

March 2017

Data Qualified?
Yes / No


 Location/STORET Station Name: Unnamed Branch @ 60m upstream of Airport Rd Date: 6/22/17
 STORET # GSCE0084 WBID: 264121FLCEN ^{KW} Latitude: 29.306394 (mm/dd/yyyy)
 County: Volusia RQ: 2017-06-12-46 ORG ID: 21FLCEN Longitude: -81.103035 (Decimal Degrees)
 Receiving Body of Water: Tomoka Field ID: GSCE0084 (Decimal Degrees)

Sampling Team Members		WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check	Duplicate Collection	Blank Collection
Terry Riggan						✓		
Katie Williams		✓	✓	✓		✓	✓	

Sampling Equipment	
☒ Sample Container	☐ Van Dorn ☐ Pole
☐ Carboy	☒ Syringe
☐ Dipper	☐ Other _____
Equipment ID _____	

Collection Method	
☐ Wading	<u>Via Boat</u>
☒ From Shore	☐ Canoe/Kayak
☐ Other (note below) _____	☐ Electric Motor
	☐ Gasoline Motor

Water Level:	Dry / Pooled / <u>Low</u> / Normal / High / Flooded	Matrix:	<u>Fresh</u> / Marine / DI
Meter ID#	Botten 67	Photos:	Yes / No
		Tide Falling:	Yes / No / <u>NA</u>

Field Sample

[illegible]

Biological Samples Collected:	None	HA	SCI	RPS	Algae ID	LVS	LVI	Other _____
SBIO ID Numbers:	SBIO-ID: 77703	RPS-ID: 8711	Macrophyte-ID: n/a	LIMS#: 1908567				

Parameter Suite	Parameter Methods	Preservation	Acid Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / ☐ W-NO2NO3 / ☐ W-TKN / ☐ W-TOC / ☐ W-S-A-TP	☒ Ice ☒ H ₂ SO ₄			☒ >2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO ₃			☐ <2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter	☒ Ice	Contains 1:1 Sulfuric Acid SA-7033010 EXP: 04/03/18 Warning! See SDS		
Chlorophyll	☒ CHLSUITE-W	☒ Ice			
Physical/Aggregate (Fresh)	☒ Alkalinity / ☐ W-F / ☐ W-TSS / ☐ TURBIDITY / ☐ W-Cl-IC / ☐ W-COLOR / ☐ W-SO4-IC / ☐ W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / ☐ W-F / ☐ W-TSS / ☐ TURBIDITY	☐ Ice			
Macroinvertebrates	☐ ME-FW-QLDC	☐ Formalin			
Periphyton	☐ ALGAE-ID	☐ Ice			
Microbiology	☐ E Coli ☐ F Coli ☒ Enterococci ☒ qPCR	☐ Ice			
Tracers	☒ W-SUC-AA-R ☒ W-UHERB-AA ☒ W-AHERB-AA	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Ice ☐ Other _____			

Unnamed Branch @ 60m **G5CE0084 D**
Upstream of Airport Rd. **Field ID** 
(Duplicate) **STORET** 
RQ-2017-06-12-43 **Date: 06/19/17**
G5CE0084_D

QA/QC Sample Information

Duplicate

Time Zone: **EST** **CEN**
Time: **1125**

Sample Depth (m): **0.1**
Total Depth (m): **0.15**

Parameter Suite	Parameter Methods	Preservation	Acid Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP	☒ Ice ☒ H ₂ SO ₄			☒ < 2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO ₃			☐ < 2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter	☒ Ice			
Chlorophyll	☒ CHLSUITE-W	☒ Ice			
Physical/Aggregate (Fresh)	☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-CI-IC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Microbiology	☐ E Coli ☐ F Coli ☐ Enterococci ☐ qPCR	☐ Ice			
Tracers	☒ W-SUC-AA-R ☒ W-UHERB-AA ☒ W-AHERB-AA	☒ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Ice ☐ Other			

Contains
1:1
Sulfuric Acid
SA-7093010
EXP: 04/03/18
Warning!
See SDS

Blank

Time Zone: **EST** **CEN** Time: **1210** Field ID: **Field Blank** Location: **Airport Rd.**

☒ Field Blank ☐ Equipment Blank ☐ Field Cleaned Equipment Blank Equipment ID: _____

Parameter Suite	Parameter Methods	Preservation	Acid Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP	☒ Ice ☒ H ₂ SO ₄			☒ < 2
Metals	☒ W-ICPMS ☐ W-ICP	☒ Ice ☐ HNO ₃			☒ < 2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter	☒ Ice			
Chlorophyll	☒ CHLSUITE-W	☒ Ice			
Physical/Aggregate (Fresh)	☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-CI-IC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Microbiology	☐ E Coli ☐ F Coli ☐ Enterococci ☐ qPCR	☐ Ice			
Tracers	☐ W-SUC-AA-R ☐ W-UHERB-AA ☐ W-AHERB-AA	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-AHERB-AA ☐ W-PYR-AA-R ☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Other			

Contains
1:1
Sulfuric Acid
SA-7093010
EXP: 04/03/18
Warning!

