	2.86	1.43	1.43	2.86	4.29	4.29
% Filterer Raw Metric	31.08%	30.69%	28.72%	37.5%	10.88%	16.56%	23.1%	27.88%	43.33%	45.33%
% Filterer Score	7.71	7.61	7.11	9.36	2.53	3.99	5.67	6.89	10*	10*
Long-Lived Taxa Raw Metric	1	1	2	2	3	2	1	2	0	1
Long-Lived Taxa Score	2.5	2.5	5	5	7.5	5	2.5	5	0	2.5
Clinger Taxa Raw Metric	7	7	6	7	7	7	3	4	6	7
Clinger Taxa Score	8.75	8.75	7.5	8.75	8.75	8.75	3.75	5	7.5	8.75
% Dominance Raw Metric	14.86%	20%	20.57%	19.87%	28.57%	23.18%	23.42%	25%	26%	30%
% Dominance Score	8.89	7.73	7.6	7.76	5.78	7	6.95	6.59	6.36	5.45
% Tanytarsini Raw Metric	33.78%	41.38%	8.51%	13.46%	3.4%	5.96%	6.96%	3.21%	0.67%	0.67%
% Tanytarsini Score	10*	10*	6.83	8.1	4.49	5.88	6.29	4.35	1.55	1.55
Sensitive Taxa Raw Metric	2	3	6	5	5	2	1	1	3	4
Sensitive Taxa Score	2.22	3.33	6.67	5.56	5.56	2.22	1.11	1.11	3.33	4.44
% Very Tolerant Taxa Raw Metric	2.7%	3.45%	24.82%	9.62%	9.52%	11.26%	26.58%	33.97%	2.67%	0.67%
% Very Tolerant Taxa Score	6.81	6.36	2.07	4.24	4.26	3.89	1.91	1.33	6.83	8.75
Total SCI Score Raw Metric	56.72	60.34	57	64.18	48.13	46.56	30.4	33.14	45.86	53.34
Total SCI Score	63.02	67.04	63.33	71.31	53.47	51.73	33.78	36.82	50.96	59.26
Mean SCI Score	65		67		53		35		55	
SCI Score Interpretation	Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)	

Macroinvertebrate Results

SCI Indices (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014
Region: Peninsula

SCI Indices

Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Total Taxa Raw Metric	26	23	21	27	30	30	36	34	25	23
Total Taxa Score	4	2.8	2	4.4	5.6	5.6	8	7.2	3.6	2.8
Ephemeroptera Taxa Raw Metric	1	2	4	3	1	2	1	1	3	2
Ephemeroptera Taxa Score	2	4	8	6	2	4	2	2	6	4
Trichoptera Taxa Raw Metric	2	1	3	3	1	1	2	2	1	1
Trichoptera Taxa Score	2.86	1.43	4.29	4.29	1.43	1.43	2.86	2.86	1.43	1.43
% Filterer Raw Metric	60.69%	69.33%	31.33%	40.67%	23.43%	20.13%	48.04%	49.68%	51.27%	59.4%
% Filterer Score	10*	10*	7.78	10*	5.75	4.91	10*	10*	10*	10*
Long-Lived Taxa Raw Metric	0	0	1	1	0	0	2	1	2	1
Long-Lived Taxa Score	0	0	2.5	2.5	0	0	5	2.5	5	2.5
Clinger Taxa Raw Metric	5	7	7	5	5	5	6	6	6	5
Clinger Taxa Score	6.25	8.75	8.75	6.25	6.25	6.25	7.5	7.5	7.5	6.25
% Dominance Raw Metric	40%	39.33%	28.67%	27.33%	32.17%	40.27%	30.07%	31.17%	37.58%	49.66%
% Dominance Score	3.18	3.33	5.76	6.06	4.96	3.12	5.44	5.19	3.73	0.99
% Tanytarsini Raw Metric	2.76%	8%	2.67%	6%	53.85%	55.7%	35.29%	35.06%	14.65%	9.4%
% Tanytarsini Score	4.01	6.66	3.94	5.9	10*	10*	10*	10*	8.33	7.1
Sensitive Taxa Raw Metric	4	6	4	3	1	2	6	5	5	4
Sensitive Taxa Score	4.44	6.67	4.44	3.33	1.11	2.22	6.67	5.56	5.56	4.44
% Very Tolerant Taxa Raw Metric	4.14%	2.67%	2%	4%	4.2%	4.03%	10.46%	9.09%	3.18%	8.05%
% Very Tolerant Taxa Score	6.01	6.83	7.32	6.07	5.98	6.06	4.05	4.36	6.51	4.63
Total SCI Score Raw Metric	42.75	50.47	54.77	54.8	43.08	43.59	61.52	57.16	57.66	44.13
Total SCI Score	47.5	56.08	60.86	60.89	47.87	48.43	68.35	63.51	64.07	49.03
Mean SCI Score	52		61		48		66		57	
SCI Score Interpretation	Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)	

Macroinvertebrate Results

SCI Indices (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014
Region: Peninsula

SCI Indices

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Total Taxa Raw Metric	28	22	27	25	22	20	29	33	41	37
Total Taxa Score	4.8	2.4	4.4	3.6	2.4	1.6	5.2	6.8	10	8.4
Ephemeroptera Taxa Raw Metric	4	3	3	3	1	0	4	3	1	2
Ephemeroptera Taxa Score	8	6	6	6	2	0	8	6	2	4
Trichoptera Taxa Raw Metric	3	2	1	2	1	1	1	2	5	7
Trichoptera Taxa Score	4.29	2.86	1.43	2.86	1.43	1.43	1.43	2.86	7.14	10
% Filterer Raw Metric	43.67%	49.03%	60.33%	41.72%	31.7%	27.48%	34.23%	35.29%	23.68%	32.12%
% Filterer Score	10*	10*	10*	10*	7.87	6.79	8.52	8.79	5.82	7.98
Long-Lived Taxa Raw Metric	1	0	1	0	0	0	1	0	2	2
Long-Lived Taxa Score	2.5	0	2.5	0	0	0	2.5	0	5	5
Clinger Taxa Raw Metric	6	6	6	5	4	4	6	6	7	6
Clinger Taxa Score	7.5	7.5	7.5	6.25	5	5	7.5	7.5	8.75	7.5
% Dominance Raw Metric	34%	43.23%	51.33%	37.58%	37.91%	41.06%	18.12%	18.3%	8.55%	11.26%
% Dominance Score	4.55	2.45	0.61	3.73	3.66	2.94	8.15	8.11	10*	9.71
% Tanytarsini Raw Metric	12%	5.16%	2.67%	0.64%	15.69%	15.23%	10.07%	11.11%	0.66%	1.99%
% Tanytarsini Score	7.77	5.51	3.94	1.49	8.53	8.45	7.28	7.56	1.53	3.32
Sensitive Taxa Raw Metric	4	5	5	4	2	2	4	6	6	5
Sensitive Taxa Score	4.44	5.56	5.56	4.44	2.22	2.22	4.44	6.67	6.67	5.56
% Very Tolerant Taxa Raw Metric	0.67%	0.65%	2.67%	5.1%	14.38%	13.25%	4.03%	0.65%	5.92%	5.3%
% Very Tolerant Taxa Score	8.75	8.79	6.83	5.59	3.33	3.52	6.06	8.77	5.28	5.51
Total SCI Score Raw Metric	62.6	51.06	48.76	43.97	36.44	31.95	59.09	63.06	62.19	66.98
Total SCI Score	69.56	56.73	54.18	48.85	40.49	35.5	65.66	70.07	69.1	74.42
Mean SCI Score	63		52		38		68		72	
SCI Score Interpretation	Category 2 (Healthy)		Category 2 (Healthy)		Category 2 (Healthy)		Category 1 (Exceptional)		Category 1 (Exceptional)	



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Macroinvertebrate Results SCI Indices (Unpooled)

Prepared For: Alachua County EPD

Project: ACEPD

Algae/Macroinvert

Sample Group: ACEPD SCI

Sample Method: Stream Condition Index

Report Date: 03/13/2014

Region: Peninsula

SCI Indices	Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Total Taxa Raw Metric		23	18	17	25	21	24
Total Taxa Score		2.8	0.8	0.4	3.6	2	3.2
Ephemeroptera Taxa Raw Metric		0	1	0	0	1	2
Ephemeroptera Taxa Score		0	2	0	0	2	4
Trichoptera Taxa Raw Metric		1	0	1	1	2	3
Trichoptera Taxa Score		1.43	0	1.43	1.43	2.86	4.29
% Filterer Raw Metric		6.91%	5.92%	48.08%	34.81%	32.89%	27.45%
% Filterer Score		1.51	1.26	10*	8.67	8.18	6.78
Long-Lived Taxa Raw Metric		1	1	1	0	0	0
Long-Lived Taxa Score		2.5	2.5	2.5	0	0	0
Clinger Taxa Raw Metric		1	2	2	2	5	5
Clinger Taxa Score		1.25	2.5	2.5	2.5	6.25	6.25
% Dominance Raw Metric		51.32%	57.24%	41.67%	29.75%	40.94%	42.48%
% Dominance Score		0.61	0*	2.8	5.51	2.97	2.62
% Tanytarsini Raw Metric		7.89%	5.26%	64.1%	45.57%	12.08%	9.8%
% Tanytarsini Score		6.62	5.56	10*	10*	7.79	7.21
Sensitive Taxa Raw Metric		0	0	2	3	5	5
Sensitive Taxa Score		0	0	2.22	3.33	5.56	5.56
% Very Tolerant Taxa Raw Metric		34.21%	26.97%	1.92%	4.43%	7.38%	3.27%
% Very Tolerant Taxa Score		1.31	1.87	7.38	5.87	4.81	6.46
Total SCI Score Raw Metric		18.04	16.5	39.24	40.92	42.41	46.36
Total SCI Score		20.04	18.33	43.6	45.46	47.12	51.51
Mean SCI Score		19		45		49	
SCI Score Interpretation		Category 3 (Impaired)		Category 2 (Healthy)		Category 2 (Healthy)	

Macroinvertebrate Results

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

Taxonomic Classification	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Total Taxa Raw Metric		41	35	37	30
Total Taxa Score		10*	8.33	9.17	6.25
Ephemeroptera Taxa Raw Metric		2	2	0	1
Ephemeroptera Taxa Score		4.00	4.00	0.00	2.00
Trichoptera Taxa Raw Metric		6	4	1	1
Trichoptera Taxa Score		8.57	5.71	1.43	1.43
% Filterer Raw Metric		9.93%	11.38%	6.29%	5.81%
% Filterer Score		2.15	2.48	1.30	1.19
Long-Lived Taxa Raw Metric		2	4	1	1
Long-Lived Taxa Score		6.67	10*	3.33	3.33
Clinger Taxa Raw Metric		8	7	0	1
Clinger Taxa Score		10*	10.00	0.00	1.43
% Dominance Raw Metric		13.48%	13.10%	15.72%	17.42%
% Dominance Score		10*	10*	9.66	9.32
% Tanytarsini Raw Metric		0.71%	2.07%	8.18%	8.39%
% Tanytarsini Score		1.58	3.30	6.52	6.59
Sensitive Taxa Raw Metric		7	8	4	3
Sensitive Taxa Score		10.00	10*	5.71	4.29
% Very Tolerant Taxa Raw Metric		7.80%	7.59%	16.98%	16.13%
% Very Tolerant Taxa Score		6.31	6.37	4.53	4.65
Total SCI Score Raw Metric		69.27	70.20	41.64	40.46
Total SCI Score		76.97	78.00	46.27	44.96
Mean SCI Score		77		46	
SCI Score Interpretation		Category 1 (Exceptional)		Category 2 (Healthy)	



Macroinvertebrate Results

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/29/2014
Region: Peninsula

Taxonomic Classification

Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Total Taxa Raw Metric	37	34
Total Taxa Score	9.17	7.92
Ephemeroptera Taxa Raw Metric	2	2
Ephemeroptera Taxa Score	4.00	4.00
Trichoptera Taxa Raw Metric	1	2
Trichoptera Taxa Score	1.43	2.86
% Filterer Raw Metric	26.56%	18.55%
% Filterer Score	6.01	4.15
Long-Lived Taxa Raw Metric	0	1
Long-Lived Taxa Score	0.00	3.33
Clinger Taxa Raw Metric	7	6
Clinger Taxa Score	10.00	8.57
% Dominance Raw Metric	10.00%	11.95%
% Dominance Score	10*	10*
% Tanytarsini Raw Metric	17.50%	10.69%
% Tanytarsini Score	8.58	7.23
Sensitive Taxa Raw Metric	6	5
Sensitive Taxa Score	8.57	7.14
% Very Tolerant Taxa Raw Metric	30.00%	28.93%
% Very Tolerant Taxa Score	3.17	3.25
Total SCI Score Raw Metric	60.93	58.46
Total SCI Score	67.70	64.96
Mean SCI Score	66	
SCI Score Interpretation	Category 2 (Healthy)	

* Values marked with an asterisk indicate that Florida Department of Environmental Protection Standard Operating Procedure was applied to normalize a calculated negative index score value to zero (0) or to adjust a score over ten (10) to exactly ten.

Macroinvertebrate Results

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Total Taxa Raw Metric		17	16
Total Taxa Score		0.83	0.42
Ephemeroptera Taxa Raw Metric		3	3
Ephemeroptera Taxa Score		6.00	6.00
Trichoptera Taxa Raw Metric		1	1
Trichoptera Taxa Score		1.43	1.43
% Filterer Raw Metric		63.06%	51.58%
% Filterer Score		10*	10*
Long-Lived Taxa Raw Metric		3	1
Long-Lived Taxa Score		10.00	3.33
Clinger Taxa Raw Metric		4	4
Clinger Taxa Score		5.71	5.71
% Dominance Raw Metric		49.04%	41.14%
% Dominance Score		2.99	4.57
% Tanytarsini Raw Metric		5.10%	4.43%
% Tanytarsini Score		5.32	4.98
Sensitive Taxa Raw Metric		3	4
Sensitive Taxa Score		4.29	5.71
% Very Tolerant Taxa Raw Metric		1.27%	4.43%
% Very Tolerant Taxa Score		9.70	7.52
Total SCI Score Raw Metric		56.27	49.68
Total SCI Score		62.52	55.20
Mean SCI Score		59	
SCI Score Interpretation		Category 2 (Healthy)	

* Values marked with an asterisk indicate that Florida Department of Environmental Protection Standard Operating Procedure was applied to normalize a calculated negative index score value to zero (0) or to adjust a score over ten (10) to exactly ten.

