

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

SAMPLE ID 79208 ORG ID 21FLWQSP LATITUDE 30.2361
 COUNTY Wakulla STORET # 32030062 LONGITUDE -84.2722
 DATE 02/06/2019 TIME 10:00 AM SAMPLING AGENCY FDEP
 SITE NAME McBride Slough
 FIELD ID/NAME MCBRIDE RECEIVING BODY OF WATER WAKULLA RIVER

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural ☒ Silviculture ☒ Field/Pasture ☒ Agricultural ☐ Residential <u>LIGHT</u> Commercial ☐ Industry ☐ Other (Specify) <u>PARK</u>							Landscape Development Intensity Index (LDI) <u>1.2</u>
Local Watershed Erosion (select one): ☒ None ☐ Slight ☐ Moderate ☐ Heavy Local Watershed NPS Pollution: ☒ No evidence ☐ Slight ☐ Moderate ☐ Heavy				Typical Width (m) Depth (m)/Velocity (m/sec) Transect <u>4.5</u> m wide			
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: Right Bank:		Hydrologic Modification Score (per FT 3101) <u>1-2</u>		<u>0.25</u> m/s <u>0.27</u> m/s ^{3-4 sec} <u>0.25</u> m/s			
High Water Mark: <u>0.1</u> + <u>0.3</u> = <u>0.4</u> (m) (above present water level) (present depth) (above bed)		Artificially Impounded ☐ Yes ☒ No		<u>0.2</u> m deep <u>0.3</u> m deep <u>0.2</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 ☐
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SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☒ RPS ☒ LVS
☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	<u>10-8</u>	<u>7</u>	
Undercut Banks / Roots	<u>41</u>	<u>1</u>	
Leaf Packs or Mat			
Aquatic Vegetation	<u>45</u>	<u>7</u>	
Rock or Shell Rubble..			
Sand.....	<u>35-37</u>	<u>65</u>	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	<u>.01</u>	<u>19.0</u>	<u>7.21</u>	<u>3.76</u>	<u>40.7</u>	<u>354.1</u>		
Mid:	<u>.2</u>	<u>19.0</u>	<u>7.14</u>	<u>3.68</u>	<u>39.8</u>	<u>354.1</u>		☒ VOB
Bottom	<u>.33</u>	<u>19.0</u>	<u>7.20</u>	<u>4.01</u>	<u>44</u>	<u>354.1</u>		
Meter ID:	<u>1483</u>							

Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐	Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐
Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: <u>1108040</u> Exp: <u>2/17/19</u> <u>4203</u> <u>1108040</u> <u>3/26/19</u> Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____	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:

SUN, 6:05 - DOWNED TREES BETWEEN 20-40m MARK HAD DIVERTED FLOW SOMEWHAT. SAMPLED ORIGINAL STRETCH AS MUCH AS POSSIBLE.
☒ The antecedent hydrologic conditions have been met to my best knowledge.

SAMPLING TEAM

JOY JACKSON, A. ONEAL, LORI WOLFE, RACHEL DRAGON

SIGNATURE: [Signature]

DATE:

