



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
STRATEGIC MONITORING PROGRAM FIELD SHEET

March 2017

PAGE 1 OF

Data Qualified?

Yes / No

Location/STORET Station Name: Sand Creek @ 100m US of CR 415 Date: 06/20/2017
(mm/dd/yyyy)

STORET # G5CE0094 WBID: 2675 Latitude: 29.07290
(Decimal Degrees)

County: Valusia RQ - 2017-06-19-40 ORG ID: 21FLCEN Longitude: -81.06923
(Decimal Degrees)

Receiving Body of Water: Spruce Creek Field ID: G5CE0094

Sampling Team Members		WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
Mike Linger						
Mike Drinnan						

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

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

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

Time Zone	Time	Sample Depth (m)	Total Depth (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (ppt)	Secchi Disk (m)	Sp COND (µmhos/cm)	Temp. (C°)
<u>EST</u>	<u>10:46</u>	<u>0.1</u>	<u>0.1</u>	<u>3.0</u>	<u>36</u>	<u>6.6</u>	<u>0.2</u>	<u>0.1 (S)</u>	<u>428</u>	<u>24.8</u>
CEN										

Biological Samples Collected: None HA SCI RPS Algae ID LVS LVI Other

SBIO ID Numbers: SBIO-ID: 77723 RPS-ID: 8715 Macrophyte-ID: 10539 LIMS#: 1907643

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 ☒ H2SO4	<u>7093010</u>	<u>4/3/18</u>	☒ <2
Metals	☐ W-ICPMS ☐ W-ICP	☐ Ice ☐ HNO3			☐ <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-CHIC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-F / W-TSS / TURBIDITY	☐ Ice			
Macroinvertebrates	☐ MI-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	☐ Ice			
	☐ W-PCL-SQ-R ☐ W-UHERB-AA ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Other			

Notes:

Signature: [Signature]

Field Parameters Entered into LIMS: LMD 7/5/17
(Initials/Date)

Date Migrated to STORET: [Blank]
(Initials/Date)

Sand Creek @ 100m US
of CR 415

Date: 06/20/2017
RQ-2017-06-19-40

Date: 6/20/17

G5CE0094
Field ID ↑
STORET ↓
G5CE0094

Field Parameters QC in LIMS: [Blank]

Field Sheets Scanned/Saved: LMD 7/5/17
(Initials/Date)

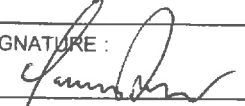
FDEP FORM FD 9000-3: PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID _____ ORG ID 21 FL CEN LATITUDE 29.07290
 COUNTY Volusia STORET # G5CE0094 LONGITUDE -81.06923
 DATE 6/20/17 TIME 10:46 SAMPLING AGENCY FDEP CE-Roc
 SITE NAME Sand Creek @ 100m US of CR 415
 FIELD ID/NAME G5CE G5CE0094 RECEIVING BODY OF WATER Spruce 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>80</u> <u>5</u> <u>10</u> <u>5</u>								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) Depth (m)/Velocity (m/sec) Transect <u>1.75</u> m wide ☐ m/s <u>.13</u> m/s ☐ m/s ☐ m deep <u>.11</u> m deep ☐ m deep			
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>>18</u> Right Bank: <u>>18</u>				Hydrologic Modification Score (per FT 3101) ☐					
High Water Mark: <u>.4</u> + <u>.1</u> = <u>.4</u> (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%)					

SEDIMENT / SUBSTRATE

Sediment Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse		Sediment Odors - Type: Sand/Silt & Detritus ☒ 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 <table border="1"> <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><u>.9</u></td> <td></td> <td></td> </tr> <tr> <td>Undercut Banks / Roots</td> <td><u>.3</u></td> <td></td> <td></td> </tr> <tr> <td>Leaf Packs or Mat</td> <td><u>1.0</u></td> <td></td> <td></td> </tr> <tr> <td>Aquatic Vegetation</td> <td><u>4.0</u></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)	<u>.9</u>			Undercut Banks / Roots	<u>.3</u>			Leaf Packs or Mat	<u>1.0</u>			Aquatic Vegetation	<u>4.0</u>			Rock or Shell Rubble				Sand				Mud / Muck / Silt				Other				Other				WATER QUALITY <table border="1"> <thead> <tr> <th></th> <th>Depth (M)</th> <th>Temp. (°C)</th> <th>pH (SU)</th> <th>D.O. (MG/L)</th> <th>D.O. Sat (%)</th> <th>Cond. (UMHO/CM)</th> <th>Salinity (PPT)</th> <th>SECCHI (M)</th> </tr> </thead> <tbody> <tr> <td>Top:</td> <td><u>0.1</u></td> <td><u>24.8</u></td> <td><u>6.6</u></td> <td><u>3.0</u></td> <td><u>36</u></td> <td><u>428</u></td> <td><u>0.2</u></td> <td><u>0.1 (s)</u></td> </tr> <tr> <td>Mid:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>☒ VOB</td> </tr> <tr> <td>Bottom</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Meter ID: <u>Boop / Nov</u> TOTAL DEPTH <u>0.1</u>				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>24.8</u>	<u>6.6</u>	<u>3.0</u>	<u>36</u>	<u>428</u>	<u>0.2</u>	<u>0.1 (s)</u>	Mid:								☒ VOB	Bottom								
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AMBIENT FIELD CONDITIONS / NOTES: <u>90's Overcast slight rain</u> ☐ The antecedent hydrologic conditions have been met to my best knowledge.																																																																																	
SAMPLING TEAM <u>Mike Linger, Mike Pannan</u>			SIGNATURE: 		DATE: <u>7/5/17</u>																																																																												