Macroinvertebrate Results

Sensitive Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Arthropoda											
Class: Malacostraca											
Order: Amphipoda											
Family: Crangonyctidae											
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Isopoda											
Family: Asellidae											
<i>Caecidotea</i> sp.		-	-	-	-	-	-	-	-	-	-
Class: Insecta											
Order: Coleoptera											
Family: Elmidae											
<i>Ancyronyx variegatus</i>		-	-	2	-	-	-	-	-	4	2
<i>Macronychus glabratus</i>		-	-	3	2	1	-	-	-	-	-
Order: Diptera											
Family: Chironomidae											
<i>Parametriocnemus</i> sp.		-	-	-	-	1	-	-	-	-	-
<i>Polypedilum aviceps</i>		-	-	-	-	-	-	-	-	-	-
<i>Rheocricotopus robacki</i>		-	-	1	1	-	-	-	-	-	-
<i>Stempellinella fimbriata</i>		-	1	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. M Epler		-	-	-	-	-	-	-	-	-	-
<i>Tribelos jucundum</i>		-	-	4	-	-	-	-	-	-	-
Family: Empididae											
<i>Hemerodromia</i> sp.		-	-	-	1	-	-	-	-	-	-
Family: Simuliidae											
<i>Simulium</i> sp.		11	5	4	13	6	2	3	2	39	45
Order: Ephemeroptera											
Family: Ephemerellidae											
<i>Eurylophella doris</i>		-	-	-	-	-	-	-	-	-	-
Family: Heptageniidae											
<i>Maccaffertium smithae</i>		6	5	2	6	23	29	-	-	30	26
Order: Odonata											
Family: Macromiidae											
<i>Macromia</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Trichoptera											
Family: Leptoceridae											
<i>Triaenodes ignitus</i>		-	-	-	-	-	-	-	-	-	-
<i>Triaenodes</i> sp.		-	-	-	-	-	-	-	-	-	1
Family: Philopotamidae											
<i>Chimarra</i> sp.		-	-	-	-	1	-	-	-	-	-
Total Organisms		17	11	16	23	32	31	3	2	73	74
Total Taxa		2	3	6	5	5	2	1	1	3	4

Macroinvertebrate Results

Sensitive Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Arthropoda											
Class: Malacostraca											
Order: Amphipoda											
Family: Crangonyctidae											
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Isopoda											
Family: Asellidae											
<i>Caecidotea</i> sp.		-	-	-	-	-	2	-	-	-	-
Class: Insecta											
Order: Coleoptera											
Family: Elmidae											
<i>Ancyronyx variegatus</i>		-	-	-	-	-	-	-	-	-	-
<i>Macronychus glabratus</i>		-	-	1	-	-	-	3	2	1	-
Order: Diptera											
Family: Chironomidae											
<i>Parametriocnemus</i> sp.		1	1	-	-	-	-	2	-	-	-
<i>Polypedilum aviceps</i>		7	13	-	-	-	-	-	-	-	-
<i>Rheocricotopus robacki</i>		-	-	-	-	-	-	1	2	10	3
<i>Stempellinella fimbriata</i>		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. M Epler		-	1	-	-	-	-	1	1	-	-
<i>Tribelos jucundum</i>		-	-	-	-	-	-	-	-	-	-
Family: Empididae											
<i>Hemerodromia</i> sp.		-	1	-	-	-	-	11	5	2	2
Family: Simuliidae											
<i>Simulium</i> sp.		58	59	11	30	6	8	10	7	59	74
Order: Ephemeroptera											
Family: Ephemerellidae											
<i>Eurylophella doris</i>		-	-	-	-	-	-	-	-	-	-
Family: Heptageniidae											
<i>Maccaffertium smithae</i>		26	13	11	6	-	-	-	-	5	2
Order: Odonata											
Family: Macromiidae											
<i>Macromia</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Trichoptera											
Family: Leptoceridae											
<i>Triaenodes ignitus</i>		-	-	1	-	-	-	-	-	-	-
<i>Triaenodes</i> sp.		-	-	-	1	-	-	-	-	-	-
Family: Philopotamidae											
<i>Chimarra</i> sp.		-	-	-	-	-	-	-	-	-	-
Total Organisms		92	88	24	37	6	10	28	17	77	81
Total Taxa		4	6	4	3	1	2	6	5	5	4

Macroinvertebrate Results

Sensitive Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Springstd Aliquot 1 02/07/13	Springstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Phylum: Arthropoda										
Class: Malacostraca										
Order: Amphipoda										
Family: Crangonyctidae										
<i>Crangonyx</i> sp.	-	-	-	-	-	-	-	-	6	8
Order: Isopoda										
Family: Asellidae										
<i>Caecidotea</i> sp.	-	-	-	-	-	-	-	-	-	-
Class: Insecta										
Order: Coleoptera										
Family: Elmidae										
<i>Ancyronyx variegatus</i>	-	-	1	-	-	-	2	1	-	-
<i>Macronychus glabratus</i>	-	1	-	-	-	-	-	-	-	-
Order: Diptera										
Family: Chironomidae										
<i>Parametrioctenus</i> sp.	-	-	-	-	1	-	1	-	-	-
<i>Polypedilum aviceps</i>	-	-	-	-	-	-	-	-	-	-
<i>Rheocricotopus robacki</i>	-	2	4	4	-	2	-	-	-	-
<i>Stempellinella fimbriata</i>	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. M Epler	-	-	-	-	-	-	-	-	-	-
<i>Tribelos jucundum</i>	-	-	-	-	-	-	-	1	-	-
Family: Empididae										
<i>Hemerodromia</i> sp.	2	-	1	-	-	-	-	1	2	-
Family: Simuliidae										
<i>Simulium</i> sp.	51	67	77	59	7	9	22	20	-	-
Order: Ephemeroptera										
Family: Ephemerellidae										
<i>Eurylophella doris</i>	-	-	-	-	-	-	-	-	-	1
Family: Heptageniidae										
<i>Maccaffertium smithae</i>	18	9	5	12	-	-	1	1	10	8
Order: Odonata										
Family: Macromiidae										
<i>Macromia</i> sp.	-	-	-	-	-	-	-	-	1	1
Order: Trichoptera										
Family: Leptoceridae										
<i>Trienodes ignitus</i>	2	-	-	-	-	-	-	3	2	-
<i>Trienodes</i> sp.	-	3	-	1	-	-	-	-	-	-
Family: Philopotamidae										
<i>Chimarra</i> sp.	-	-	-	-	-	-	-	-	9	15
Total Organisms	73	82	88	76	8	11	26	27	30	33
Total Taxa	4	5	5	4	2	2	4	6	6	5

Macroinvertebrate Results

Sensitive Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Arthropoda						
Class: Malacostraca						
Order: Amphipoda						
Family: Crangonyctidae						
<i>Crangonyx</i> sp.	-	-	-	1	1	1
Order: Isopoda						
Family: Asellidae						
<i>Caecidotea</i> sp.	-	-	24	31	-	-
Class: Insecta						
Order: Diptera						
Family: Chironomidae						
<i>Tanytarsus</i> sp. M Epler	-	-	5	2	2	3
Family: Simuliidae						
<i>Simulium</i> sp.	-	-	-	-	8	7
Order: Ephemeroptera						
Family: Heptageniidae						
<i>Maccaffertium smithae</i>	-	-	-	-	61	65
Order: Trichoptera						
Family: Philopotamidae						
<i>Chimarra</i> sp.	-	-	-	-	2	3
Total Organisms	0	0	29	34	74	79
Total Taxa	0	0	2	3	5	5

Macroinvertebrate Results

Sensitive Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

Taxonomic Classification	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Phylum Arthropoda					
Class Malacostraca					
Order Amphipoda					
Family Crangonyctidae					
<i>Crangonyx</i> sp.		-	-	25	21
Order Isopoda					
Family Asellidae					
<i>Caecidotea</i> sp.		-	-	20	27
Class Insecta					
Order Coleoptera					
Family Elmidae					
<i>Ancyronyx variegata</i>		10	4	-	-
<i>Macronychus glabratus</i>		8	18	-	-
Order Diptera					
Family Chironomidae					
<i>Polypedilum aviceps</i>		4	1	-	-
<i>Stempellinella leptocelloides</i>		-	3	-	-
<i>Tanytarsus</i> sp. M Epler		-	-	1	-
<i>Tribelos jucundum</i>		5	5	5	-
Family Simuliidae					
<i>Simulium</i> sp.		2	2	-	-
Order Ephemeroptera					
Family Heptageniidae					
<i>Maccaffertium smithae</i>		9	9	-	-
Family Leptophlebiidae					
<i>Choroterpes basalis</i>		-	-	-	1
Order Trichoptera					
Family Leptoceridae					
<i>Triaenodes ignitus</i>		1	2	-	-
Total Organisms		39	44	51	49
Total Taxa		7	8	4	3

Macroinvertebrate Results

Sensitive Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Parametriocnemus</i> sp.		1	-
<i>Polypedilum aviceps</i>		1	1
<i>Tanytarsus</i> sp. D Epler		8	6
Family Empididae			
<i>Hemerodromia</i> sp.		2	-
Family Simuliidae			
<i>Simulium</i> sp.		9	7
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		8	12
Order Trichoptera			
Family Leptoceridae			
<i>Triaenodes</i> sp.		-	1
Total Organisms		29	27
Total Taxa		6	5



Macroinvertebrate Results Sensitive Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Tanytarsus</i> sp. D Epler		6	4
Family Empididae			
<i>Hemerodromia</i> sp.		-	1
Family Simuliidae			
<i>Simulium</i> sp.		77	65
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		4	4
Total Organisms		87	74
Total Taxa		3	4

Macroinvertebrate Results

Long Lived Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Arthropoda										
Class: Malacostraca										
Order: Decapoda										
Family: Cambaridae										
Cambaridae (LPIL)	-	-	-	-	-	-	1	1	-	-
Procambarus sp.	-	-	1	2	2	3	-	-	-	-
Class: Insecta										
Order: Megaloptera										
Family: Corydalidae										
Corydalus cornutus	-	-	-	-	-	-	-	-	-	-
Order: Odonata										
Family: Aeshnidae										
Boyeria vinosa	1	-	-	-	-	-	-	-	-	-
Family: Gomphidae										
Progomphus sp.	-	-	2	2	1	-	-	-	-	-
Family: Macromiidae										
Macromia sp.	-	-	-	-	-	-	-	-	-	-
Phylum: Mollusca										
Class: Gastropoda										
Order: Basommatophora										
Family: Lymnaeidae										
Galba cubensis	-	-	-	-	-	-	-	1	-	-
Class: Bivalvia										
Order: Veneroida										
Family: Corbiculidae										
Corbicula fluminea	-	1	-	-	-	6	-	-	-	2
Corbicula sp.	-	-	-	-	3	-	-	-	-	-
Total Organisms	1	1	3	4	6	9	1	2	0	2
Total Taxa	1	1	2	2	3	2	1	2	0	1

Macroinvertebrate Results

Long Lived Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Arthropoda											
Class: Malacostraca											
Order: Decapoda											
Family: Cambaridae											
Cambaridae (LPIL)		-	-	-	-	-	-	-	-	1	-
Procambarus sp.		-	-	-	-	-	-	1	-	-	-
Class: Insecta											
Order: Megaloptera											
Family: Corydalidae											
Corydalus cornutus		-	-	-	-	-	-	-	-	-	-
Order: Odonata											
Family: Aeshnidae											
Boyeria vinosa		-	-	-	-	-	-	-	-	-	-
Family: Gomphidae											
Progomphus sp.		-	-	-	-	-	-	-	-	1	1
Family: Macromiidae											
Macromia sp.		-	-	-	-	-	-	-	-	-	-
Phylum: Mollusca											
Class: Gastropoda											
Order: Basommatophora											
Family: Lymnaeidae											
Galba cubensis		-	-	-	-	-	-	-	-	-	-
Class: Bivalvia											
Order: Veneroida											
Family: Corbiculidae											
Corbicula fluminea		-	-	1	1	-	-	5	4	-	-
Corbicula sp.		-	-	-	-	-	-	-	-	-	-
Total Organisms		0	0	1	1	0	0	6	4	2	1
Total Taxa		0	0	1	1	0	0	2	1	2	1

Macroinvertebrate Results

Long Lived Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Phylum: Arthropoda										
Class: Malacostraca										
Order: Decapoda										
Family: Cambaridae										
Cambaridae (LPIL)	-	-	-	-	-	-	-	-	-	1
Procambarus sp.	-	-	1	-	-	-	1	-	-	-
Class: Insecta										
Order: Megaloptera										
Family: Corydalidae										
Corydalus cornutus	-	-	-	-	-	-	-	-	1	-
Order: Odonata										
Family: Aeshnidae										
Boyeria vinosa	-	-	-	-	-	-	-	-	-	-
Family: Gomphidae										
Progomphus sp.	1	-	-	-	-	-	-	-	-	-
Family: Macromiidae										
Macromia sp.	-	-	-	-	-	-	-	-	1	1
Phylum: Mollusca										
Class: Gastropoda										
Order: Basommatophora										
Family: Lymnaeidae										
Galba cubensis	-	-	-	-	-	-	-	-	-	-
Class: Bivalvia										
Order: Veneroida										
Family: Corbiculidae										
Corbicula fluminea	-	-	-	-	-	-	-	-	-	-
Corbicula sp.	-	-	-	-	-	-	-	-	-	-
Total Organisms	1	0	1	0	0	0	1	0	2	2
Total Taxa	1	0	1	0	0	0	1	0	2	2

Macroinvertebrate Results

Long Lived Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Arthropoda						
Class: Insecta						
Order: Megaloptera						
Family: Corydalidae						
<i>Chauliodes</i> sp.	-	-	1	-	-	-
Phylum: Mollusca						
Class: Gastropoda						
Order: Architaenioglossa						
Family: Ampullariidae						
<i>Pomacea insularum</i>	1	1	-	-	-	-
Total Organisms	1	1	1	0	0	0
Total Taxa	1	1	1	0	0	0

Macroinvertebrate Results Long Lived Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

Taxonomic Classification	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Phylum Arthropoda					
Class Malacostraca					
Order Decapoda					
Family Cambaridae					
Cambaridae (LPIL)		-	1	5	3
Class Insecta					
Order Megaloptera					
Family Corydalidae					
Corydalus cornutus		-	1	-	-
Order Odonata					
Family Aeshnidae					
Boyeria vinosa		2	4	-	-
Family Gomphidae					
Hagenius brevistylis		1	-	-	-
Progomphus alachuensis		-	2	-	-
Total Organisms		3	8	5	3
Total Taxa		2	4	1	1