02/06/2019

HA-15637

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

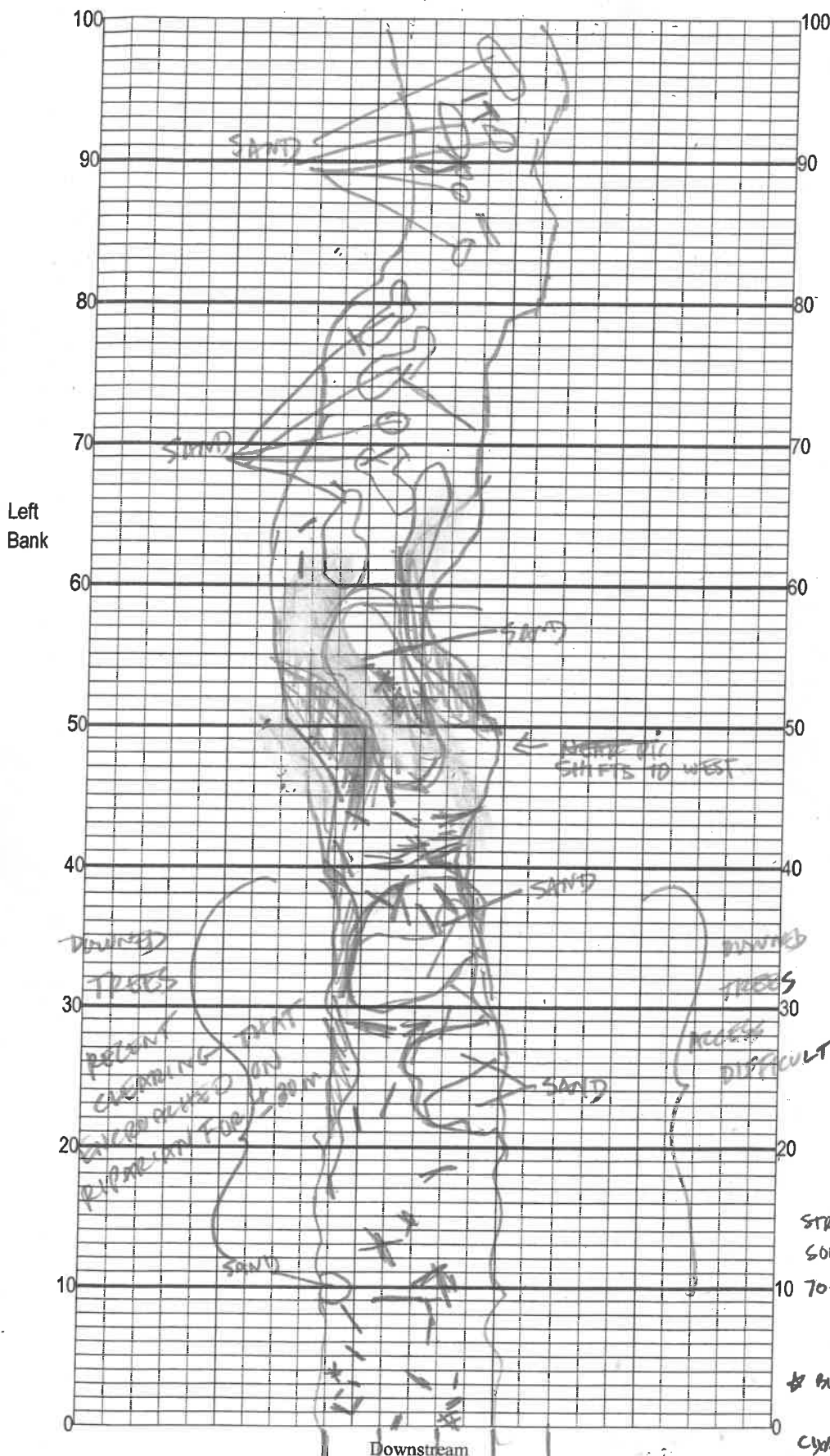
SAMPLING AGENCY: <u>FDEP-AEQA</u>		STORET STATION NUMBER: <u>32030062</u>	DATE (MM/DD/YY): <u>2.6.19</u>	RECEIVING BODY OF WATER: <u>WAKULLA RIVER</u>
REMARKS: <u>EUREF</u>	COUNTY: <u>WAKULLA</u>	LOCATION: <u>McBride Slough</u>		FIELD ID/NAME: <u>McBride REF</u>

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 SOME SMOOTH <u>SNAGS</u>	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered
Substrate Diversity <u>10</u> <u>9</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> <u>9</u> 8 7 6	5 4 3 2 1
Substrate Availability <u>18</u>	Greater than 30% major productive habitat present at site 20 19 <u>18</u> 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>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>17</u> Primary Score <u>61</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>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	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 <u>RECENT CLEAR CUT</u> <u>ALONG 1/2 30m</u>	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>10</u>	<u>10</u> 9	8 <u>7</u> 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>77</u>	<u>10</u> 9	8 7 6	5 4	3 2 1

138**TOTAL SCORE**

Date: <u>2.6.19</u>	Analyst: <u>Joy Jackson</u>	Signature: <u>Jay</u>
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DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



