FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

STRATEGIC MONITORING PLAN Field Sheet

July 2022

Meter Passed End of Day CCV: (Yes) / No

WIN Station Name:	Clear Lake @ Arnold Palmer Drive					**Sample Date:**	2/13/2023
WIN / Field ID:	G4CE0107	**ORG ID:**	21FLCEN	**ENR:**		**Latitude:**	28.51067818
County:	Orange	**WBID:**	3169G1	STREAM		**Longitude:**	-81.4545472
Receiving Body of Water:	Shingle Creek					**RQ-**	2023-02-13-16

Sampling Team Members	WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
Matt Bearden	x	x	x	x	x
Victoria Schwartz		x		x	x

Sampling Equipment					
x	Sample Container			Carboy	
	Dipper			Van Dorn	
	Syringe			Pole	
Syringe Lot#	*2090604*		**Filter Lot#**	*17413308*	
Secchi Equipment ID:	*Knothead*				

Collection Method			
x	**Wading**		**Canoe/Kayak**
	From Shore		**Electric Motor**
			Gasoline Motor
Depth Measured With	*Meter*		

Water Level:	*Normal*
Flow:	*Flowing*
Matrix:	*Fresh*
Tide Stage:	
High Tide:	
Low Tide:	
Photos:	*Yes*
Meter ID:	*Craw Daddy*
Depth Gauge ID:	**depth_gauge**

Time Zone	Time	Total Depth (m)	Sample Depth (m)	DO (mg/L)	DO (%SAT)	Temp. (°C)	pH	Secchi Disk (m)	Sp COND (µmhos/cm)	Salinity (PPTh)
EST	1315	0.7	0.3	8.29	89	18.6	6.96	0.7	245	0.12
								VOB (s)		

Biological Samples Collected: HA LVS RPS Algal ID

SBIO Visit ID: 86176 **HA ID:** **RPS ID:** 10072 **Macrophyte ID:** 12411 **LIMS Sample ID Entered Into The Macrophyte Module:** 2387008

Parameter Suite	Parameter Methods (LIMS Test Codes)			Preservation Type		Lot#	Expiration Date	pH Check
Microbiology	**E. coli**			**ICE**				
Chlorophyll	**CHLSUITE-W**			**ICE**				
Physical/Aggregate Nutrients	**ALKALINITY, TURBIDITY, W-F, W-TSS**			**ICE**				
	W-CL-IC, W-COLOR, W-SO4-IC, W-TDS			**ICE**				
Filtered Nutrients	**W-PO4-F**	**Field Filtered 0.45 µm Filter**		**ICE**		Syring Lot#:2090604; Filter Lot#:17413308		
Acid Preserved Nutrients	**W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP**			**ICE**	**H2SO4***	*SA2229010*	*08/30/2023*	*H2SO4 pH<2*
Metals	**W-ICPMS**	**W-ICP**	**W-HARD**	**ICE**	**HNO3****	NA2126030	06/02/2023	HNO3 pH<2
Organics (LC)	**W-E8321-DI**	**W-E8321-MS**						
Macroinvertebrates								
Organics (GC)				**Ice**				
	W-PSNP-TQ	**W-TR-SQ-R**						
Molecular								
Periphyton	**Algal_ID**			**Ice**				
Phytoplankton								
BOD								
DOC								
					SyringLot#		**FilterLot#**	
Other(s)								

*2.0 ml of H2SO4 Used Unless Noted Otherwise
**2.0 ml of HNO3 Used Unless Noted Otherwise

Field Comments:	/ Algal ID Collection Time: 1320		
Comments on COC:			
Relinquish Date:	02/13/2023	**Signature:**	

LIMS EVENT ID: CEN-DIST-2023-02-14-01 **WIN Import ID:** 39993

Enter Field Parameters, Verify Station ID In LIMS DMT: KWM 3/7/23 (Initials/Date)

QC Station ID, Field Parameters In LIMS DMT: VLS 3/15/23 (Initials/Date)

Save Field Sheets on Network: _____ (Initials/Date)

Migrate Data to WIN: KWM 5/5/23 (Initials/Date)

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet WBID: 3169G1

SAMPLE ID ____ ORG ID ____ LATITUDE 28.51067818
COUNTY Orange STORET # G4CE0107 LONGITUDE -81.4545472
DATE 2/13/23 TIME 13:15 SAMPLING AGENCY 21FLCEN
SITE NAME Clear Lake Outlet @ Arnold Palmer Dr.
FIELD ID/NAME G4CE0107 RECEIVING BODY OF WATER Shingle 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)
10				~~25~~ 38	47	5	