Contains
1:1
Nitric Acid
NA-6253070
EXP: 09/09/17
Warning!
See SDS

Note: 10 Field Blank

Field Blank 
Field ID 
STORET 
FieldBlank

Unnamed Branch @ 60m **G5CE0084**
Upstream of Airport Rd. **Field ID** 
RQ-2017-06-12-46 **Date: 06/19/17** **STORET** 
G5CE0084

Signature: **Kutlans** Date: **6/22/17**

Field Parameters Entered into LIMS: _____ (Initials/Date) Field Parameters QC in LIMS: **7/2 7/13/17** (Initials/Date)
Date Migrated to STORET: _____ (Initials/Date) Field Sheets Scanned/Saved: _____ (Initials/Date)

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

SAMPLING AGENCY:		STORET STATION NUMBER: <u>G5CE0084</u>	DATE (MM/DD/YY): <u>6/22/17</u>	RECEIVING BODY OF WATER: <u>Tomoka</u>
REMARKS:	COUNTY: <u>Volusia</u>	LOCATION: <u>Unnamed Branch</u>		FIELD ID/NAME: <u>G5CE0084</u>

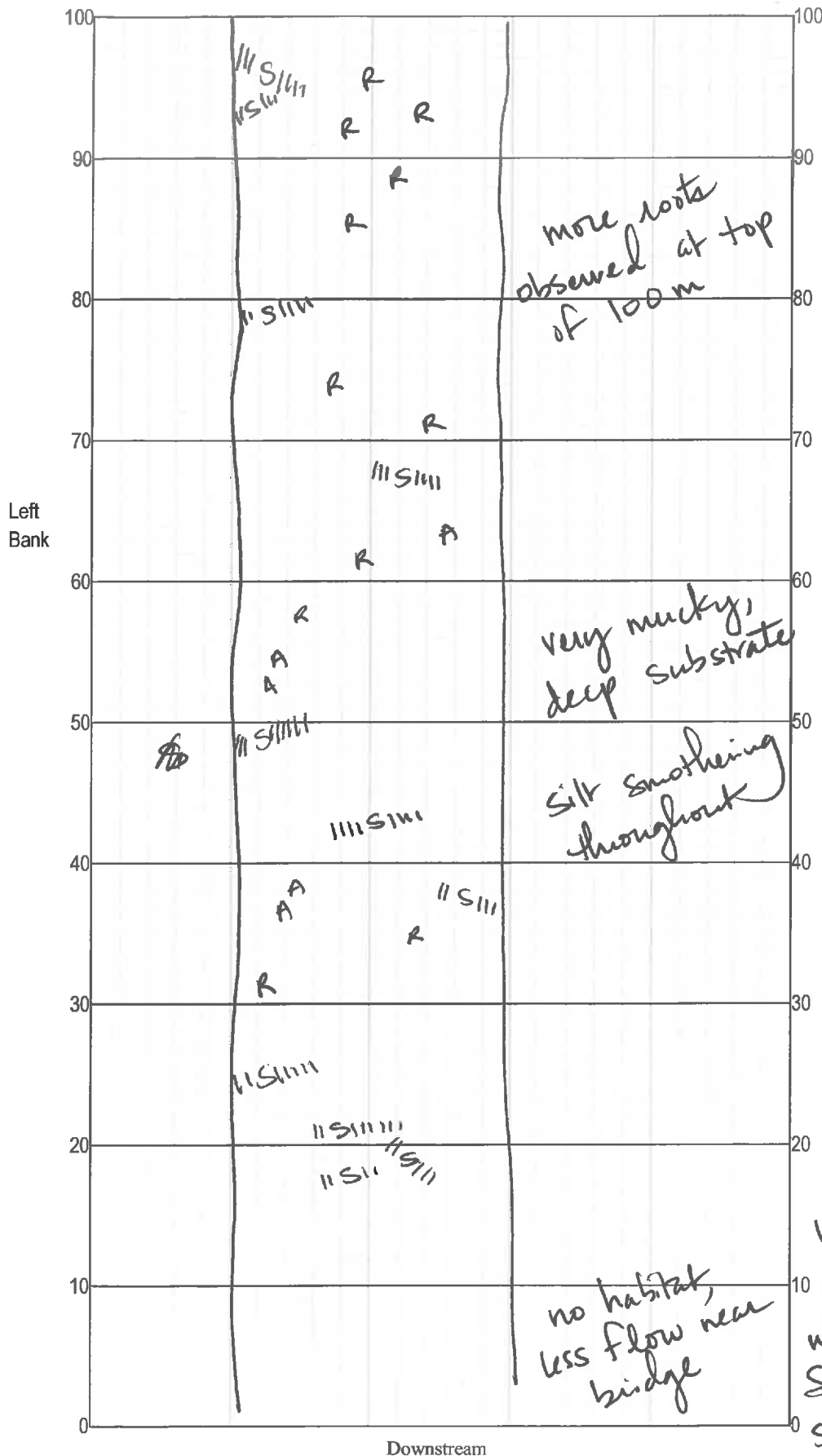
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>6</u>	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. 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 10 9 8 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>4</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>5</u> ----- Primary Score <u>25</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 Artificial Channelization <u>18</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 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>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. 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>10</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>9</u> Left Bank <u>9</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; 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 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