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

4m

Location: McBride Slough
Date: 2.6.19
Sampler: J JACKSON

100 m: Latitude		
Longitude		
0 m: Latitude		
Longitude		
Substrates: Code key, draw proportionate habitat abundance.		%
# Snags		8
SS Roots/undercut banks		<1
Leaf Packs (or mats)		
M Aquatic Macrophytes		45
S SAND		37
Pools		
	total # observed =	
	# range expected =	
Average width	4.5 m	
Average depth	0.3 m	
Velocity measured at	40	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:

STREAM HAS CHANGED FLOW PATTERN
SOMEWHAT DUE TO DOWNED TREES - E.S.P.
10 TO 90m. HARD TO SEE DEFINED CHANNEL

* BOTTOM COVERED W/ VEG EXCEPT WHERE NOTED

CHANNEL VERY BEACHED - DOWNED TREES
DUE TO

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: <u>Mcbride Slough</u>					County: <u>Wabulla</u>		Date: <u>2-6-2019</u>		Investigators: <u>JACKSON, R. DRAGON</u>	
Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover	Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover	
0	1	N			60	1	N			
	2					2				
	3					3				
	4					4				
	5			44		5				53
	6					6				
	7					7				
	8					8				
	9					9				
10	1				70	1	N			
	2					2				
	3					3				
	4					4				
	5			65		5				50
	6					6				
	7					7				
	8					8				
	9					9				
20	1				80	1	N			
	2					2				
	3					3				
	4					4				
	5			53		5				40
	6					6				
	7					7				
	8					8				
	9					9				
30	1				90	1	N			
	2					2				
	3					3				
	4					4				
	5			60		5				82
	6					6				
	7					7				
	8					8				
	9					9				
40	1				100	1	N			
	2					2				
	3					3				
	4					4				
	5			60		5				71
	6					6				
	7					7				
	8					8				
	9					9				
50	1					1				
	2					2				
	3					3				
	4					4				
	5			54		5				
	6					6				
	7					7				
	8					8				
	9					9				

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.

Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.

Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.

Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%.

Secchi depth	V03
Estimated?	Y

# points ranked 4-6	0
total points assessed	99
% points ranked 4-6	0

Check accompanying data collected at same site/date.	
Algal mat sample	N
Linear Veg Survey	Y
Habitat Assessment	Y
SCI/Biorecon	Y
Water sample	Y
RQ- 2019-02-04-77	

Algal Thickness Rank	
N	rough, no algae, slimy, algae up to 1mm
3	>1mm - 6mm
4	>6mm - 20mm
5	>20mm - 10 cm
6	>10 cm

MAVEN ID 11208 11208 11206 11210



DEP FORM FD 9000-32: LINEAR VEGETATION SURVEY FIELD SHEET

Waterbody: McBride Slough Date: 2/06/15 County: Wakulla Storet Number:
 Analyst: A. O'Neal (Lori Wolfe obs) Signature: Ashley O'Neal
 Comments:

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1m² of taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.

HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)	HERBACEOUS SPECIES	Meter Mark										Specimen collected (check)
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100			0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
<i>Alternanthera philoxeroides</i>												<i>Micranthemum glomeratum</i>											
<i>Bacopa caroliniana</i>												<i>Micranthemum umbrosum</i>											
<i>Bacopa monnieri</i>												<i>Myriophyllum aquaticum</i>											
<i>Bidens mitis</i>												<i>Najas guadelupensis</i>											
<i>Boehmeria cylindrica</i>												<i>Nuphar luteum</i>											
<i>Centella asiatica</i>												<i>Orontium aquaticum</i>											
<i>Ceratophyllum demersum</i>												<i>Panicum hemitomon</i>											
<i>Chara</i>												<i>Panicum repens</i>											
<i>Cicuta maculata</i>												<i>Panicum rigidulum</i>											
<i>Cladium jamaicense</i>												<i>Pistia stratioides</i>											
<i>Colocasia esculenta</i>												<i>Polygonum glabrum</i>		✓	✓	✓	✓			✓	✓		
<i>Commelina diffusa</i>												<i>Polygonum hydropiperoides</i>											
<i>Commelina virginica</i>												<i>Polygonum punctatum</i>											
<i>Crinum americanum</i>												<i>Pontedaria cordata</i>							✓		✓		
<i>Diodia virginiana</i>												<i>Potamogeton illinoensis</i>											
<i>Eichhornia crassipes</i>												<i>Ruellia simplex</i>											
<i>Eleocharis (wispy viviparous)</i>												<i>Sacciolepis striata</i>											
<i>Hydrilla verticillata</i>												<i>Sagittaria kurziana</i>											
<i>Hydrocotyle</i>												<i>Sagittaria lancifolia</i>											
<i>Hygrophila polysperma</i>												<i>Sagittaria latifolia</i>											
<i>Hymenocallis</i>				✓	✓	C	✓		✓	✓		<i>Salvinia minima</i>											
<i>Lachnanthes caroliniana</i>												<i>Samolus parviflora</i>											
<i>Landoltia punctata</i>												<i>Saururus cernuus</i>											
<i>Lemna</i>												<i>Sparganium americanum</i>											
<i>Limnophila sessiflora</i>												<i>Typha</i>											
<i>Ludwigia leptocarpa</i>												<i>Vallisneria americana</i>											
<i>Ludwigia palustris</i>												<i>Zizania aquatica</i>											
<i>Ludwigia peruviana</i>												<i>Sium suave</i>		C	V	C	C	V	C	C	✓	90-100	
<i>Ludwigia repens</i>	✓	✓	✓		✓	✓						<i>Rhynchospora miliacea</i>	✓	C	C	V	V	V	V	V	V		
<i>Luziola fluitans</i>												<i>Lobelia cardinalis</i>	✓	C	C	C	C	C	C	V	V		
												<i>Datura</i>											
												<i>Peltandra virginica</i>	✓	✓	✓	✓	✓						
												<i>Hymenocallis sp.</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	see above	
												<i>(Crinum)</i>											
												<i>Fontinalis</i>											
												<i>Sagittaria kurziana</i>									✓		
												<i>Rorippa aquatica</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓		
If no Dominant or Co-Dominant were selected, indicate with "X"																							
Indicate % cover macrophytes per section																							
0-5% Macrophyte Coverage																							
>5 and ≤10% Macrophyte Coverage																							
>10 and ≤25% Macrophyte Coverage																							
>25 and ≤50% Macrophyte Coverage																							
> 50% Macrophyte Coverage																							

big tree fall at 10m - Hurricane Michael
 flow is multi- "pathway" spread out beyond typical channel

* *Clinopodium brownei*

RD-2019-02-04-77

Request Number: RD-2019-02-04-77

Reference Stream Sampling

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Customer: BSSP

Requester: Sarah Panek

Field Report Prepared By:

Joy Jackson

Project ID: SCIREF

Collected By:

Joy Jackson

Sampling Agency:

DEP-AE04

Location		McBride Street		☒ Comp		Collection (comp begin or grab)		☒ Grab		Date 2-6-2019		Time 1:00 PM		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID		MCBRI REF		Matrix (type, e.g., Salt, Fresh, etc)		Fresh surface water		Diss. Oxygen		3.76 / 40.7		☒ % sat (mg/L)		Total Res. Chlorine								(See pg 2)	
WINSTORET #		22030062		Temp (C)		19.0		pH		7.21		Sample Depth		0.1 m		☒ ft		Sp. Conductance (umho/cm)		354		A,B	
Latitude		30.2361		☒ dd		☒ dms		Longitude		-84.2722		☒ dd		☒ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							
Location				☐ Comp		Collection (comp begin or grab)		☐ Grab		Date		Time		Eastern Composite end		Central Composite end		Date		Time		Bottle Group(s)	
Field ID				Matrix (type, e.g., Salt, Fresh, etc)				Diss. Oxygen				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
WINSTORET #				Temp (C)				pH				Sample Depth				☐ ft		Sp. Conductance (umho/cm)					
Latitude				☐ dd		☐ dms		Longitude				☐ dd		☐ dms		Salinity (ppt)							

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Ashley D. Neal	2/6/2019 15:12	hand delivery	2		2/6/19 15:12