Landscape Development Intensity Index (LDI): ____

Local Watershed Erosion (select one): ☐ None ☑ Slight (VS) ☑ ~~Moderate~~ (VS) ☐ Heavy

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

Width of Riparian Vegetation (m) on Each Buffer Side: Left Bank: 8 Right Bank: 12

Hydrologic Modification Score (per FT 3101): ____

Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 8 m wide

____ m/s	0.7 m/s	____ m/s
____ m deep	0.7 m deep	____ m deep

High Water Mark: 0.5 (m) + 0.7 (above present water level) = 1.2 (present depth) (above bed)

Artificially Impounded: ☑ Yes ☐ No

Artificially Channelized: ☐ NO ☐ Some recovery ☐ Mostly recovered, more sinuous ☑ Recent, severe

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

SEDIMENT / SUBSTRATE

Sediment Oils: ☐ Absent ☐ Slight ☐ Moderate ☐ Profuse

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

Smothering of Substrates

	None	Slight	Moderate	Severe
Sand Smothering:	☑	☐	☐	☐
Silt Smothering:	☐	☐	☐	☑
Algae Smothering:	☐	☐	☐	☑

SUBSTRATE TYPE

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

	% 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			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	0.3	18.6	6.96	8.29	89	245	0.12	0.7
Mid:								☒ VOB
Bottom								TOTAL DEPTH
								0.7

Meter ID: Crow Daddy

Water Odors Normal ☑ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐

Water Surface Oils Normal ☑ Sheen ☐ Globs ☐ Slick ☐ Other ☐

Water Sample Taken? ☑ Yes ☐ No
Sample Preserved? ☑ Yes ☐ No
Lot Number: ____ Exp: ____

Color Tannic ☑ Green (Algae) ☐ Clear ☐ Other (Specify) ☐

RPS ALGAL-ID
Algae Sample Taken? ☑ Yes ☐ No
Sample Preserved? ☐ Yes ☐ No
Lot Number: ____ Exp: ____

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:
Sunny. Site not SQ Appropriate
Canal

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

SAMPLING TEAM: Matt Bearden + Victoria Schwartz

SIGNATURE: [signature] DATE: 2/13/23

62-160.800, F.A.C.

Revision Date: January 2017

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

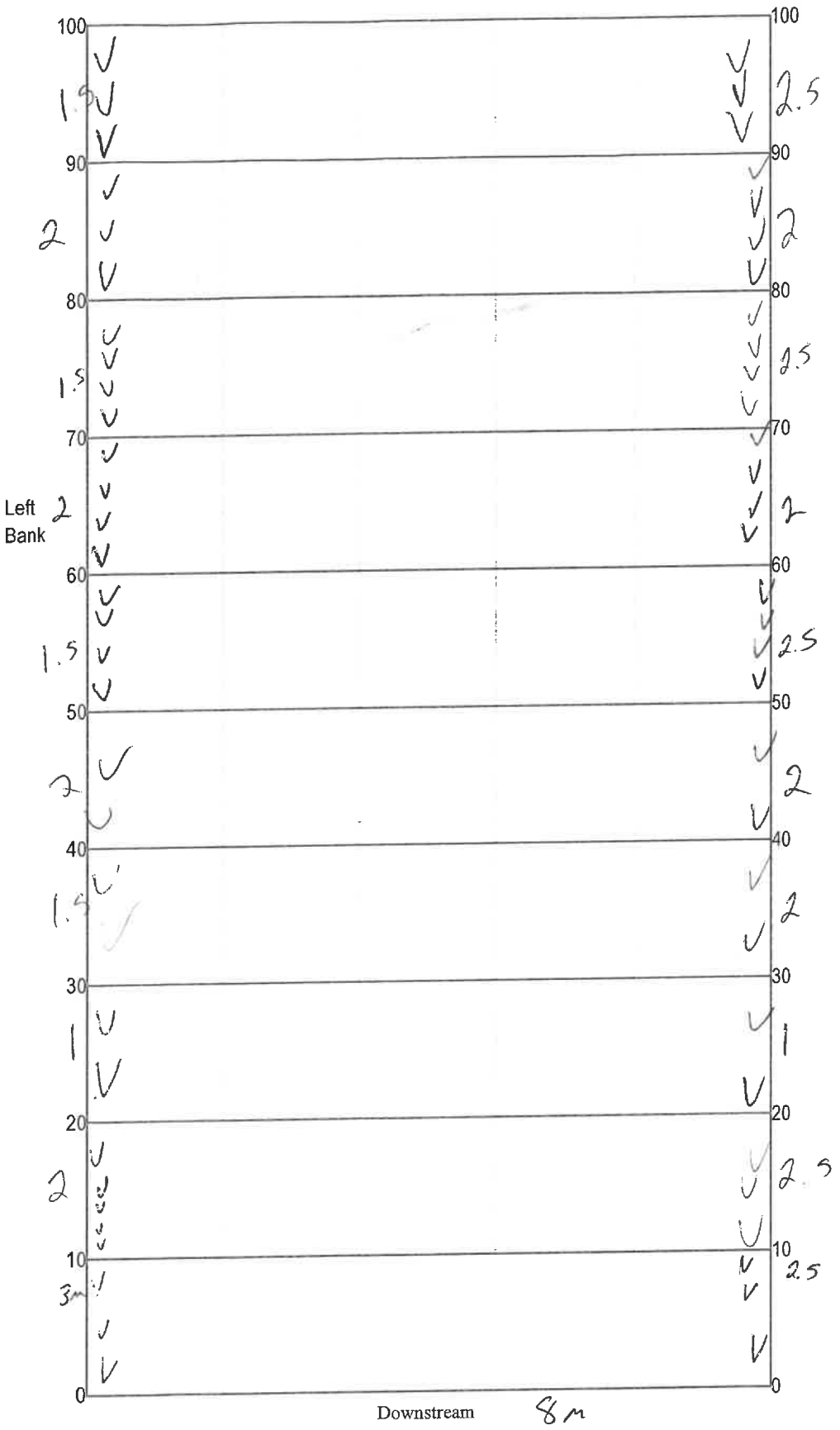
SAMPLING AGENCY:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
Central ROC	04CE0107	2/13/23	Shingle Creek
REMARKS:	**COUNTY:**	**LOCATION:**	**FIELD ID/NAME:**
	Orange	Clear Lake Outlet @ Arnold Palmer Dr	04CE0107