Macroinvertebrate Results Long Lived Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/29/2014
Region: Peninsula

Taxonomic Classification

Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Mollusca		
Class Bivalvia		
Order Veneroida		
Family Corbiculidae		
<i>Corbicula fluminea</i>	-	2
Total Organisms	0	2
Total Taxa	0	1



Macroinvertebrate Results Long Lived Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Megaloptera			
Family Corydalidae			
<i>Corydalus cornutus</i>		1	-
Order Odonata			
Family Gomphidae			
<i>Progomphus sp.</i>		1	-
Phylum Mollusca			
Class Bivalvia			
Order Veneroida			
Family Corbiculidae			
<i>Corbicula fluminea</i>		6	1
Total Organisms		8	1
Total Taxa		3	1

Macroinvertebrate Results

Clinger Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Arthropoda										
Class: Insecta										
Order: Coleoptera										
Family: Dryopidae										
<i>Helichus fastigiatus</i>	-	-	-	-	-	-	-	-	-	3
<i>Helichus</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Elmidae										
<i>Macronychus glabratus</i>	-	-	3	2	1	-	-	-	-	-
<i>Microcylloepus pusillus</i>	22	15	11	14	42	35	6	6	26	20
<i>Stenelmis hungerfordi</i>	-	-	-	-	6	-	-	-	-	-
<i>Stenelmis</i> sp.	1	1	-	-	-	5	-	-	-	2
Order: Diptera										
Family: Chironomidae										
<i>Rheotanytarsus exiguus</i> group Epler	15	16	4	6	-	1	-	-	-	-
<i>Rheotanytarsus pellucidus</i>	1	4	-	2	-	2	-	-	-	1
<i>Rheotanytarsus</i> sp.	-	-	-	-	-	-	-	-	1	-
Family: Simuliidae										
<i>Simulium</i> sp.	11	5	4	13	6	2	3	2	39	45
Order: Ephemeroptera										
Family: Heptageniidae										
<i>Maccaffertium smithae</i>	6	5	2	6	23	29	-	-	30	26
Order: Trichoptera										
Family: Hydropsychidae										
<i>Cheumatopsyche</i> sp.	11	11	29	31	4	11	28	39	24	20
<i>Hydropsyche decalda</i>	-	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL)	-	-	-	-	-	-	-	-	-	-
Family: Hydroptilidae										
<i>Hydroptila</i> sp.	-	-	-	-	-	-	-	1	-	-
Family: Philopotamidae										
<i>Chimarra</i> sp.	-	-	-	-	1	-	-	-	-	-
Family: Polycentropodidae										
<i>Cyrnellus fraternus</i>	-	-	-	-	-	-	-	-	1	-
Total Organisms	67	57	53	74	83	85	37	48	121	117
Total Taxa	7	7	6	7	7	7	3	4	6	7

Macroinvertebrate Results

Clinger Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Arthropoda											
Class: Insecta											
Order: Coleoptera											
Family: Dryopidae											
<i>Helichus fastigiatus</i>		-	-	-	-	-	-	-	-	-	-
<i>Helichus</i> sp.		1	1	-	-	-	-	-	-	-	-
Family: Elmidae											
<i>Macronychus glabratus</i>		-	-	1	-	-	-	3	2	1	-
<i>Microcylloepus pusillus</i>		-	4	1	-	10	5	5	18	3	3
<i>Stenelmis hungerfordi</i>		-	-	-	-	-	-	-	-	-	-
<i>Stenelmis</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Diptera											
Family: Chironomidae											
<i>Rheotanytarsus exiguus</i> group Epler		-	2	4	7	5	4	46	48	-	-
<i>Rheotanytarsus pellucidus</i>		4	8	-	-	17	13	5	2	2	3
<i>Rheotanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-
Family: Simuliidae											
<i>Simulium</i> sp.		58	59	11	30	6	8	10	7	59	74
Order: Ephemeroptera											
Family: Heptageniidae											
<i>Maccaffertium smithae</i>		26	13	11	6	-	-	-	-	5	2
Order: Trichoptera											
Family: Hydropsychidae											
<i>Cheumatopsyche</i> sp.		26	33	31	23	1	-	3	10	9	6
<i>Hydropsyche decalda</i>		-	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL)		-	-	-	-	-	2	-	-	-	-
Family: Hydroptilidae											
<i>Hydroptila</i> sp.		-	-	3	2	-	-	-	-	-	-
Family: Philopotamidae											
<i>Chimarra</i> sp.		-	-	-	-	-	-	-	-	-	-
Family: Polycentropodidae											
<i>Cyrnellus fraternus</i>		-	-	-	-	-	-	-	-	-	-
Total Organisms		115	120	62	68	39	32	72	87	79	88
Total Taxa		5	7	7	5	5	5	6	6	6	5

Macroinvertebrate Results

Clinger Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Phylum: Arthropoda										
Class: Insecta										
Order: Coleoptera										
Family: Dryopidae										
<i>Helichus fastigiatus</i>	-	-	-	-	-	-	-	-	-	-
<i>Helichus</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Elmidae										
<i>Macronychus glabratus</i>	-	1	-	-	-	-	-	-	-	-
<i>Microcyloopus pusillus</i>	19	18	12	35	1	2	27	28	1	-
<i>Stenelmis hungerfordi</i>	-	-	-	-	-	-	-	-	-	-
<i>Stenelmis</i> sp.	-	-	1	2	-	-	-	-	2	2
Order: Diptera										
Family: Chironomidae										
<i>Rheotanytarsus exiguus</i> group Epler	4	-	3	-	9	6	3	6	1	2
<i>Rheotanytarsus pellucidus</i>	2	2	-	-	-	-	1	2	-	-
<i>Rheotanytarsus</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Simuliidae										
<i>Simulium</i> sp.	51	67	77	59	7	9	22	20	-	-
Order: Ephemeroptera										
Family: Heptageniidae										
<i>Maccaffertium smithae</i>	18	9	5	12	-	-	1	1	10	8
Order: Trichoptera										
Family: Hydropsychidae										
<i>Cheumatopsyche</i> sp.	3	4	10	6	26	19	20	24	12	16
<i>Hydropsyche decalda</i>	-	-	-	-	-	-	-	-	13	15
Hydropsychidae (LPIL)	-	-	-	-	-	-	-	-	-	-
Family: Hydroptilidae										
<i>Hydroptila</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Philopotamidae										
<i>Chimarra</i> sp.	-	-	-	-	-	-	-	-	9	15
Family: Polycentropodidae										
<i>Cyrnellus fraternus</i>	-	-	-	-	-	-	-	-	-	-
Total Organisms	97	101	108	114	43	36	74	81	48	58
Total Taxa	6	6	6	5	4	4	6	6	7	6

Macroinvertebrate Results

Clinger Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Arthropoda						
Class: Insecta						
Order: Diptera						
Family: Chironomidae						
<i>Endochironomus</i> sp.	-	1	-	-	-	-
<i>Rheotanytarsus exiguus</i> group Epler	9	8	65	47	16	11
Family: Simuliidae						
<i>Simulium</i> sp.	-	-	-	-	8	7
Order: Ephemeroptera						
Family: Heptageniidae						
<i>Maccaffertium smithae</i>	-	-	-	-	61	65
Order: Trichoptera						
Family: Hydropsychidae						
<i>Cheumatopsyche</i> sp.	-	-	5	4	22	19
Family: Philopotamidae						
<i>Chimarra</i> sp.	-	-	-	-	2	3
Total Organisms	9	9	70	51	109	105
Total Taxa	1	2	2	2	5	5

Macroinvertebrate Results

Clinger Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Taxonomic Classification					
Phylum	Arthropoda				
Class	Insecta				
Order	Coleoptera				
Family	Dryopidae				
	<i>Helichus fastigiatus</i>	1	2	-	-
Family	Elmidae				
	<i>Macronychus glabratus</i>	8	18	-	-
	<i>Microcylloepus pusillus</i>	19	19	-	-
	<i>Stenelmis</i> sp.	6	10	-	-
Order	Diptera				
Family	Chironomidae				
	<i>Rheotanytarsus exiguus</i> group Epler	-	-	-	2
Family	Simuliidae				
	<i>Simulium</i> sp.	2	2	-	-
Order	Ephemeroptera				
Family	Heptageniidae				
	<i>Maccaffertium smithae</i>	9	9	-	-
Order	Trichoptera				
Family	Hydropsychidae				
	<i>Cheumatopsyche</i> sp.	6	3	-	-
Family	Philopotamidae				
	<i>Wormaldia moesta</i>	1	-	-	-
Total Organisms		52	63	0	2
Total Taxa		8	7	0	1

Macroinvertebrate Results

Clinger Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Coleoptera			
Family Elmidae			
<i>Microcyloopus pusillus</i>		7	19
<i>Stenelmis</i> sp.		1	1
Order Diptera			
Family Chironomidae			
<i>Rheotanytarsus exiguus</i> group Epler		1	-
<i>Rheotanytarsus pellucidus</i>		13	9
Family Simuliidae			
<i>Simulium</i> sp.		9	7
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		8	12
Order Trichoptera			
Family Hydropsychidae			
<i>Cheumatopsyche</i> sp.		12	7
Total Organisms		51	55
Total Taxa		7	6

Macroinvertebrate Results Clinger Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Coleoptera			
Family Elmidae			
<i>Microcylloepus pusillus</i>		-	2
Order Diptera			
Family Chironomidae			
<i>Rheotanytarsus pellucidus</i>		2	-
Family Simuliidae			
<i>Simulium</i> sp.		77	65
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		4	4
Order Trichoptera			
Family Hydropsychidae			
<i>Cheumatopsyche</i> sp.		11	12
Total Organisms		94	83
Total Taxa		4	4

Macroinvertebrate Results

Suspension Feeders (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Arthropoda										
Class: Insecta										
Order: Diptera										
Family: Chironomidae										
<i>Rheotanytarsus exiguus</i> group Epler (1)	15	16	4	6	-	1	-	-	-	-
<i>Rheotanytarsus pellucidus</i> (1)	1	4	-	2	-	2	-	-	-	1
<i>Rheotanytarsus</i> sp. (1)	-	-	-	-	-	-	-	-	1	-
<i>Stempellinella fimbriata</i> (0.5)	-	1	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. C Epler (0.5)	11	5	-	2	-	1	-	-	-	-
<i>Tanytarsus</i> sp. L Epler (0.5)	-	3	3	1	-	1	-	1	-	-
<i>Tanytarsus</i> sp. M Epler (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. T Epler (0.5)	-	-	-	-	3	2	-	-	-	-
<i>Tanytarsus</i> sp. U Epler (0.5)	3	2	4	10	1	2	11	4	-	-
Family: Simuliidae										
<i>Simulium</i> sp. (1)	11	5	4	13	6	2	3	2	39	45
Order: Trichoptera										
Family: Hydropsychidae										
<i>Cheumatopsyche</i> sp. (1)	11	11	29	31	4	11	28	39	24	20
<i>Hydropsyche decalda</i> (1)	-	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL) (1)	-	-	-	-	-	-	-	-	-	-
Family: Philopotamidae										
<i>Chimarra</i> sp. (1)	-	-	-	-	1	-	-	-	-	-
Family: Polycentropodidae										
<i>Cyrrnellus fraternus</i> (1)	-	-	-	-	-	-	-	-	1	-
Phylum: Mollusca										
Class: Bivalvia										
Order: Veneroida										
Family: Corbiculidae										
<i>Corbicula fluminea</i> (1)	-	1	-	-	-	6	-	-	-	2
<i>Corbicula</i> sp. (1)	-	-	-	-	3	-	-	-	-	-
Family: Pisidiidae										
<i>Pisidium</i> sp. (1)	-	-	-	-	-	-	-	-	-	-
Family: Sphaeriidae										
<i>Pisidium casertanum</i> (1)	-	2	-	-	-	-	-	-	-	-
Sphaeriidae (LPIL) (1)	1	-	-	-	-	-	-	-	-	-
Total Organisms	53	50	44	65	18	28	42	46	65	68
Total Taxa	7	10	5	7	6	9	3	4	4	4

Macroinvertebrate Results

Suspension Feeders (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Arthropoda											
Class: Insecta											
Order: Diptera											
Family: Chironomidae											
<i>Rheotanytarsus exiguus</i> group Epler (1)		-	2	4	7	5	4	46	48	-	-
<i>Rheotanytarsus pellucidus</i> (1)		4	8	-	-	17	13	5	2	2	3
<i>Rheotanytarsus</i> sp. (1)		-	-	-	-	-	-	-	-	-	-
<i>Stempellinella fimbriata</i> (0.5)		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler (0.5)		-	1	-	-	1	2	2	-	-	-
<i>Tanytarsus</i> sp. C Epler (0.5)		-	-	-	-	2	-	-	-	-	-
<i>Tanytarsus</i> sp. L Epler (0.5)		-	-	-	-	4	4	-	-	-	-
<i>Tanytarsus</i> sp. M Epler (0.5)		-	1	-	-	-	-	1	1	-	-
<i>Tanytarsus</i> sp. T Epler (0.5)		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. U Epler (0.5)		-	-	-	-	2	-	-	-	21	11
Family: Simuliidae											
<i>Simulium</i> sp. (1)		58	59	11	30	6	8	10	7	59	74
Order: Trichoptera											
Family: Hydropsychidae											
<i>Cheumatopsyche</i> sp. (1)		26	33	31	23	1	-	3	10	9	6
<i>Hydropsyche decalda</i> (1)		-	-	-	-	-	-	-	-	-	-
Hydropsychidae (LPIL) (1)		-	-	-	-	-	2	-	-	-	-
Family: Philopotamidae											
<i>Chimarra</i> sp. (1)		-	-	-	-	-	-	-	-	-	-
Family: Polycentropodidae											
<i>Cyrnellus fraternus</i> (1)		-	-	-	-	-	-	-	-	-	-
Phylum: Mollusca											
Class: Bivalvia											
Order: Veneroida											
Family: Corbiculidae											
<i>Corbicula fluminea</i> (1)		-	-	1	1	-	-	5	4	-	-
<i>Corbicula</i> sp. (1)		-	-	-	-	-	-	-	-	-	-
Family: Pisidiidae											
<i>Pisidium</i> sp. (1)		-	1	-	-	-	-	3	5	-	-
Family: Sphaeriidae											
<i>Pisidium casertanum</i> (1)		-	-	-	-	-	-	-	-	-	-
Sphaeriidae (LPIL) (1)		-	-	-	-	-	-	-	-	-	-
Total Organisms		88	105	47	61	38	33	75	77	91	94
Total Taxa		3	7	4	4	8	6	8	7	4	4

