

SCI

Site Name Deep Creek @ 400 m S of SR 40 Sample Date 11/27/18
WBID 2908 WIN ID 62CE0167 RQ 2018-11-19-25

	Initial/Date	QC Initial/Date
Water chemistry data to LIMS	LMD 12/20/18	MKL 12/20/18
Create SBIO station visit	LMD 12/20/18	n/a
Phys/Chem entry	LMD 12/20/18	MKL 12/20/18
Habitat Assessment entry	LMD 12/20/18	MKL 12/20/18
Vascular entry (add LIMS ID to entry)	n/a	n/a
RPS entry	LMD 12/20/18	MKL 12/20/18
Authorize SBIO data	MKL 12/20/18	n/a
Scan all sheets to 21FLCEN folder	LMD 12/20/18	n/a
LIMS/WIN migration	LMD 2/14/19	n/a
File in cabinet		n/a

Comments/notes:



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STRATEGIC MONITORING PROGRAM FIELD SHEET

April 2018

Data Qualified?

Yes / No

WIN Station Name: Deep Creek @ 400m S of SR40

Date: 11/27/2018
(mm/dd/yyyy)

WIN/ Field ID: G2CE0167

WBID: 2908

Latitude: 29.20130

(Decimal Degrees)

County: Volusia

ORG ID: 21 FL CEN

Longitude: -81.36886

(Decimal Degrees)

Receiving Body of Water: Spring Garden Creek

RQ-2018- 11-19-25

Sampling Team Members

Mike Linger

Mike Drennan

WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
/	/	/	/	/
/	/	/	/	/

Sampling Equipment

- ☒ Sample Container ☐ Van Dorn ☐ Pole
☐ Carboy ☒ Syringe
☐ Dipper ☐ Other

Depth Measured with SECCHI DISK LINE/METER

Equipment ID (KNOTHEAD/67, LEADFOOT/NON, CRUSTY/SCUD)

Collection Method

- ☒ Wading ☐ Canoe/Kayak
☐ From Shore ☐ Electric Motor
☐ Other ☐ Gasoline Motor

Water Level: Dry/ Pooled/ Low / Normal / High / Flooded

Meter ID# SCUD

Matrix: Fresh / Marine / DI

Photos: Yes / No

Flow: No Flow / Intestinal / Flowing / NA

Tide: Rising/ Falling/ Slack NA

Tide Times: High Low

Time Zone	Time	Total Depth (m)	Sample Depth (m)	Secchi Disk (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (PPT)	Sp COND (umhos/cm)	Temp. (C°)
<u>EST</u>	<u>1311</u>	<u>0.6</u>	<u>0.3</u>	<u>0.4</u>	<u>4.71</u>	<u>47.4</u>	<u>4.91</u>	<u>0.05</u>	<u>100.9</u>	<u>15.6</u>
CEN										

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

SBIO ID Numbers: SBIO-ID: HA-ID: RPS-ID: Macrophyte-ID: LIMS#: 2043865

Parameter Suite	Parameter Methods	Preservation	Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP	☒ Ice ☒ H2SO4	<u>SA8197090</u>	<u>7/16/19</u>	☒ <2
Metals	☒ W-ICPMS ☒ W-ICP	☒ Ice ☒ HNO3	<u>NA8080070</u>	<u>3/21/19</u>	☒ <2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 um Filter	☒ Ice	<u>13615055</u>		
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	☒ MI-FW-QLDC	☒ Formalin			
Periphyton	☐ ALGAE-ID	☐ Ice			
Microbiology	☒ E Coli ☐ F Coli ☐ Enterococci	☒ Ice			
Molecular	☐ PCR-FILTER ☐ PCR-HF183 ☐ PCR-BacR ☐ PCR-GULL2 ☐ PCR-GFD	☐ Ice			
Tracers	☐ W-E8321-DI ☐ W-E8321-MS	☐ Ice			
Pesticides	☒ W-PSNP-TQ ☐ W-CT-CL-R ☒ W-E8321-DI ☐ W-PCL-SQ-R ☒ WE8321-MS ☐ W-CARB-AA	☒ Ice ☐ Other			

H2SO4
LOT# SA8197090
EXP: 07/16/2019

Place Preservative Sticker(s) Here
(If Available)

HNO3
LOT# NA8080070
EXP: 03/21/2019

Notes:

WIN ID / Field ID →

Deep Creek @ 400m
S of SR40 (2908)



G2CE0167

Signature: [Signature]

Date: 11/28/18

Enter Field Parameters, Verify Station ID In LIMS DMT: LMD 11/27/18

QC Station ID, Field Parameters In LIMS DMT: MKL 12/20/18

Scan/Save Field Sheets LMD 12/20/18

Migrate Data to WIN: LMD 2/14/19

Verify Data In WIN: [Signature]