101

TOTAL SCORE

Date: <u>6/22/17</u>	Analyst: <u>Katie Williams</u>	Signature: <u>KWilliams</u>
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DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Location: Unnamed Branch
 Date: 6/22/17
 Sampler: Katie Williams

100 m: Latitude _____
 Longitude _____
 0 m: Latitude _____
 Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

☐ S	Snags	_____
☐ R	Roots/undercut banks	_____
☐ L	Leaf Packs (or mats)	_____
☐ A	Aquatic Macrophytes	_____
☐		_____
☐		_____
☐	Pools	total # observed = _____ # range expected = _____

Average width 4 m
 Average depth 0.15 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:

Water level lower than last assessment, can see roots which we did not last time. Smothering slightly less, but still very silty.

Length of grid represents 100 m of stream (not linear meters).
 (Horizontal scale is double vertical scale, draw proportionately).
Arctostaphylos, Saururus, Arundo, Acer, Taxodium, Smilax, Toxicodendron, Sabal palm.

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

Waterbody: <u>Unnamed Branch</u>	Date: <u>6/27</u>	County: <u>Volusia</u>	Storet Number: <u>G5UE009</u>
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Analyst: Katie Williams Signature: K Williams

Comments: 62m², no LVS. *Oenothera*, *Saxifraga*, *Centa* present

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m² 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.

[illegible]

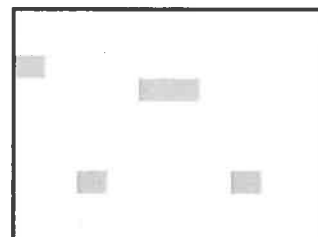
FDEP FORM FD 9000-32 LINEAR VEGETATION SURVEY FIELD SHEET

Percent Cover Categories for macrophytes in a 10 m segment of a stream 5 m wide

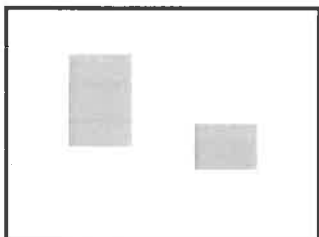
5% Macrophyte Coverage



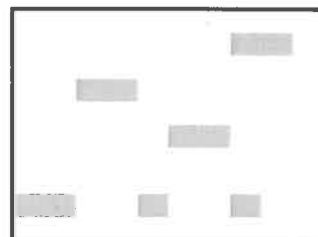
5% Macrophyte Coverage



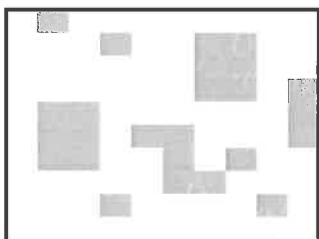
10% Macrophyte Coverage



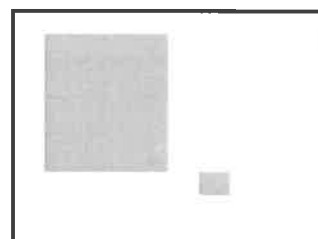
10% Macrophyte Coverage



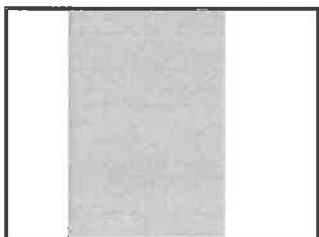
25% Macrophyte Coverage



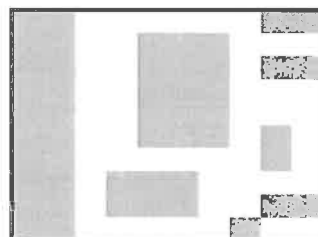
25% Macrophyte Coverage



50% Macrophyte Coverage



50% Macrophyte Coverage



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

SAMPLE ID _____	ORG ID <u>241116N</u>	LATITUDE _____
COUNTY <u>Volusia</u>	STORET # <u>GSCE0084</u>	LONGITUDE _____
DATE <u>6/22/17</u>	TIME _____	SAMPLING AGENCY _____
SITE NAME <u>GSCE0084 Unnamed Branch</u>		
FIELD ID/NAME <u>↓</u>		RECEIVING BODY OF WATER <u>Tomoka River</u>