Macroinvertebrate Results

Suspension Feeders (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Phylum: Arthropoda										
Class: Insecta										
Order: Diptera										
Family: Chironomidae										
<i>Rheotanytarsus exiguus</i> group Epler (1)	4	-	3	-	9	6	3	6	1	2
<i>Rheotanytarsus pellucidus</i> (1)	2	2	-	-	-	-	1	2	-	-
<i>Rheotanytarsus</i> sp. (1)	-	-	-	-	-	-	-	-	-	-
<i>Stempellinella fimbriata</i> (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. C Epler (0.5)	1	-	-	-	1	-	2	-	-	-
<i>Tanytarsus</i> sp. L Epler (0.5)	-	-	-	-	-	-	-	-	-	1
<i>Tanytarsus</i> sp. M Epler (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. T Epler (0.5)	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. U Epler (0.5)	10	6	1	1	12	15	8	4	-	-
Family: Simuliidae										
<i>Simulium</i> sp. (1)	51	67	77	59	7	9	22	20	-	-
Order: Trichoptera										
Family: Hydropsychidae										
<i>Cheumatopsyche</i> sp. (1)	3	4	10	6	26	19	20	24	12	16
<i>Hydropsyche decalda</i> (1)	-	-	-	-	-	-	-	-	13	15
Hydropsychidae (LPIL) (1)	-	-	-	-	-	-	-	-	-	-
Family: Philopotamidae										
<i>Chimarra</i> sp. (1)	-	-	-	-	-	-	-	-	9	15
Family: Polycentropodidae										
<i>Cyrrnellus fraternus</i> (1)	-	-	-	-	-	-	-	-	-	-
Phylum: Mollusca										
Class: Bivalvia										
Order: Veneroida										
Family: Corbiculidae										
<i>Corbicula fluminea</i> (1)	-	-	-	-	-	-	-	-	-	-
<i>Corbicula</i> sp. (1)	-	-	-	-	-	-	-	-	-	-
Family: Pisidiidae										
<i>Pisidium</i> sp. (1)	-	-	-	-	-	-	-	-	1	-
Family: Sphaeriidae										
<i>Pisidium casertanum</i> (1)	-	-	-	-	-	-	-	-	-	-
Sphaeriidae (LPIL) (1)	-	-	-	-	-	-	-	-	-	-
Total Organisms	71	79	91	66	55	49	56	56	36	49
Total Taxa	6	4	4	3	5	4	6	5	5	5

Macroinvertebrate Results

Suspension Feeders (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Arthropoda						
Class: Insecta						
Order: Diptera						
Family: Chironomidae						
<i>Dicrotendipes simpsoni</i> (0.5)	-	2	5	5	-	-
<i>Rheotanytarsus exiguus</i> group Epler (1)	9	8	65	47	16	11
<i>Tanytarsus</i> sp. F Epler (0.5)	-	-	-	1	-	-
<i>Tanytarsus</i> sp. G Epler (0.5)	2	-	-	-	-	-
<i>Tanytarsus</i> sp. L Epler (0.5)	1	-	-	-	-	1
<i>Tanytarsus</i> sp. M Epler (0.5)	-	-	5	2	2	3
Family: Simuliidae						
<i>Simulium</i> sp. (1)	-	-	-	-	8	7
Order: Trichoptera						
Family: Hydropsychidae						
<i>Cheumatopsyche</i> sp. (1)	-	-	5	4	22	19
Family: Philopotamidae						
<i>Chimarra</i> sp. (1)	-	-	-	-	2	3
Total Organisms	12	10	80	59	50	44
Total Taxa	3	2	4	5	5	6

Macroinvertebrate Results Suspension Feeder Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Taxonomic Classification					
Phylum Porifera					
Class Unspecified					
Order Unspecified					
Family Unspecified					
Porifera (LPIL)		-	-	1	1
Phylum Arthropoda					
Class Insecta					
Order Diptera					
Family Chironomidae					
<i>Dicrotendipes simpsoni</i>		-	-	14	10
<i>Rheotanytarsus exiguus</i> group Epler		-	-	-	2
<i>Stempellinella leptocelloides</i>		-	3	-	-
<i>Tanytarsus</i> sp. L complex Epler		-	-	1	-
<i>Tanytarsus</i> sp. M Epler		-	-	1	-
Family Culicidae					
<i>Culex</i> sp.		-	-	1	1
Family Simuliidae					
<i>Simulium</i> sp.		2	2	-	-
Order Trichoptera					
Family Hydropsychidae					
<i>Cheumatopsyche</i> sp.		6	3	-	-
Family Philopotamidae					
<i>Wormaldia moesta</i>		1	-	-	-
Phylum Mollusca					
Class Bivalvia					
Order Veneroida					
Family Sphaeriidae					
<i>Pisidium</i> sp.		5	10	-	-
Total Organisms		14	18	18	14
Total Taxa		4	4	5	4

Macroinvertebrate Results Suspension Feeder Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Rheotanytarsus exiguus</i> group Epler		1	-
<i>Rheotanytarsus pellucidus</i>		13	9
<i>Tanytarsus sepp</i>		-	1
<i>Tanytarsus</i> sp. L Epler complex		5	-
<i>Tanytarsus</i> sp. D Epler		8	6
Family Simuliidae			
<i>Simulium</i> sp.		9	7
Order Trichoptera			
Family Hydropsychidae			
<i>Cheumatopsyche</i> sp.		12	7
Phylum Mollusca			
Class Bivalvia			
Order Veneroida			
Family Corbiculidae			
<i>Corbicula fluminea</i>		-	2
Family Sphaeriidae			
<i>Pisidium</i> sp.		1	1
Total Organisms		49	33
Total Taxa		7	7

Macroinvertebrate Results Suspension Feeder Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Rheotanytarsus pellucidus</i>		2	-
<i>Tanytarsus sp. L Epler complex</i>		-	3
<i>Tanytarsus sp. D Epler</i>		6	4
Family Simuliidae			
<i>Simulium sp.</i>		77	65
Order Trichoptera			
Family Hydropsychidae			
<i>Cheumatopsyche sp.</i>		11	12
Phylum Mollusca			
Class Bivalvia			
Order Veneroida			
Family Corbiculidae			
<i>Corbicula fluminea</i>		6	1
Total Organisms		102	85
Total Taxa		5	5

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Nemertea											
Class: Enopla											
Order: Hoplonemertea											
Family: Tetrastemmatidae											
<i>Prostoma</i> sp.		-	-	-	-	-	-	-	-	-	-
Phylum: Annelida											
Class: Clitellata											
Order: Haplotaxida											
Family: Naididae											
<i>Dero digitata</i> complex Milligan		-	-	-	-	-	-	-	-	-	-
<i>Dero</i> sp.		1	-	-	1	-	-	-	-	-	-
<i>Nais communis</i>		-	-	-	-	-	-	-	-	-	-
<i>Nais communis</i> complex Milligan		-	1	-	-	-	-	-	-	3	-
<i>Nais pardalis</i>		-	-	-	-	-	-	-	-	-	-
<i>Pristina synclites</i>		-	-	-	-	-	-	-	-	-	-
Family: Tubificoid Naididae											
<i>Limnodrilus hoffmeisteri</i>		-	-	-	-	-	-	-	-	-	-
Tubificoid Naididae imm. w/o hair setae (LPIL)		-	1	3	2	-	-	1	-	-	-
Order: Lumbriculida											
Family: Lumbriculidae											
<i>Lumbriculus</i> sp.		-	-	3	-	-	-	-	-	-	-
Phylum: Arthropoda											
Class: Insecta											
Order: Coleoptera											
Family: Haliplidae											
<i>Peltodytes</i> sp.		-	-	-	1	-	-	-	-	-	-
Order: Diptera											
Family: Chironomidae											
<i>Chironomus</i> sp.		-	-	4	1	-	-	1	1	-	-
<i>Cricotopus bicinctus</i> group Epler		-	-	-	-	-	-	-	6	-	-
<i>Polypedilum illinoense</i> group Epler		1	-	-	-	-	-	-	-	1	1
<i>Polypedilum tritum</i>		-	-	-	-	-	-	-	-	-	-
Family: Stratiomyidae											
<i>Odontomyia</i> sp.		-	-	-	-	-	-	-	-	-	-
Family: Tipulidae											
<i>Tipula</i> sp.		-	-	8	-	2	-	-	-	-	-
Order: Hemiptera											
Family: Mesoveliidae											
<i>Mesovelia</i> sp.		-	-	-	-	-	-	1	-	-	-
Order: Odonata											
Family: Coenagrionidae											
<i>Argia sedula</i>		-	-	17	10	-	-	14	19	-	-
<i>Enallagma cardenium</i>		2	-	-	-	-	3	-	-	-	-
Phylum: Mollusca											
Class: Gastropoda											
Order: Basommatophora											
Family: Physidae											

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
<i>Physella cubensis</i>	-	-	-	-	-	1	10	4	-	-
<i>Physella</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Planorbidae										
<i>Hebetancylus excentricus</i>	-	3	-	-	3	3	2	1	-	-
<i>Laevapex fuscus</i>	-	-	-	-	-	-	-	-	-	-
<i>Micromenetus dilatatus</i>	-	-	-	-	3	2	-	-	-	-
<i>Micromenetus floridensis</i>	-	-	-	-	-	-	1	-	-	-
<i>Planorbella scalaris</i>	-	-	-	-	-	-	-	-	-	-
<i>Planorbella</i> sp.	-	-	-	-	-	-	-	-	-	-
Order: Neotaenioglossa										
Family: Thiaridae										
<i>Melanoides</i> sp.	-	-	-	-	-	8	-	-	-	-
<i>Melanoides turricula</i>	-	-	-	-	6	-	12	22	-	-
Total Organisms	4	5	35	15	14	17	42	53	4	1
Total Taxa	3	3	5	5	4	5	8	6	2	1

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Nemertea											
Class: Enopla											
Order: Hoplonemertea											
Family: Tetrastemmatidae											
<i>Prostoma</i> sp.		-	-	-	-	-	1	-	1	-	-
Phylum: Annelida											
Class: Clitellata											
Order: Haplotaxida											
Family: Naididae											
<i>Dero digitata</i> complex Milligan		-	-	-	-	-	-	-	-	-	-
<i>Dero</i> sp.		-	-	-	-	-	-	-	-	-	-
<i>Nais communis</i>		1	-	-	-	-	-	-	-	-	-
<i>Nais communis</i> complex Milligan		-	-	-	1	1	-	-	-	1	5
<i>Nais pardalis</i>		-	-	-	1	-	-	-	-	-	-
<i>Pristina synclites</i>		-	-	-	-	-	-	-	-	-	-
Family: Tubificoid Naididae											
<i>Limnodrilus hoffmeisteri</i>		-	-	-	-	-	-	-	-	-	-
Tubificoid Naididae imm. w/o hair setae (LPIL)		-	1	-	-	-	1	1	1	-	-
Order: Lumbriculida											
Family: Lumbriculidae											
<i>Lumbriculus</i> sp.		1	-	-	-	-	-	-	-	-	-
Phylum: Arthropoda											
Class: Insecta											
Order: Coleoptera											
Family: Haliplidae											
<i>Peltodytes</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Diptera											
Family: Chironomidae											
<i>Chironomus</i> sp.		-	-	-	-	-	-	-	1	-	-
<i>Cricotopus bicinctus</i> group Epler		-	-	2	-	-	-	-	-	1	2
<i>Polypedilum illinoense</i> group Epler		1	1	1	1	2	3	2	-	-	2
<i>Polypedilum tritum</i>		-	-	-	-	-	-	-	-	-	-
Family: Stratiomyidae											
<i>Odontomyia</i> sp.		-	-	-	-	-	-	-	1	-	-
Family: Tipulidae											
<i>Tipula</i> sp.		-	-	-	-	-	-	-	-	1	2
Order: Hemiptera											
Family: Mesoveliidae											
<i>Mesovelia</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Odonata											
Family: Coenagrionidae											
<i>Argia sedula</i>		-	-	-	-	-	-	-	5	2	-
<i>Enallagma cardenium</i>		-	-	-	-	2	-	-	-	-	-
Phylum: Mollusca											
Class: Gastropoda											
Order: Basommatophora											
Family: Physidae											

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
 Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71	Blues71	HogSink	HogSink	LFC329B	LFC329B	Boulwr	Boulwr	Pos16	Pos16
		Aliquot 1 01/25/13	Aliquot 2 01/25/13	Aliquot 1 01/25/13	Aliquot 2 01/25/13	Aliquot 1 01/30/13	Aliquot 2 01/30/13	Aliquot 1 01/30/13	Aliquot 2 01/30/13	Aliquot 1 02/04/13	Aliquot 2 02/04/13
<i>Physella cubensis</i>		-	-	-	-	-	-	-	-	-	-
<i>Physella</i> sp.		1	1	-	-	-	-	-	-	-	-
Family: Planorbidae											
<i>Hebetancylus excentricus</i>		-	-	-	-	-	-	-	-	-	1
<i>Laevapex fuscus</i>		1	1	-	-	-	-	-	-	-	-
<i>Micromenetus dilatatus</i>		1	-	-	3	-	-	-	-	-	-
<i>Micromenetus floridensis</i>		-	-	-	-	-	-	-	-	-	-
<i>Planorbella scalaris</i>		-	-	-	-	-	1	-	-	-	-
<i>Planorbella</i> sp.		-	-	-	-	1	-	-	-	-	-
Order: Neotaenioglossa											
Family: Thiaridae											
<i>Melanoides</i> sp.		-	-	-	-	-	-	-	-	-	-
<i>Melanoides turricula</i>		-	-	-	-	-	-	13	5	-	-
Total Organisms		6	4	3	6	6	6	16	14	5	12
Total Taxa		6	4	2	4	4	4	3	6	4	5