(Initials/Date)

(Initials/Date)

(Initials/Date)

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

SAMPLE ID _____ ORG ID 21 FL CEN LATITUDE 29.20130
 COUNTY Volusia STORET # 62CE0167 LONGITUDE -81.36886
 DATE 11/26/18 TIME 1311 SAMPLING AGENCY FDEP CERO
 SITE NAME Deep Creek @ 400m S of SR 40
 FIELD ID/NAME 62CE0167 RECEIVING BODY OF WATER Spring Garden Creek

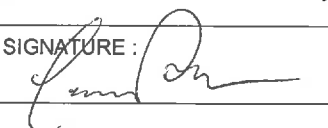
RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural 100 Silviculture Field/Pasture Agricultural Residential Commercial Industry 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) Depth (m)/Velocity (m/sec) Transect 7.7 m wide m/s 0.13 m/s m/s m deep 0.7 m deep m deep		
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: 718 Right Bank: 718				Hydrologic Modification Score (per FT 3101)				
High Water Mark: 0.3 + 0.7 = 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%)				

SEDIMENT / SUBSTRATE

Sediment type: Sand/Organic fibrous

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																																										
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ABUNDANCE			Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐ Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify)																																										
Not Obs. Rare Common Abundant Periphyton: ☒ ☐ ☐ ☐ Fish: ☐ ☐ ☐ ☒ Aquatic Plants: ☐ ☒ ☐ ☐ Iron/Sulfur Bacteria: ☒ ☐ ☐ ☐			Clarity Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque ☐																																										
System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify)			AMBIENT FIELD CONDITIONS / NOTES: <u>60°F clear skies</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.																																										

SAMPLING TEAM <u>Michael Linger / Mike Drennan</u>	SIGNATURE: 	DATE: <u>11/27/18</u>
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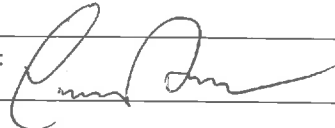
DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

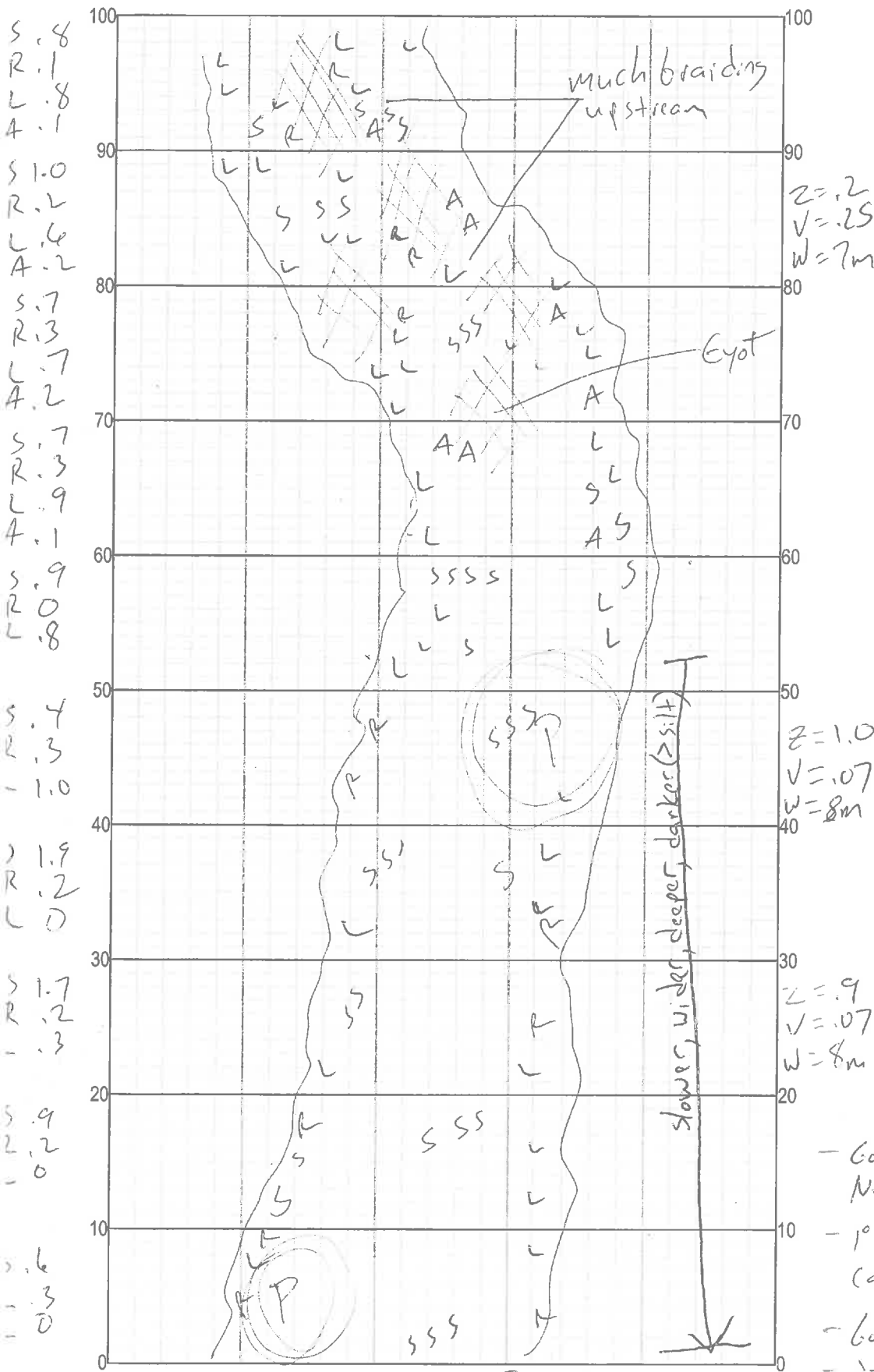
SAMPLING AGENCY: <u>FDEP-CEROC</u>		STORET STATION NUMBER: <u>62CE0167</u>	DATE (MM/DD/YY): <u>11/26/18</u>	RECEIVING BODY OF WATER: <u>Spring Garden Creek</u>
REMARKS:	COUNTY: <u>Volusia</u>	LOCATION: <u>Deep Creek @ 400m S of SR40</u>	FIELD ID/NAME: <u>62CE0167</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity <u>13</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 <u>13</u> 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 <u>4</u> 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>16</u> ----- Primary Score <u>45</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 <u>16</u>	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>20</u>	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. <u>20</u> 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging or straightening 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> <u>20</u>	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankfull to top of bank. Bankfull is within or above the woody 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 woody root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank <u>10</u> Left Bank <u>10</u> <u>20</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 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> <u>16</u> ----- Secondary Score <u>78</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 <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