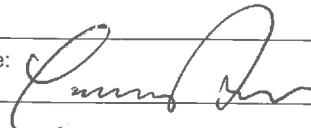
DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

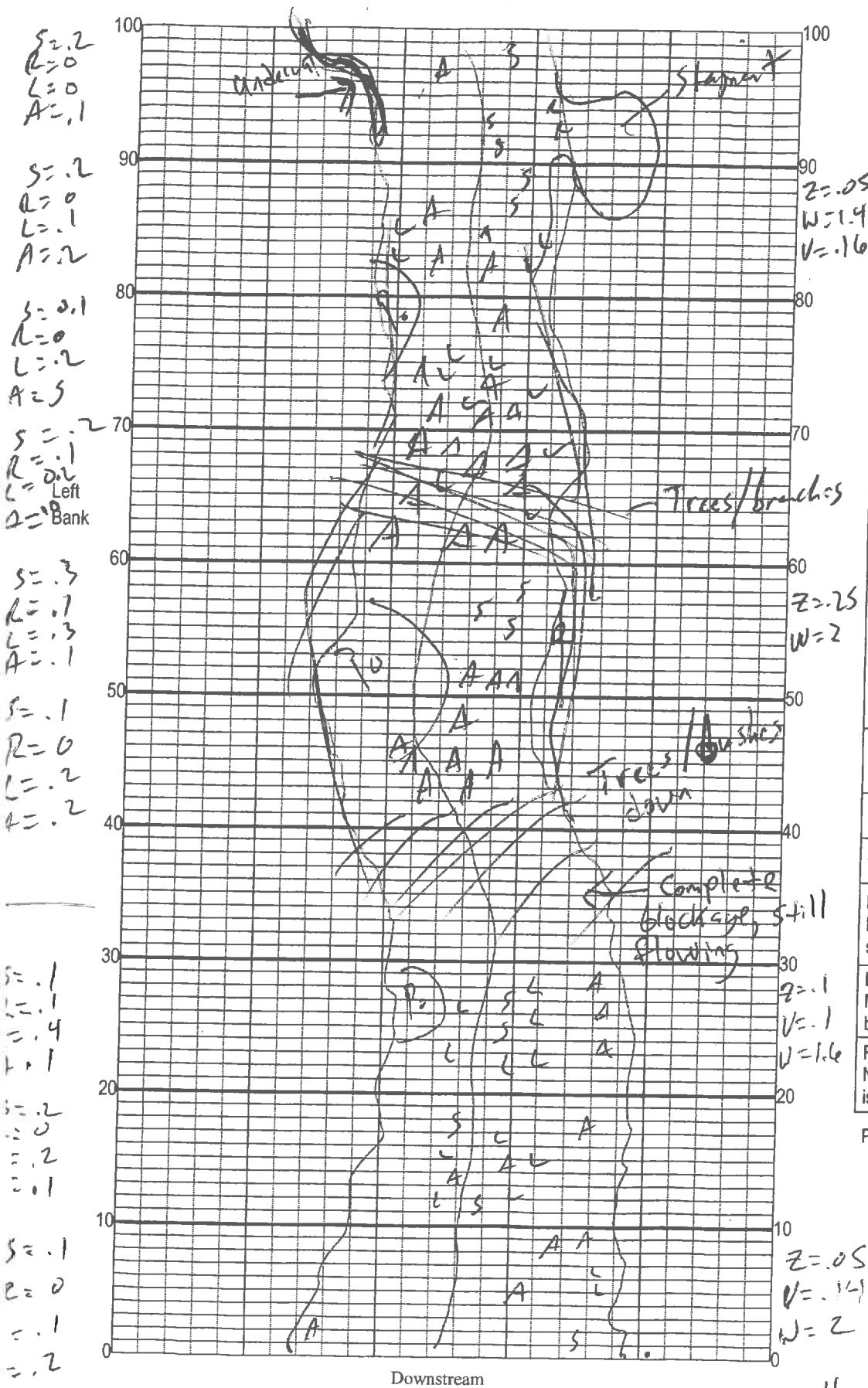
SAMPLING AGENCY: <u>FDLP - CEROC</u>		STORET STATION NUMBER: <u>65CE0094</u>	DATE (MM/DD/YY): <u>6/20/17</u>	RECEIVING BODY OF WATER: <u>Spruce Creek</u>
REMARKS:	COUNTY: <u>Volusia</u>	LOCATION: <u>Sand Creek @ 100m US of C</u>		FIELD ID/NAME: <u>65CE0094</u>