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification	Station Replicate Collection Date	Hog16 Aliquot 1	Hog16 Aliquot 2	Sprngstd Aliquot 1	Sprngstd Aliquot 2	TumWd Aliquot 1	TumWd Aliquot 2	Mntry Aliquot 1	Mntry Aliquot 2	Hat Buck Bay Aliquot 1	Hat Buck Bay Aliquot 2
		02/04/13	02/04/13	02/07/13	02/07/13	02/07/13	02/07/13	03/01/13	03/01/13	09/19/13	09/19/13
Phylum: Nemertea											
Class: Enopla											
Order: Hoplonemertea											
Family: Tetrastemmatidae											
<i>Prostoma</i> sp.		-	-	-	-	-	-	1	-	-	-
Phylum: Annelida											
Class: Clitellata											
Order: Haplotaxida											
Family: Naididae											
<i>Dero digitata</i> complex Milligan		-	-	-	-	-	-	-	-	-	1
<i>Dero</i> sp.		-	-	-	-	-	-	-	-	1	-
<i>Nais communis</i>		-	-	-	-	-	-	-	-	-	-
<i>Nais communis</i> complex Milligan		-	-	-	1	-	-	2	1	1	-
<i>Nais pardalis</i>		-	-	-	1	-	-	-	-	-	-
<i>Pristina synclites</i>		-	-	-	-	-	-	-	-	1	1
Family: Tubificoid Naididae											
<i>Limnodrilus hoffmeisteri</i>		-	-	-	2	-	-	-	-	-	-
Tubificoid Naididae imm. w/o hair setae (LPIL)		-	-	-	-	-	-	1	-	5	5
Order: Lumbriculida											
Family: Lumbriculidae											
<i>Lumbriculus</i> sp.		-	-	-	-	2	1	-	-	-	-
Phylum: Arthropoda											
Class: Insecta											
Order: Coleoptera											
Family: Haliplidae											
<i>Peltodytes</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Diptera											
Family: Chironomidae											
<i>Chironomus</i> sp.		-	-	1	-	-	-	-	-	-	-
<i>Cricotopus bicinctus</i> group Epler		-	-	-	-	3	4	-	-	-	-
<i>Polypedilum illinoense</i> group Epler		-	1	1	-	1	1	2	-	1	-
<i>Polypedilum tritum</i>		1	-	-	-	1	-	-	-	-	1
Family: Stratiomyidae											
<i>Odontomyia</i> sp.		-	-	-	-	-	-	-	-	-	-
Family: Tipulidae											
<i>Tipula</i> sp.		-	-	1	-	-	-	-	-	-	-
Order: Hemiptera											
Family: Mesoveliidae											
<i>Mesovelia</i> sp.		-	-	-	-	-	-	-	-	-	-
Order: Odonata											
Family: Coenagrionidae											
<i>Argia sedula</i>		-	-	-	2	14	13	-	-	-	-
<i>Enallagma cardenium</i>		-	-	-	-	-	-	-	-	-	-
Phylum: Mollusca											
Class: Gastropoda											
Order: Basommatophora											
Family: Physidae											

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
<i>Physella cubensis</i>	-	-	1	-	-	1	-	-	-	-
<i>Physella</i> sp.	-	-	-	-	-	-	-	-	-	-
Family: Planorbidae										
<i>Hebetancylus excentricus</i>	-	-	-	-	-	-	-	-	-	-
<i>Laevapex fuscus</i>	-	-	-	2	-	-	-	-	-	-
<i>Micromenetus dilatatus</i>	-	-	-	-	-	-	-	-	-	-
<i>Micromenetus floridensis</i>	-	-	-	-	-	-	-	-	-	-
<i>Planorbella scalaris</i>	-	-	-	-	-	-	-	-	-	-
<i>Planorbella</i> sp.	-	-	-	-	-	-	-	-	-	-
Order: Neotaenioglossa										
Family: Thiaridae										
<i>Melanoides</i> sp.	-	-	-	-	1	-	-	-	-	-
<i>Melanoides turricula</i>	-	-	-	-	-	-	-	-	-	-
Total Organisms	1	1	4	8	22	20	6	1	9	8
Total Taxa	1	1	4	5	6	5	4	1	5	4

Macroinvertebrate Results

Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

	Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Annelida							
Class: Clitellata							
Order: Haplotaxida							
Family: Naididae							
<i>Bratislavia unidentata</i>		1	-	-	-	-	-
<i>Dero digitata</i> complex Milligan		-	-	1	-	-	-
<i>Dero pectinata</i>		-	-	1	-	-	-
<i>Dero vaga</i>		1	-	-	-	-	-
<i>Nais communis</i> complex Milligan		-	-	-	-	-	1
Family: Tubificoid Naididae							
<i>Limnodrilus hoffmeisteri</i>		-	1	-	-	-	-
Tubificoid Naididae imm. w/o hair setae (LPIL)		5	-	1	-	2	-
Order: Lumbriculida							
Family: Lumbriculidae							
<i>Lumbriculus</i> sp.		-	-	-	-	1	-
Order: Rhynchobdellida							
Family: Glossiphoniidae							
Glossiphoniidae (LPIL)		-	-	-	-	-	1
<i>Helobdella stagnalis</i>		5	2	-	-	-	-
Phylum: Arthropoda							
Class: Insecta							
Order: Diptera							
Family: Chironomidae							
<i>Chironomus</i> sp.		-	-	-	1	-	-
<i>Glyptotendipes meridionalis</i>		16	23	-	-	-	-
<i>Goeldichironomus carus</i>		13	14	-	-	-	-
<i>Goeldichironomus</i> sp.		-	-	-	1	-	-
<i>Larsia decolorata</i>		-	-	-	2	-	-
<i>Polypedilum beckae</i>		-	1	-	-	-	-
<i>Polypedilum tritum</i>		-	-	-	1	-	-
<i>Tanytarsus</i> sp. F Epler		-	-	-	1	-	-
Order: Odonata							
Family: Coenagrionidae							
<i>Enallagma cardenium</i>		-	-	-	1	-	-
<i>Ischnura</i> sp.		6	-	-	-	-	-
Phylum: Mollusca							
Class: Gastropoda							
Order: Basommatophora							
Family: Physidae							
<i>Physella cubensis</i>		3	-	-	-	1	-
Family: Planorbidae							
<i>Micromenetus dilatatus</i>		-	-	-	-	2	-
<i>Micromenetus floridensis</i>		-	-	-	-	5	3
<i>Planorbella duryi</i>		1	-	-	-	-	-
<i>Planorbella scalaris</i>		1	-	-	-	-	-
Total Organisms		52	41	3	7	11	5
Total Taxa		10	5	3	6	5	3



Macroinvertebrate Results Very Tolerant Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
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Macroinvertebrate Results

Very Tolerant Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
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Taxonomic Classification

Phylum	Nemertea				
Class	Enopla				
Order	Hoplonemertea				
Family	Tetrastemmatidae				
	<i>Prostoma</i> sp.	1	-	-	-
Phylum	Annelida				
Class	Clitellata				
Order	Haplotaxida				
Family	Naididae				
	<i>Dero digitata</i> complex Milligan	-	-	12	9
	<i>Dero pectinata</i>	-	-	-	1
	<i>Dero vaga</i>	-	-	2	3
	<i>Nais communis</i> complex Milligan	1	-	-	-
	<i>Pristina synclites</i>	-	-	-	2
Family	Tubificoid Naididae				
	<i>Limnodrilus hoffmeisteri</i>	-	5	-	-
	Tubificoid Naididae (LPIL) imm. w/o hair setae	1	-	9	5
Phylum	Arthropoda				
Class	Insecta				
Order	Diptera				
Family	Chironomidae				
	<i>Chironomus</i> sp.	-	-	-	3
	<i>Cryptochironomus</i> sp.	-	1	-	-
	<i>Larsia decolorata</i>	-	-	1	-
	<i>Polypedilum illinoense</i> group Epler	4	1	1	2
	<i>Polypedilum tritum</i>	-	-	1	-
Phylum	Mollusca				
Class	Gastropoda				
Order	Basommatophora				
Family	Physidae				
	<i>Physella cubensis</i>	4	4	-	-
Family	Planorbidae				
	<i>Micromenetus dilatatus</i>	-	-	1	-
Total Organisms		11	11	27	25
Total Taxa		5	4	7	7

Macroinvertebrate Results

Very Tolerant Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Nemertea			
Class Enopla			
Order Hoplonemertea			
Family Tetrastemmatidae			
<i>Prostoma</i> sp.		1	1
Phylum Annelida			
Class Clitellata			
Order Haplotaxida			
Family Tubificoid Naididae			
Tubificoid Naididae (LPIL) imm. w/o hair setae		1	-
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Polypedilum illinoense</i> group Epler		5	5
Phylum Mollusca			
Class Gastropoda			
Order Basommatophora			
Family Physidae			
<i>Physella cubensis</i>		12	11
Family Planorbidae			
<i>Hebetancylus excentricus</i>		5	5
<i>Micromenetus dilatatus</i>		16	17
Order Neotaenioglossa			
Family Thiaridae			
<i>Melanoides</i> sp.		8	7
Total Organisms		48	46
Total Taxa		7	6



Macroinvertebrate Results Very Tolerant Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Polypedilum illinoense</i> group Epler		2	6
Phylum Mollusca			
Class Gastropoda			
Order Basommatophora			
Family Planorbidae			
<i>Micromenetus</i> sp.		-	1
Total Organisms		2	7
Total Taxa		1	2

Macroinvertebrate Results

Tanytarsini Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	POS53 Aliquot 1 12/14/12	POS53 Aliquot 2 12/14/12	ThreeLK Aliquot 1 12/14/12	ThreeLK Aliquot 2 12/14/12	Hog45 Aliquot 1 12/14/12	Hog45 Aliquot 2 12/14/12	Tum14 Aliquot 1 01/10/13	Tum14 Aliquot 2 01/10/13	LHTNB Aliquot 1 01/15/13	LHTNB Aliquot 2 01/15/13
Phylum: Arthropoda											
Class: Insecta											
Order: Diptera											
Family: Chironomidae											
<i>Cladotanytarsus</i> sp. I Epler		-	-	-	-	-	-	-	-	-	-
<i>Paratanytarsus dissimilis</i>		20	29	1	-	1	-	-	-	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-
<i>Rheotanytarsus exiguus</i> group Epler		15	16	4	6	-	1	-	-	-	-
<i>Rheotanytarsus pellucidus</i>		1	4	-	2	-	2	-	-	-	1
<i>Rheotanytarsus</i> sp.		-	-	-	-	-	-	-	-	1	-
<i>Stempellinella fimbriata</i>		-	1	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. C Epler		11	5	-	2	-	1	-	-	-	-
<i>Tanytarsus</i> sp. L Epler		-	3	3	1	-	1	-	1	-	-
<i>Tanytarsus</i> sp. M Epler		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. T Epler		-	-	-	-	3	2	-	-	-	-
<i>Tanytarsus</i> sp. U Epler		3	2	4	10	1	2	11	4	-	-
Total Organisms		50	60	12	21	5	9	11	5	1	1
Total Taxa		5	7	4	5	3	6	1	2	1	1

Macroinvertebrate Results

Tanytarsini Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition
Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

	Station Replicate Collection Date	Blues71 Aliquot 1 01/25/13	Blues71 Aliquot 2 01/25/13	HogSink Aliquot 1 01/25/13	HogSink Aliquot 2 01/25/13	LFC329B Aliquot 1 01/30/13	LFC329B Aliquot 2 01/30/13	Boulwr Aliquot 1 01/30/13	Boulwr Aliquot 2 01/30/13	Pos16 Aliquot 1 02/04/13	Pos16 Aliquot 2 02/04/13
Phylum: Arthropoda											
Class: Insecta											
Order: Diptera											
Family: Chironomidae											
<i>Cladotanytarsus</i> sp. I Epler		-	-	-	1	-	-	-	-	-	-
<i>Paratanytarsus dissimilis</i>		-	-	-	-	46	60	-	3	-	-
<i>Paratanytarsus</i> sp.		-	-	-	1	-	-	-	-	-	-
<i>Rheotanytarsus exiguus</i> group Epler		-	2	4	7	5	4	46	48	-	-
<i>Rheotanytarsus pellucidus</i>		4	8	-	-	17	13	5	2	2	3
<i>Rheotanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-
<i>Stempellinella fimbriata</i>		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler		-	1	-	-	1	2	2	-	-	-
<i>Tanytarsus</i> sp. C Epler		-	-	-	-	2	-	-	-	-	-
<i>Tanytarsus</i> sp. L Epler		-	-	-	-	4	4	-	-	-	-
<i>Tanytarsus</i> sp. M Epler		-	1	-	-	-	-	1	1	-	-
<i>Tanytarsus</i> sp. T Epler		-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. U Epler		-	-	-	-	2	-	-	-	21	11
Total Organisms		4	12	4	9	77	83	54	54	23	14
Total Taxa		1	4	1	3	7	5	4	4	2	2

Macroinvertebrate Results

Tanytarsini Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: Algae/Macroinvert
Sample Group: CWP Stream Condition Index Study 2013

Sample Method: Stream Condition Index
Report Date: 02/05/2014

Taxonomic Classification

Station Replicate Collection Date	Hog16 Aliquot 1 02/04/13	Hog16 Aliquot 2 02/04/13	Sprngstd Aliquot 1 02/07/13	Sprngstd Aliquot 2 02/07/13	TumWd Aliquot 1 02/07/13	TumWd Aliquot 2 02/07/13	Mntry Aliquot 1 03/01/13	Mntry Aliquot 2 03/01/13	Hat Buck Bay Aliquot 1 09/19/13	Hat Buck Bay Aliquot 2 09/19/13
Phylum: Arthropoda										
Class: Insecta										
Order: Diptera										
Family: Chironomidae										
<i>Cladotanytarsus</i> sp. I Epler	-	-	-	-	-	-	-	-	-	-
<i>Paratanytarsus dissimilis</i>	-	-	-	-	2	-	-	5	-	-
<i>Paratanytarsus</i> sp.	1	-	-	-	-	2	1	-	-	-
<i>Rheotanytarsus exiguus</i> group Epler	4	-	3	-	9	6	3	6	1	2
<i>Rheotanytarsus pellucidus</i>	2	2	-	-	-	-	1	2	-	-
<i>Rheotanytarsus</i> sp.	-	-	-	-	-	-	-	-	-	-
<i>Stempellinella fimbriata</i>	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. A Epler	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. C Epler	1	-	-	-	1	-	2	-	-	-
<i>Tanytarsus</i> sp. L Epler	-	-	-	-	-	-	-	-	-	1
<i>Tanytarsus</i> sp. M Epler	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. T Epler	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp. U Epler	10	6	1	1	12	15	8	4	-	-
Total Organisms	18	8	4	1	24	23	15	17	1	3
Total Taxa	5	2	2	1	4	3	5	4	1	2

Macroinvertebrate Results

Tanytarsini Taxa (Unpooled)

Prepared For: Alachua County EPD
Project: ACEPD
Algae/Macroinvert
Sample Group: ACEPD SCI