123

TOTAL SCORE

Date: <u>11/26/18</u>	Analyst: <u>Mike Linger / Mike Drennan</u>	Signature: 
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Location: Deep Creek @ 400m S of SR 40
 Date: 11/27/18
 Sampler: Mike Linger / Mike Drennan

100 m: Latitude 29.203927
 Longitude -81.367887
 0 m: Latitude 29.202995
 Longitude -81.368355

Substrates: Code key, draw proportionate habitat abundance. %

☐ S	Snags	1.3
☐ R	Roots/undercut banks	.3
☐ L	Leaf Packs (or mats)	.7
☐ A	Aquatic Macrophytes	—
☐		—
☐		—
☒ P	Pools	total # observed = 2 # range expected = 1-2

Average width 7.7 m
 Average depth 0.7 m

Velocity measured at 25, 45, 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:
 Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

- Good mix of Taxodium, Nyssa, Cephalanthus, Sabal
- 1° plants include scurraurus, hydranth, Carex - very few in flow
- Good buffer
- stable banks throughout
- braiding upstream
- Acidic/Tannic system
- Silting more noticeable downstream
- Wetland surrounding stream

BF = 0.3 + WL
 BH = BF

$S = 9.6$
 $R = 2.1$
 $L = 5.1$
 $A = 0.6$

$17.4 / 770 = \pm 3\% \text{ habitat}$

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Deep Creek County: Volusia Date: 11/27/18 Investigators: Mike Linger

STORET Station Number: G2CE0167

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	3		80	60	1	N		72
	2	N				2	N		
	3	N				3			
	4	N				4			
	5	N				5			
	6	N				6			
	7	N				7			
	8	N				8	N		
	9	N				9	N		
10	1	N		72	70	1	N		76
	2	N				2			
	3	N				3			
	4	N				4			
	5	N				5			
	6	N				6			
	7	N				7			
	8	N				8			
	9	N				9			
20	1	N		84	80	1	N		80
	2	N				2			
	3	N				3			
	4	N				4			
	5	N				5			
	6	N				6			
	7	N				7			
	8	N				8			
	9	N				9			
30	1	N		76	90	1	N		88
	2					2			
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8	N				8			
	9	N				9			
40	1	N		68	100	1	N		84
	2					2			
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8					8			
	9					9			
50	1	N		72		1			
	2					2			
	3					3			
	4					4			
	5					5			
	6					6			
	7					7			
	8					8			
	9					9			

Secchi depth 0.4
Estimated?

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

Check accompanying data collected at same site/date.
Algal mat sample
Linear Veg Survey
Habitat Assessment ☒
SC/Biorecon ☒
Water sample ☒
RQ-2018-11-19-25

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

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%.