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):								Landscape Development Intensity Index (LDI)	
Forest/Natural	Silviculture	Field/Pasture	Agricultural	Residential	Commercial	Industry	Other (Specify)		
<u>35</u>				<u>45</u>		<u>10</u>	<u>10</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>3</u> m wide	
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>718</u> Right Bank: <u>718</u>				Hydrologic Modification Score (per FT 3101) _____				_____ m/s <u>0.1</u> m/s _____ m/s	
High Water Mark: <u>0.6</u> + <u>0.15</u> = <u>0.75</u> (m) (above present water level) (present depth) (above bed)				Artificially Impounded ☐ Yes ☒ No				_____ m deep <u>0.15</u> m deep _____ 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): _____			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			Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐																																										
<table border="1" style="width:100%"> <thead> <tr> <th></th> <th>% Coverage</th> <th>INVERT # Times Sampled</th> <th>PERI # Times Sampled</th> </tr> </thead> <tbody> <tr><td>Woody Debris (Snags)</td><td></td><td></td><td></td></tr> <tr><td>Undercut Banks / Roots</td><td></td><td></td><td></td></tr> <tr><td>Leaf Packs or Mat</td><td></td><td></td><td></td></tr> <tr><td>Aquatic Vegetation</td><td></td><td></td><td></td></tr> <tr><td>Rock or Shell Rubble..</td><td></td><td></td><td></td></tr> <tr><td>Sand.....</td><td></td><td></td><td></td></tr> <tr><td>Mud / Muck / Silt</td><td></td><td></td><td></td></tr> <tr><td>Other</td><td></td><td></td><td></td></tr> <tr><td>Other</td><td></td><td></td><td></td></tr> </tbody> </table>				% Coverage	INVERT # Times Sampled	PERI # Times Sampled	Woody Debris (Snags)				Undercut Banks / Roots				Leaf Packs or Mat				Aquatic Vegetation				Rock or Shell Rubble..				Sand.....				Mud / Muck / Silt				Other				Other				Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) D.O. Sat (%) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M) Top: <u>0.1</u> <u>25.9</u> <u>6.9</u> <u>5.1</u> <u>62</u> <u>491</u> <u>0.24</u> _____ Mid: _____ Bottom: _____ Meter ID: <u>Betty 67</u>			Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐		
	% Coverage	INVERT # Times Sampled	PERI # Times Sampled																																													
Woody Debris (Snags)																																																
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Rock or Shell Rubble..																																																
Sand.....																																																
Mud / Muck / Silt																																																
Other																																																
Other																																																
			Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: _____ Exp: _____			Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify) _____																																										
			Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____			Clarity Clear ☒ Slightly Turbid ☐ Turbid ☐ Opaque ☐																																										
ABUNDANCE Not Obs. Rare Common Abundant			System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) _____																																													
Periphyton: ☒ ☐ ☐ ☐ Fish: ☐ ☒ ☐ ☐ Aquatic Plants: ☐ ☒ ☐ ☐ Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐			AMBIENT FIELD CONDITIONS / NOTES: <u>hot & humid</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.																																													
SAMPLING TEAM <u>Kmw, TR</u>			SIGNATURE <u>Phillips</u>			DATE: <u>6/22/17</u>																																										

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Unnamed Branch
@ 60 m upstream of Airport Rd

County: Vol.

Date: 6-22-17

Investigators: Terry R. Jordan / Katie Williams

STORET Station Number:
GSCE0084

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	N		60	1	N	N	
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		
10	1	N			70	1	N		
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		
20	1	N			80	1	N		
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		
30	1	N			90	1	N		
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		
40	1	N			100	1	N		
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		
50	1	N				1	N		
	2	X				2	X		
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	X				8	X		
	9	N				9	N		

Secchi depth 0.2
 Estimated? N

points ranked 4-6 0
 total points assessed 20
 % points ranked 4-6 0

Check accompanying data collected at same site/date.
 Algal mat sample ☐
 Linear Veg Survey ☐
 Habitat Assessment ☒
 SCI/Biorecon ☐
 Water sample ☒
 RQ- 2017-06-12-46

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

Bottoms too mucky to traverse for canopy cover.

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%.