Sample Method: Stream Condition Index
Report Date: 03/13/2014

Taxonomic Classification

Station Replicate Collection Date	PC20 Aliquot 1 05/20/13	PC20 Aliquot 2 05/20/13	Bee Tree Creek Aliquot 1 09/09/13	Bee Tree Creek Aliquot 2 09/09/13	Lochloosa Creek Aliquot 1 09/09/13	Lochloosa Creek Aliquot 2 09/09/13
Phylum: Arthropoda						
Class: Insecta						
Order: Diptera						
Family: Chironomidae						
<i>Paratanytarsus dissimilis</i>	-	-	30	22	-	-
<i>Rheotanytarsus exiguus</i> group Epler	9	8	65	47	16	11
<i>Tanytarsus</i> sp. F Epler	-	-	-	1	-	-
<i>Tanytarsus</i> sp. G Epler	2	-	-	-	-	-
<i>Tanytarsus</i> sp. L Epler	1	-	-	-	-	1
<i>Tanytarsus</i> sp. M Epler	-	-	5	2	2	3
Total Organisms	12	8	100	72	18	15
Total Taxa	3	1	3	4	2	3

Macroinvertebrate Results

Tanytarsini Taxa

Project: ACEPD 2014 SCI
Sample Group: SCI 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 08/28/2014
Region: Peninsula

	Station Rep Collection Date	Mill Creek-SCI Aliquot 1 08/12/14	Mill Creek-SCI Aliquot 2 08/12/14	Little Lochloosa Creek-SCI Aliquot 1 08/21/14	Little Lochloosa Creek-SCI Aliquot 2 08/21/14
Taxonomic Classification					
Phylum	Arthropoda				
Class	Insecta				
Order	Diptera				
Family	Chironomidae				
	<i>Rheotanytarsus exiguus</i> group Epler	-	-	-	2
	<i>Stempellinella leptocelloides</i>	-	3	-	-
	<i>Tanytarsus messersmithi</i>	-	-	11	11
	<i>Tanytarsus</i> sp. L complex Epler	-	-	1	-
	<i>Tanytarsus</i> sp. M Epler	-	-	1	-
	Tanytarsini (LPIL)	1	-	-	-
Total Organisms		1	3	13	13
Total Taxa		1	1	3	2

Macroinvertebrate Results

Tanytarsini Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Cellon Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Cellon 441 Aliquot 1 12/16/14	Cellon 441 Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Paratanytarsus dissimilis</i>		-	1
<i>Paratanytarsus</i> sp.		1	-
<i>Rheotanytarsus exiguus</i> group Epler		1	-
<i>Rheotanytarsus pellucidus</i>		13	9
<i>Tanytarsus sepp</i>		-	1
<i>Tanytarsus</i> sp. L Epler complex		5	-
<i>Tanytarsus</i> sp. D Epler		8	6
Total Organisms		28	17
Total Taxa		5	4



Macroinvertebrate Results Tanytarsini Taxa

Project: Cellon and Turkey Creek SCI
Sample Group: Turkey Creek Dec 2014
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 12/30/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Aliquot 1 12/16/14	Turkey Aliquot 2 12/16/14
Phylum Arthropoda			
Class Insecta			
Order Diptera			
Family Chironomidae			
<i>Rheotanytarsus pellucidus</i>		2	-
<i>Tanytarsus</i> sp. L Epler complex		-	3
<i>Tanytarsus</i> sp. D Epler		6	4
Total Organisms		8	7
Total Taxa		2	2



Macroinvertebrate Results

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Sample Method: Stream Condition Index

Report Date: 7/24/2014

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Total Taxa Raw Metric		24	20	14	12
Total Taxa Score		3.75	2.08	0*	0*
Ephemeroptera Taxa Raw Metric		1	1	1	1
Ephemeroptera Taxa Score		2	2	2	2
Trichoptera Taxa Raw Metric		2	2	2	1
Trichoptera Taxa Score		2.86	2.86	2.86	1.43
% Filterer Raw Metric		44.90%	35.76%	19.18%	17.69%
% Filterer Score		10*	8.15	4.3	3.95
Long-Lived Taxa Raw Metric		1	0	1	1
Long-Lived Taxa Score		3.33	0	3.33	3.33
Clinger Taxa Raw Metric		5	5	4	2
Clinger Taxa Score		7.14	7.14	5.71	2.86
% Dominance Raw Metric		33.33%	25.00%	33.56%	38.78%
% Dominance Score		6.13	7.8	6.09	5.04
% Tanytarsini Raw Metric		4.08%	4.86%	2.74%	0.00%
% Tanytarsini Score		4.78	5.2	3.88	0
Sensitive Taxa Raw Metric		3	3	0	1
Sensitive Taxa Score		4.29	4.29	0	1.43
% Very Tolerant Taxa Raw Metric		22.45%	20.83%	36.30%	42.18%
% Very Tolerant Taxa Score		3.86	4.04	2.7	2.34
Total SCI Score Raw Metric		48.15	43.57	30.87	22.38
Total SCI Score		53.5	48.41	34.3	24.87
Mean SCI Score		51		30	
SCI Score Interpretation		Category 2 (Healthy)		Category 3 (Impaired)	



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Macroinvertebrate Results

Sensitive Taxa

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Sample Method: Stream Condition Index

Report Date: 7/24/2014

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Diptera					
Family Chironomidae					
Rheocricotopus robacki		14	21		
Family Empididae					
Hemerodromia sp.		9	10	-	1
Family Simuliidae					
Simulium sp.		3	5		
Total Organisms		26	36	0	1
Total Taxa		3	3	0	1



Macroinvertebrate Results

Long Lived Taxa

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Report Date: 7/24/2014

Sample Method: Stream Condition Index

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Odonata					
Family Gomphidae					
Progomphus sp.		1	-		
Phylum Mollusca					
Class Bivalvia					
Order Veneroida					
Family Corbiculidae					
Corbicula fluminea				1	2
Total Organisms		1	0	1	2
Total Taxa		1	0	1	1



Macroinvertebrate Results Clinger Taxa

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Report Date: 7/24/2014

Sample Method: Stream Condition Index

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Coleoptera					
Family Elmidae					
Microcylloepus pusillus		7	17	49	57
Order Diptera					
Family Chironomidae					
Rheotanytarsus exiguus group Epler		1	1	1	-
Family Simuliidae					
Simulium sp.		3	5		
Order Trichoptera					
Family Hydropsychidae					
Cheumatopsyche sp.		49	36	21	15
Family Hydroptilidae					
Hydroptila sp.		2	2	1	-
Total Organisms		62	61	72	72
Total Taxa		5	5	4	2



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Macroinvertebrate Results Suspension Feeder Taxa

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Sample Method: Stream Condition Index

Report Date: 7/24/2014

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Diptera					
Family Chironomidae					
Dicrotendipes neomodestus		17	13	10	18
Rheotanytarsus exiguus group Epler		1	1	1	-
Tanytarsus sp. U Epler		5	6		
Family Simuliidae					
Simulium sp.		3	5		
Order Trichoptera					
Family Hydropsychidae					
Cheumatopsyche sp.		49	36	21	15
Phylum Mollusca					
Class Bivalvia					
Order Unspecified					
Family Unspecified					
Bivalvia (LPIL)		2	-		
Order Veneroida					
Family Corbiculidae					
Corbicula fluminea				1	2
Total Organisms		77	61	33	35
Total Taxa		6	5	4	3



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Macroinvertebrate Results Very Tolerant Taxa

Project: Sweetwater Branch SCI

Sample Group: Sweetwater, SE 4th St. (02/12)

Prepared For: Alachua County EPD

Sample Method: Stream Condition Index

Report Date: 7/24/2014

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Coleoptera					
Family Haliplidae					
Peltodytes sp.		-	1		
Order Diptera					
Family Chironomidae					
Cricotopus bicinctus group Epler		1	-		
Dicrotendipes neomodestus		17	13	10	18
Glyptotendipes sp.		-	1		
Polypedilum illinoense group Epler		9	8	13	13
Order Odonata					
Family Coenagrionidae					
Argia sedula				27	26
Phylum Mollusca					
Class Gastropoda					
Order Basommatophora					
Family Physidae					
Physella sp.		6	7		
Order Neotaenioglossa					
Family Thiaridae					
Melanoides sp.				3	5
Total Organisms		33	30	53	62
Total Taxa		4	5	4	4



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Macroinvertebrate Results

Tanytarsini Taxa

Project: Sweetwater Branch SCI
Sample Group: Sweetwater, SE 4th St. (02/12)
Prepared For: Alachua County EPD
Sample Method: Stream Condition Index

Report Date: 7/24/2014

Region: Peninsula

Taxonomic Classification	Station	SWBSE4	SWBSE4	SWBSE4	SWBSE4
	Rep	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2
Collection Date		2/21/2012	2/21/2012	9/11/2012	9/11/2012
Phylum Arthropoda					
Class Insecta					
Order Diptera					
Family Chironomidae					
Paratanytarsus sp.				3	-
Rheotanytarsus exiguus group Epler		1	1	1	-
Tanytarsus sp. U Epler		5	6		
Total Organisms		6	7	4	0
Total Taxa		2	2	2	0

Biorecon Score Calculator for Little Hatchet at North Branch May 29, 2014

Biorecon metric	Raw Metric Value	Northeast	Panhandle	Peninsula
Total taxa	24	0.43	0.24	0.52
Corrected Total taxa*				0.52
Ephemeroptera taxa	4	1.14	0.33	0.80
Corrected Ephemeroptera taxa*				0.80
Trichoptera taxa	3	0.46	0.43	0.43
Corrected Trichoptera taxa*				0.43
Long-lived taxa	4	0.67	0.40	0.57
Corrected Long-lived taxa*				0.57
Clinger taxa	6	0.86	0.39	0.75
Corrected Clinger taxa*				0.75
Sensitive taxa	5	0.45	0.26	0.56
Corrected Sensitive taxa*				0.56
**Biorecon Score		0.00	0.00	6.00
Score Interpretation		Healthy		

Data provided by Water and Air Research, Inc., Gainesville, Florida.

Note: This table incorporates changes to the Biorecon scoring procedure from the June 8, 2004 revision of FDEP SOP LT 7000.

*Enter the calculated values for the corresponding metric above into the field for the corrected value. If the metric score is below zero, enter "0". If the value is above one, enter "1".

** This score has been normalized to a scale of 0 to 10 by division by 0.6 as called for in LT 7000.

Table LT 7100-1. BioRecon metric name and range of metric values.

BioRecon metric	Northeast	Panhandle	Peninsula
Total taxa	14–37	16–49	11–36
Ephemeroptera taxa	0–3.5	0–12	0–5
Trichoptera taxa	0–6.5	0–7	0–7
Long-lived taxa	0–6	0–10	0–7
Clinger taxa	0–7	0–15.5	0–8
Sensitive taxa	0–11	0–19	0–9

Note: Metric values higher or lower than the listed range were assigned a score of 0 or 1 as appropriate.

Bold values indicate scoring ranges that differ from the same SCI metric.

Table LT 7100-3

Categorical descriptions and range of index values for the BioRecon index. Square brackets indicate a value is included in the range; round brackets indicate a value is

BioRecon	Index range
1 sample	
Category 1 ("exceptional")	[7–10]
Category 2 ("healthy")	[4–7)
Category 3 ("impaired")	[0–4)

Biorecon Score Calculator for Prairie Creek May 29, 2014

Biorecon metric	Raw Metric Value	Northeast	Panhandle	Peninsula
Total taxa	28	0.61	0.36	0.68
Corrected Total taxa*				0.68
Ephemeroptera taxa	1	0.29	0.08	0.20
Corrected Ephemeroptera taxa*				0.20
Trichoptera taxa	3	0.46	0.43	0.43
Corrected Trichoptera taxa*				0.43
Long-lived taxa	3	0.50	0.30	0.43
Corrected Long-lived taxa*				0.43
Clinger taxa	1	0.14	0.06	0.13
Corrected Clinger taxa*				0.13
Sensitive taxa	0	0.00	0.00	0.00
Corrected Sensitive taxa*				0.00
**Biorecon Score		0.00	0.00	3.00
Score Interpretation		Impaired		

Data provided by Water and Air Research, Inc., Gainesville, Florida.

Note: This table incorporates changes to the Biorecon scoring procedure from the June 8, 2004 revision of FDEP SOP LT 7000.

*Enter the calculated values for the corresponding metric above into the field for the corrected value. If the metric score is below zero, enter "0". If the value is above one, enter "1".

** This score has been normalized to a scale of 0 to 10 by division by 0.6 as called for in LT 7000.

Table LT 7100-1. BioRecon metric name and range of metric values.

BioRecon metric	Northeast	Panhandle	Peninsula
Total taxa	14–37	16–49	11–36
Ephemeroptera taxa	0–3.5	0–12	0–5
Trichoptera taxa	0–6.5	0–7	0–7
Long-lived taxa	0–6	0–10	0–7
Clinger taxa	0–7	0–15.5	0–8
Sensitive taxa	0–11	0–19	0–9

Note: Metric values higher or lower than the listed range were assigned a score of 0 or 1 as appropriate. Bold values indicate scoring ranges that differ from the same SCI metric.

Table LT 7100-3

Categorical descriptions and range of index values for the BioRecon index. Square brackets indicate a value is included in the range; round brackets indicate a value is not included.