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>6</u>	20 19 18 17 16	15 14 13 12 11	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>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 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>10</u> ----- Primary Score <u>34</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>18</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>8</u> Left Bank <u>8</u> <u>16</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>9</u> Left Bank <u>9</u> <u>18</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>9</u> Left Bank <u>9</u> <u>18</u> ----- Secondary Score <u>70</u>	10 9	8 7 6	5 4	3 2 1

104

TOTAL SCORE

Date: <u>7/5/17</u>	Analyst: <u>Mike Drennan</u>	Signature: 
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Location: Sand Creek @ 100m
US of CR 415

Date: 6/20/17

Sampler: Mike Drennan/Linger

100 m: Latitude 29.0726

Longitude -81.0696

0 m: Latitude 29.0727

Longitude -81.0686

Substrates: Code key, draw proportionate habitat abundance.

5 Snags .9

☒ Roots/undercut banks .3

L	Leaf Packs (or mats)	1.0
---	----------------------	-----

A Aquatic Macrophytes 4.0

Po Pools total # observed = 3
range expected = 4-9

Average width 1.75 m

Average depth 1.1 m

Velocity measured at 25, 85 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: 25+
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

- medium smothering
- healthy canopy / understory
- ft bank mostly undisturbed but good root armoring

$$BF = .9 \text{ m above } H_2O$$
$$BH = 1.1 \text{ m}$$
$$\bar{z} = .11m$$
$$\overline{D} = 1.75 \mu$$
$$\bar{V} = .13 \text{ m/s}$$

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

62-160.800, F.A.C

$$\left. \begin{array}{l} S = 1.5 \\ R = 0.6 \\ L = 1.7 \\ A = 7.0 \end{array} \right\} 10.8 / 175_n = 6\%$$

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Sand Creek @ 100m US of CR 415 County: Volusia Date: 6/20/17 Investigators: Mike Ling

STORET Station Number: 65CE0094

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	2			60	1	2		
	2	2				2	2		
	3	2				3	2		
	4	2				4	2		
	5	2				5	2		
	6	2		84		6	2		80
	7	2				7	2		
	8	2				8	2		
	9	2				9	2		
10	1	2			70	1	2		
	2	2				2	2		
	3	2				3	2		
	4	2				4	2		
	5	3				5	2		
	6	3		76		6	2		72
	7	2				7	2		
	8	2				8	2		
	9	2				9	2		
20	1	2			80	1	2		
	2	2				2	2		
	3	2				3	2		
	4	2				4	2		
	5	2				5	2		
	6	2		80		6	2		76
	7	2				7	2		
	8	2				8	2		
	9	2				9	2		
30	1	2			90	1	2		
	2	2				2	2		
	3	2				3	2		
	4	2				4	2		
	5	2				5	2		
	6	2		88		6	2		80
	7	2				7	3		
	8	2				8	4		
	9	2				9	4		
40	1	2			100	1	2		
	2	2				2	2		
	3	2				3	3		
	4	2				4	4		
	5	2				5	4		
	6	2		84		6	3		84
	7	2				7	2		
	8	2				8	2		
	9	2				9	2		
50	1	2				1	2		
	2	2				2	2		
	3	2				3	2		
	4	2				4	2		
	5	2				5	2		
	6	2		76		6	2		
	7	2				7	2		
	8	2				8	2		
	9	2				9	2		

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 0.1 m
Estimated?

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

Check accompanying data collected at same site/date.
Algal mat sample
Linear Veg Survey ☒
Habitat Assessment ☒
SCI/Biorecon
Water sample ☒
RQ: 2017-06-19-40

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

Waterbody: Sand Creek @ 100m US of CR 415	Date: 6/20/17	County: Volusia	Storet Number: 65CE0094
Analyst: Mike Linder, Mike Danner	Signature: <i>[Signature]</i>		

Comments:

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]