BioRecon	Index range
1 sample	
Category 1 ("exceptional")	[7–10]
Category 2 ("healthy")	[4–7)
Category 3 ("impaired")	[0–4)



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Macroinvertebrate Results

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014
Region: Peninsula

Taxonomic Classification

Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Total Taxa Raw Metric	28	24
Total Taxa Score	5.42	3.75
Ephemeroptera Taxa Raw Metric	1	4
Ephemeroptera Taxa Score	2.00	8.00
Trichoptera Taxa Raw Metric	3	3
Trichoptera Taxa Score	4.29	4.29
% Filterer Raw Metric	16.83%	15.2%
% Filterer Score	3.75	3.37
Long-Lived Taxa Raw Metric	3	4
Long-Lived Taxa Score	10.00	10*
Clinger Taxa Raw Metric	1	6
Clinger Taxa Score	1.43	8.57
% Dominance Raw Metric	14.85%	12.00%
% Dominance Score	9.83	10*
% Tanytarsini Raw Metric	0.00%	0.00%
% Tanytarsini Score	0.00	0.00
Sensitive Taxa Raw Metric	0	5
Sensitive Taxa Score	0.00	7.14
% Very Tolerant Taxa Raw Metric	13.86%	3.20%
% Very Tolerant Taxa Score	5.00	8.16
Total SCI Score Raw Metric	X	X
Total SCI Score	X	X
Mean SCI Score		
SCI Score Interpretation		



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Macroinvertebrate Results Raw Data (Unpooled)

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Phylum Cnidaria			
Class Hydrozoa			
Order Anthoathecata			
Family Hydridae			
<i>Hydra sp.</i>		1	-
Phylum Annelida			
Class Clitellata			
Order Arhynchobdellida			
Family Erpobdellidae			
<i>Mooreobdella tetragon</i>		1	-
Family Hirudinidae			
<i>Unspecified (LPIL)</i>		1	-
Order Lumbriculida			
Family Lumbriculidae			
<i>Eclipidrilus palustris</i>		1	-
<i>Unspecified (LPIL)</i>		-	2
Order Rhynchobdellida			
Family Glossiphoniidae			
<i>Desserobdella phalera</i>		2	-
<i>Helobdella stagnalis</i>		3	-
Phylum Arthropoda			
Class Malacostraca			
Order Amphipoda			
Family Hyalellidae			
<i>Hyalella azteca complex LeCroy</i>		15	-
Order Decapoda			
Family Cambaridae			
<i>Procambarus sp.</i>		1	-
Family Palaemonidae			
<i>Palaemonetes paludosus</i>		1	-
Class Insecta			
Order Coleoptera			
Family Dryopidae			
<i>Helichus lithophilus</i>		-	2
Family Dytiscidae			
<i>Desmopachria sp.</i>		1	-
<i>Hydrovatus sp.</i>		1	-
Family Elmidae			
<i>Ancyronyx variegatus</i>		-	5
<i>Microcylloepus pusillus</i>		-	6
<i>Stenelmis sp.</i>		-	11
Family Gyrinidae			
<i>Dineutus carolinus</i>		5	-
<i>Dineutus sp.</i>		-	4
Family Hydrophilidae			
<i>Helochaeres sp.</i>		1	-
Family Scirtidae			
<i>Scirtes sp.</i>		1	-



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Macroinvertebrate Results Raw Data (Unpooled)

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014

Taxonomic Classification		Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Order	Diptera			
Family	Chironomidae			
	<i>Unspecified (LPIL)</i>		10	1
Family	Simuliidae			
	<i>Simulium</i> sp.		-	1
Family	Tipulidae			
	<i>Tipula (Yamatotipula)</i> sp.		-	1
Order	Ephemeroptera			
Family	Baetidae			
	<i>Acentrella alachua</i>		-	1
	<i>Labiobaetis propinquus</i>		-	6
Family	Caenidae			
	<i>Caenis diminuta</i>		1	14
Family	Heptageniidae			
	<i>Maccaffertium smithae</i>		-	15
Order	Hemiptera			
Family	Belostomatidae			
	<i>Belostoma lutarium</i>		6	-
Family	Nepidae			
	<i>Ranatra buenoi</i>		2	-
Order	Megaloptera			
Family	Corydalidae			
	<i>Chauliodes rastricornis</i>		3	-
Order	Odonata			
Family	Aeshnidae			
	<i>Boyeria vinosa</i>		-	7
Family	Calopterygidae			
	<i>Calopteryx dimidiata</i>		-	1
	<i>Hetaerina titia</i>		-	1
Family	Coenagrionidae			
	<i>Enallagma cardenium</i>		-	3
	<i>Enallagma signatum</i>		13	-
	<i>Ischnura posita</i>		6	1
	<i>Ischnura ramburii</i>		2	-
Family	Gomphidae			
	<i>Progomphus</i> sp.		-	1
Family	Macromiidae			
	<i>Macromia</i> sp.		-	1
Order	Trichoptera			
Family	Hydropsychidae			
	<i>Cheumatopsyche</i> sp.		15	15
Family	Leptoceridae			
	<i>Oecetis cinerascens</i>		3	-
	<i>Oecetis inconspicua</i> complex Pescador		2	-
	<i>Oecetis persimilis</i>		-	9
	<i>Triaenodes ignitus</i>		-	14
Phylum	Mollusca			
Class	Gastropoda			
Order	Basommatophora			



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Macroinvertebrate Results Raw Data (Unpooled)

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Family Planorbidae			
<i>Planorbella duryi</i>		1	-
Class Bivalvia			
Order Veneroida			
Family Corbiculidae			
<i>Corbicula fluminea</i>		-	3
Family Sphaeriidae			
<i>Sphaerium striatinum</i>		1	-
Phylum Bryozoa			
Class Phylactolaemata			
Order Plumatellida			
Family Plumatellidae			
<i>Plumatella</i> sp.		1	-
Total Organisms		101	125
Total Taxa		28	24



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Macroinvertebrate Results Long Lived Taxa

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Phylum Arthropoda			
Class Malacostraca			
Order Decapoda			
Family Cambaridae			
<i>Procambarus sp.</i>		1	-
Family Palaemonidae			
<i>Palaemonetes paludosus</i>		1	-
Class Insecta			
Order Megaloptera			
Family Corydalidae			
<i>Chauliodes rastricornis</i>		3	-
Order Odonata			
Family Aeshnidae			
<i>Boyeria vinosa</i>		-	7
Family Gomphidae			
<i>Progomphus sp.</i>		-	1
Family Macromiidae			
<i>Macromia sp.</i>		-	1
Phylum Mollusca			
Class Bivalvia			
Order Veneroida			
Family Corbiculidae			
<i>Corbicula fluminea</i>		-	3
Total Organisms		5	12
Total Taxa		3	4



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Macroinvertebrate Results Sensitive Taxa

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Phylum Arthropoda			
Class Insecta			
Order Coleoptera			
Family Elmidae			
<i>Ancyronyx variegatus</i>		-	5
Order Diptera			
Family Simuliidae			
<i>Simulium</i> sp.		-	1
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		-	15
Order Odonata			
Family Macromiidae			
<i>Macromia</i> sp.		-	1
Order Trichoptera			
Family Leptoceridae			
<i>Triaenodes ignitus</i>		-	14
Total Organisms		0	36
Total Taxa		0	5



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Macroinvertebrate Results Very Tolerant Taxa

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Phylum Annelida			
Class Clitellata			
Order Rhynchobdellida			
Family Glossiphoniidae			
<i>Desserobdella phalera</i>		2	-
<i>Helobdella stagnalis</i>		3	-
Phylum Arthropoda			
Class Insecta			
Order Odonata			
Family Coenagrionidae			
<i>Enallagma cardenium</i>		-	3
<i>Ischnura posita</i>		6	1
<i>Ischnura ramburii</i>		2	-
Phylum Mollusca			
Class Gastropoda			
Order Basommatophora			
Family Planorbidae			
<i>Planorbella duryi</i>		1	-
Total Organisms		14	4
Total Taxa		5	2



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Macroinvertebrate Results Clinger Taxa

Project: ACEPD 2014 Biorecon
Sample Group: May 2014
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 06/09/2014
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	PC20 PC20-Biorecon 05/29/14	LHTNB LHTNB-Biorecon 05/29/14
Phylum Arthropoda			
Class Insecta			
Order Coleoptera			
Family Dryopidae			
<i>Helichus lithophilus</i>		-	2
Family Elmidae			
<i>Microcyllloepus pusillus</i>		-	6
<i>Stenelmis</i> sp.		-	11
Order Diptera			
Family Simuliidae			
<i>Simulium</i> sp.		-	1
Order Ephemeroptera			
Family Heptageniidae			
<i>Maccaffertium smithae</i>		-	15
Order Trichoptera			
Family Hydropsychidae			
<i>Cheumatopsyche</i> sp.		15	15
Total Organisms		15	50
Total Taxa		1	6



Macroinvertebrate Results

Project: Biorecon 2015
Sample Group: Turkey Creek Biorecon
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 01/26/2015
Region: Peninsula

Taxonomic Classification	Station Rep Collection Date	Turkey Creek BioRecon 01/21/15
Total Taxa Raw Metric		26
Total Taxa Score		0.60
Ephemeroptera Taxa Raw Metric		2
Ephemeroptera Taxa Score		0.40
Trichoptera Taxa Raw Metric		3
Trichoptera Taxa Score		0.43
Long-Lived Taxa Raw Metric		5
Long-Lived Taxa Score		0.71
Clinger Taxa Raw Metric		7
Clinger Taxa Score		0.88
Sensitive Taxa Raw Metric		4
Sensitive Taxa Score		0.44
Total Biorecon Score Raw Metric		3.46
Total Biorecon Score		6
SCI Score Interpretation		Category 2 (Healthy)



Macroinvertebrate Results Sensitive Taxa

Project: Biorecon 2015
Sample Group: Turkey Creek Biorecon
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 01/27/2015
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Creek BioRecon 01/21/15
Phylum Arthropoda		
Class Insecta		
Order Coleoptera		
Family Elmidae		
<i>Ancyronyx variegatus</i>		2
Order Diptera		
Family Simuliidae		
<i>Simulium</i> sp.		3
Order Ephemeroptera		
Family Heptageniidae		
<i>Maccaffertium smithae</i>		15
Order Trichoptera		
Family Leptoceridae		
<i>Triaenodes ignitus</i>		13
Total Organisms		33
Total Taxa		4

Macroinvertebrate Results

Clinger Taxa

Project: Biorecon 2015
Sample Group: Turkey Creek Biorecon
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 01/27/2015
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Creek BioRecon 01/21/15
Phylum Arthropoda		
Class Insecta		
Order Coleoptera		
Family Dryopidae		
<i>Helichus fastigiatus</i>		2
Family Elmidae		
<i>Microcylloepus pusillus</i>		9
<i>Stenelmis</i> sp.		8
Order Diptera		
Family Simuliidae		
<i>Simulium</i> sp.		3
Order Ephemeroptera		
Family Heptageniidae		
<i>Maccaffertium smithae</i>		15
Order Trichoptera		
Family Hydropsychidae		
<i>Cheumatopsyche</i> sp.		15
Family Polycentropodidae		
<i>Cerootina</i> sp.		8
Total Organisms		60
Total Taxa		7

Macroinvertebrate Results Long Lived Taxa

Project: Biorecon 2015
Sample Group: Turkey Creek Biorecon
Prepared For: Alachua County EPD
Sample Method: Biorecon

Report Date: 01/27/2015
Region: Peninsula

Taxonomic Classification

	Station Rep Collection Date	Turkey Creek BioRecon 01/21/15
Phylum Arthropoda		
Class Malacostraca		
Order Decapoda		
Family Cambaridae		
Cambaridae (LPIL)		1
Class Insecta		
Order Megaloptera		
Family Corydalidae		
Corydalus cornutus		1
Order Odonata		
Family Aeshnidae		
Boyeria vinosa		3
Family Gomphidae		
Progomphus obscurus		3
Phylum Mollusca		
Class Bivalvia		
Order Veneroida		
Family Corbiculidae		
Corbicula fluminea		4
Total Organisms		12
Total Taxa		5

Quantitative Bioassessment Report of Five Alachua County Creeks: Hester-Dendy Sampling and Analysis 2013

Prepared for: Alachua County
Environmental Protection Department and
the Florida Department of Transportation
by: Water & Air Research, Inc.

Introduction

Alachua County is located in north central Florida. In this area of Florida, water drains from a central ridge north and west toward the Santa Fe River in the Suwannee River Water Management District, and south and east toward the Orange Creek Basin of the St. Johns River Water Management District. Gainesville is the largest urban area in Alachua County (over 50 square miles) and the influences of development, water quality degradation and increased stormwater flows can be observed throughout the city. Numerous creeks carry the water through a variety of ecological communities and land use types that are influenced by differences in topography and geology.



Hogtown Creek view downstream to Haile Sink.

The Alachua County Environmental Protection Department (ACEPD) has collected water quality data on many of these creeks since the early 1970's, and began routinely collecting in-stream

biological data in 1996. The Clean Water Partnership (CWP) which includes the Florida Department of Transportation (FDOT), the City of Gainesville Public Work Department, and the Alachua County Public Works Department, funded biological sampling of creeks in 2008 in support of their National Pollution Discharge Elimination System (NPDES) Phase II permit for the Gainesville urban area.



A Caddisfly larva swims in its case. Caddisflies are used as indicators of water quality.

The sampling of benthic macroinvertebrate communities has long been used for water quality assessments because of their tendency to be more sedentary and thus more reliable site condition indicators over time compared to fish and plankton. Benthic macroinvertebrates are organisms without a backbone that are large enough to be seen with the naked eye. These and include clams, snails, aquatic worms, aquatic insects, and crustaceans. Many prefer specific types of water quality and habitat characteristics. For instance, many mayfly and caddisfly species require high levels of dissolved oxygen and flowing water, while others are more tolerant of low dissolved oxygen and contamination by sewage.

By studying the communities of benthic macroinvertebrates in each creek, we gain information about the water environment

and the effects of the surrounding habitat. Community structure and function is a valuable tool for evaluating the condition of benthic habitats, rates of recovery after environmental perturbations, and potentially providing an early signal of development impacts to the system.

Benthic invertebrates are collected using different methods, depending on habitat, flow conditions and the purpose of sampling. In water bodies with consistent flow such as creeks, streams, and rivers artificial substrates, also known as Hester-Dendy samplers, are often used. Hester-Dendy samplers measure biodiversity by providing a quantitative method of analysis for Biological Integrity Criteria (BIC). Hester-Dendy analysis of Alachua County creeks was conducted in 1996, 2000, and 2009. The 2013 assessment was repeated at some of the same locations as in past studies.

Purpose

The ACEPD sponsored a study of creeks in the county from the years 2000 to 2004 in an effort to understand their biological health. This was the first study using a systematic method, and gave the ACEPD baseline data which could be used in the future to determine if the health of the creeks was improving, declining, or remaining stable. In 2008, the study was repeated at several of the same locations so that the new data could be compared with data collected in 2000-2004. Some stations were added at this time which had not been sampled before.

The Watershed Action Volunteers (WAV) sponsored by the St. Johns River Water Management District and ACEPD were used in these previous sampling events as part of the public education portion of the NPDES permit.

The current assessment began in 2013 and was funded by the Florida Department of Transportation. It is being conducted in

support of the Orange Creek Basin (OCB) Basin Management Action Plan or BMAP for implementation of Total Maximum Daily Loads (TMDLs) adopted by the Florida Department of Environmental Protection (FDEP) as well as the current Phase II NPDES permit. The ACEPD administered the project and all sampling and analysis was performed by Water and Air Research, Inc. (Water & Air) staff.

Planners and scientists may use the information gathered in this study when making decisions with regard to improving impaired waters and protecting and preserving existing water bodies. The results may assist water quality experts and engineers to decide whether action is needed in the surrounding watershed to improve water quality. This type of bioassessment is also commonly used to assure compliance to FDEP standards. The data may also raise questions that can be used to guide future research.

Basin Descriptions

Alachua County covers an area of approximately 961 square miles in north-central peninsular Florida. There are two major surface water basins in Alachua County: the Orange Creek Basin (OCB) in central and southeastern area of the county and the Santa River Basin in the north (Figure 1). The OCB covers approximately 425 square miles in Alachua County and is part of the larger Ocklawaha basin and the greater St. Johns River watershed. Streams are concentrated in the eastern and northern portions of Alachua County. The western part of Alachua County is generally devoid of streams due to absence of Hawthorn Group formation sands, clays and carbonates. In this area of Alachua County the karst geology dominates, and even the Santa Fe River flows underground.

The creeks assessed in this study were concentrated in the Gainesville urban area and all are located within the Orange Creek Basin. The creeks can be grouped by major

Comment [AS1]: Santa Fe River Basin; add fe

watershed and include: (1) Springstead and Hogtown Creeks in the Hogtown Creek Watershed (2) Tumblin Creek in the Paynes Prairie Watershed; and (3) Hatchet and Little Hatchet Creeks in the Newnans Lake Watershed.

Site locations

Site locations are described by their proximity to landmarks such as street crossings and also by their corresponding global positioning system (GPS) points (Table 1). Figure 1 shows the deployment locations of Hester-Dendy (artificial substrate) samplers.

Methodology

Four Masonite, multi-disk Hester-Dendy samplers were attached to a concrete block for each of the five locations (Table 1).



Hester-Dendy Sampler Set-up

Using guidelines found in FDEP SOP FS 7430 the samplers were incubated in the streams for 28 days. During this time, benthic macroinvertebrates colonized the

samplers, some forming cases, filtering food debris passing by, and scraping and eating periphyton, other algae, and diatoms that may grow on the sampler. Predatory insects also made their way onto the substrate to feed. The samplers were collected in good condition at all locations. However, at Tumblin Creek, the samplers were partially sand-smothered, but still well-populated. At Hogtown Sink, the sampler was redeployed due to removal by the landowner. Before redeployment, the owner was advised of its purpose and redeployed. The samples were collected successfully and were processed by Water & Air Research, Inc.

The Physical and Chemical Data, Shannon Diversity Index, Pielou's Evenness, Florida Index, Density, and Total Taxa results are provided in Table 2 to compare data previously collected in 1996, 2000, 2009 with that collected in 2013.

Physical/Chemical Data

Physical/Chemical Data were not collected during all sampling events, but may be of interest. Results are shown in Table 2. Physical and Chemical Data may vary daily and seasonally, dependent in part on rainfall and temperature. To have comparable results from one sampling event to another, it is advisable to sample under similar conditions each time. This is not always possible due to time and budget constraints, unexpected storms, drought, or other unforeseen circumstances. However, it is a goal to strive for in order to have comparable data. The 2013 readings were taken with a YSI QS multi-parameter meter which had been calibrated and checked the morning of each sampling event.

Increases in water temperature can result from stormwater running off of hot pavement directly into creeks. If the water is directed to a stormwater pond which then flows into a creek, it may help keep the temperature lower if the pond is shaded.

Shading the creek itself also can keep the water temperatures lower.



Springstead Creek is shaded at this location.

Cold water is more likely to have low dissolved oxygen (DO) because it can retain more DO than warmer water. Unfortunately, the need for DO increases as temperature increases. This occurs because metabolic rate for ectotherms (cold-blooded animals) increases with temperature. Therefore, if temperatures are very high, DO drops, while the need for DO increases. This is why fish kills often occur during the hot summer months. Many aquatic insects are sensitive to low DO as well, and may die off when the water is too warm and does not retain as much dissolved oxygen. Good current velocity helps to oxygenate the water by creating more contact with the oxygen in the air. In streams where the velocity is very low, the level of DO is lower.

Specific conductivity (Sp C) measures the amount of ions in the water available to conduct an electric current. Groundwater in Florida from deep limestone aquifers will have relatively high Sp C values due to dissolved calcium and magnesium ions in the water, usually about 300-500 $\mu\text{S}/\text{cm}$. Groundwater from the surficial or intermediate aquifers (or aquifer systems) typically has lower concentrations of ions in solution and are the water sources for the Gainesville area creeks. In the surficial aquifer the Sp C typically ranges 50 to 100

$\mu\text{S}/\text{cm}$. The intermediate aquifer Sp C ranges from 90 to 200 $\mu\text{S}/\text{cm}$. A recent rainfall event will often lower the specific conductivity due to the lack of dissolved ions in rainwater. In the urban environment Sp C in the creeks may be higher due to nonpoint pollution or illicit discharges.

The pH indicates how acidity or alkalinity of the water. Pure water has a pH of 7.0 standard units (SU) and is neutral. The lower the number is below 7.0, the more acidic it is, while the higher the number is above 7.0, the more alkaline it is. Rainwater tends to have a lower pH, sometimes very low when air pollutants produce "acid rain", whereas ground water tends to have a neutral or higher pH, due to the dissolved limestone underground which buffers acid in the water. Shallow groundwater from the surficial aquifer system naturally has a relatively low pH due to the absence of limestone and other carbonate rocks, which would raise the pH.

Comment [AS2]: Replace how with the



The Hester-Dendy sampler is in the water, being tied off to a tree as the multi-parameter probe takes readings at Hogtown Creek upstream of the Haile Sink location.

Explanation of Indices

Three indices, as well as six Stream Condition Index (SCI) metrics were used to analyze macroinvertebrate populations collected from each location. The Shannon Weaver Diversity Index (SWDI or Shannon Diversity Index) is a quantitative measure of

biodiversity and species distribution or evenness. Pielou's Evenness is a measure of the similarity in abundance of individual species. The Florida Index classifies aquatic macroinvertebrates on their sensitivity to organic pollution and dissolved oxygen depletion.

Shannon Diversity Index

The Shannon Diversity Index is determined by two components, the degree of evenness in the distribution between species (or distinct taxonomic groups) and the number of species (or distinct taxonomic groups). Values generally range from 0 to 5, with the highest values occurring where the number of taxa and evenness in abundance are high. Values ~~of~~ between 3 and 5 indicate clean water conditions, whereas values of 2 or lower are characteristic of stressed waters.

$$SWDI = - \sum (\text{proportion of } i^{\text{th}} \text{ taxa}) (\log_2 \text{proportion of } i^{\text{th}} \text{ taxa})$$

where: SWDI is the Shannon-Weaver diversity value
zero is the lowest possible value and higher numbers indicate greater diversity

The index can be skewed by naturally occurring patchy distribution. The presence or absence of sensitive species is important in assessing the significance of SWDI as a water quality indicator. (Barbour et al., 1996. Standard Methods, 19th Edition, Part 10500.)

Pielou's Evenness

Pielou's Evenness (Pielou 1996) is calculated using the number of taxa per sample, abundance (total number of organisms/sample), and SWDI. Pielou's Evenness was calculated using the following equation:

$$\text{Evenness} = \frac{SWDI}{\log^2 S}$$

where: SWDI is the Shannon-Weaver index value
S is the total number of taxa.

Values range between 0 and 1. A value of 1 denotes that all taxa are represented by an equal number of individuals. Thus, the closer a value is to 1, the more even the distribution.

Florida Index

The Florida index, or Beck's index, was specifically designed for use in Florida freshwater streams and rivers, especially with reference to the impact of organic pollution on community composition. Class I organisms are "sensitive or intolerant to pollution"; Class II organisms are "facultative" and, thus, can tolerate varied conditions, perhaps including moderate levels of pollution. A high value indicates presence of a large number of pollution sensitive organisms.

The index is calculated as follows:

$$2 * (\text{number of Class I Organisms}) + (\text{number of Class II Organisms}) = \text{Biotic Index}$$

0-2 = gross pollution; 3-5 = moderate pollution; 6-9 = clean but poor habitat; 10 and above = clean



The mayfly nymph *Maccaffertium smithae* is a sensitive, Class I Florida Index species.

Additional Metrics

To further characterize the macro-invertebrate populations in these five streams, we evaluated some measures utilized in the FDEP Stream Condition

Index. Those are Sensitive Taxa (species), Long-lived Taxa, Clinger Taxa, Suspension Feeders, and Very Tolerant Taxa. The Sensitive Taxa are those sensitive to pollution. Long-lived Taxa have a life cycle of more than one year as an aquatic form, such as a mussel or a dragonfly nymph. The Clinger Taxa are able to hang onto a substrate in a swift current and prefer to have a good stream velocity.

Suspension feeders catch food as it drifts by in the current, sometimes by building a web to trap debris or with setae or other anatomical structures to collect food. The Very Tolerant Taxa are found where the conditions such as low dissolved oxygen, high turbidity, and high biochemical oxygen demand make life difficult for other macroinvertebrates.

Results

Table 2 shows the physical and chemical data collected during the current and past Hester-Dendy sampling events. The Shannon Diversity Index, Pielou's Evenness, Florida Index, Total Density, and Total Number of Taxa metrics are found in Table 3. The additional metrics such as Sensitive Taxa, Clinger Taxa and Very Tolerant Taxa are listed in Table 4.

The database output for Raw Data, Index Data, Density, Per Cent Abundance, Sensitive, Long-lived, Clinger, and Very Tolerant Taxa data may be found in Appendix A. Bench sheets are presented in Appendix B.

During 2013 the parameters of temperature, dissolved oxygen, specific conductivity and pH were all within expected ranges.

High temperatures reduce the amount of dissolved oxygen in the water which stresses the macroinvertebrate population.

~~Stream current velocity is also an important factor that influences dissolved oxygen.~~ Dissolved oxygen is also affected by stream current velocity, water color, time of day,

solar radiation, and the plants producing oxygen in the water. The lowest dissolved oxygen recording was at Hatchet Creek in June 2000 at 1.27 mg/L. Because of the many variables that affect a water sample, using metrics to evaluate the macroinvertebrate population helps to give another perspective on the quality of the water environment.

The Shannon Diversity Index values (Table 2) fell into the range indicating clean water conditions for all stations during 2013, except for Little Hatchet near the Airport Industrial Park. The highest score was for Springstead Creek west of US 441.



Springstead Creek Hester-Dendy samplers were located in a sheltered area near the bank.

The 2013 Pielou's Evenness scores had roughly the same results with most values closer to 1 than to 0, showing a good distribution of species. Again, the lowest score was for Little Hatchet near the Airport Industrial Park. The highest score was for Springstead Creek west of US 441.

Hatchet Creek upstream of the sink on Alachua County Forever land (Newnans Lake Conservation Area - Hatchet Creek Addition) scored highest for the Florida Index (37 points). Hogtown Creek at Haile Sink and Springstead Creek also had high Florida Index scores (29 points each). Tumblin Creek, which historically had low Florida Index scores, improved over the

years. The lowest number was again at Little Hatchet Creek.

Total Density measures the number of organisms per square meter calculated by using the surface area of the Hester-Dendy samplers. The density is influenced by how much food is available to the organisms populating the samplers. The food, such as periphyton, may grow on the sampler, or may be filtered from the water by the organisms. Predators may come onto the sampler and eat the organisms populating it as well. The highest density was found at Hogtown Creek at Haile Sink. The lowest was at Tumblin Creek west of US 441 in the wooded area near Bivens Arm.



The Tumblin Creek Hester-Dendy Sampler is located in this pool.

The highest number of unique species was found at Hogtown Creek at Haile Sink. This station has an open canopy which, given enough nutrients, allows for abundant growth of plants and periphyton, providing a rich food source. Additionally, Hogtown Creek has a swift current and natural riparian zone which makes a healthy environment for a variety of macroinvertebrates.

Table 4 provides more detail about the communities at each station. Little Hatchet Creek, which scored poorly in all of the metrics discussed, had no Very Tolerant Taxa. The greatest percent abundance (69%) was of mayflies of the family

Heptageniidae, which are Sensitive and Clinger Taxa. The next most common was the caddisfly *Cheumatopsyche*, which is also a Clinger taxon (18%) (Appendix A). Even though the Total Number of Taxa is low (13 taxa), the prevailing organisms are indicative of better conditions.

Hatchet Creek upstream of a sink which carries the creek water underground, is located in a former silviculture area but is now land preserved by Alachua County. This station had the only Long-lived organism of all stations. It had the highest number of Sensitive Taxa (6) matched by Hogtown Creek, a high number of Clinger Taxa (7), Suspension Feeders (9), and no Very Tolerant Taxa. Hogtown Creek had seven Very Tolerant Taxa. Considering this information, Hatchet Creek is a very healthy stream in terms of organisms requiring good environmental conditions.

Tumblin Creek, which had the same number of species as Hatchet Creek, had no Sensitive Taxa and nine Very Tolerant Taxa. Tumblin Creek appears to be impaired compared to the other stations.

Summary and Recommendations

The results for Little Hatchet Creek are mixed as they indicate by all indices, a macroinvertebrate community which has little variety and is dominated by one particular species. However, that species is known to be a Sensitive Taxon. No organisms found there were tolerant of pollution. The continual flow, good riparian buffer, and sandy bottom make it a good environment for those dominant taxa. However, high stormwater flows and sand sedimentation may prevent a greater variety of organisms from populating the creek.

The Shannon Diversity Index indicates that Springstead Creek west of US 441 has the most balanced community of the five streams studied. Hatchet Creek has the most Florida Index species with high

Comment [AS3]: Hatchet Creek upstream of a sink, which carries a portion of the creek water underground, is located in a silviculture on land now owned by Alachua county.

numbers of Sensitive Taxa and Suspension-feeding organisms and has no species listed as very tolerant of pollution. Hogtown Creek upstream of Haile Sink has the highest densities of organisms and the highest numbers of unique species, although some of those are Very Tolerant Taxa. Tumblin Creek has a high number of Very Tolerant Taxa and no Sensitive Taxa, but otherwise has a surprising number of Florida Index species, and seems to have a fairly balanced distribution of organisms.

Continued monitoring of the Alachua County creeks using bioassessments may help to document the effectiveness of ~~implemented~~**best** management practices and to guide future scientists, planners, and

engineers toward solutions. Hester-Dendy sampling for individual sites can assist in targeting a particular site for restoration activities. A regular schedule of monitoring and reporting, such as every five years, will keep local governments informed about the conditions in their waterways. Some creeks, such as Little Hatchet Creek, may need more frequent sampling.

Creeks and streams have the ability to recover from disturbance, and these data may help local governments take the necessary steps to help Alachua County's impaired creeks to recover, ~~and to~~ **protecting** our healthy creeks for future generations of residents and wildlife.

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