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 2	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 4	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 13	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 3 Primary Score 22	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** 2	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 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 9 Left Bank 9	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the woody 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 woody root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 4 Left Bank 1	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 4 Left Bank 2 Secondary Score 31	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

53 **TOTAL SCORE**

Date: 2/13/23	Analyst: M. Bearden / V. Schwartz	Signature:

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).

Location: Clear Lake Outlet @ Arnold Palmer Dr
G4LE0107

Date: 2/13/18

Sampler: M. Bearden, V. Schwartz

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 51.
- ☐ _____ ____
- ☐ _____ ____
- ☐ Pools total # observed = ____ # range expected = ____

Average width 8 m

Average depth 0.7 m

Velocity measured at 0.5 meter mark. 0.17 m/s

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:

V = 39.5 = 5%

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

Waterbody: Clear Lake Outlet @ Arnold | Date: 7/13/23 | County: Orange | Storet Number: G4CE0107

Analyst: Matt Beesley/Victoria Schwark | Palmer Dr. | Signature: Vict Bsf

Comments: Canal. Could not access right shore (deep/mucky)

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1m^2 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 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Alternanthera philoxeroides	/	/	/	/	/	/	/	/	/	/	
Bacopa caroliniana											
Bacopa monneri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Ceratophyllum demersum											
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Commelina diffusa											
Commelina virginica											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes							/	/	/		
Eleocharis (wispy viviparous)											
Hydrilla verticillata			/								
Hydrocotle	D	D	D	D	D	D	D	D	D	D	
Hygrophila polysperma											X
Hymenocallis											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna	/	/	/	/	/	/	/	/	/	/	
Limnophila sessiflora											
Ludwigia leptocarpa											
Ludwigia palustris											
Ludwigia peruviana											
Ludwigia repens											
Luziola fluitans											
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											

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Micranthemum glomeratum											
Micranthemum umbrosum											
Myriophyllum aquaticum	/	C	/	/	/	/	/	/	/	/	
Najas guadelupensis											
Nuphar luteum							/	/			
Orontium aquaticum											
~~Panicum hemitomon~~			/	/					/		✓ ? (V5)
Panicum repens											
Panicum rigidulum											
Pistia stratioides											
Polygonum glabra											
Polygonum hydropiperoides											
Polygonum punctatum							/				✓
Pontedaria cordata											
Potamogeton illinoensis											
Ruellia simplex											
Sacciolepis striata			/	/					/		✓
Sagittaria kurziana											
Sagittaria lancifolia											
Sagittaria latifolia											
Salvinia minima	/	/	/	/	/	/	/	/	/	/	
Samolus parviflora											
Saururus cernuus											
Sparganium americanum											
Typha											
Vallisneria americana											
Zizania aquatica											
~~Ludwigia / Hygrophila?~~	D	D	D	D	D	D	D	D	D	D	~~X~~ (V8)
~~Panicum sp.~~		/	/								(V5)
Azolla										/	

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Clear Lake Outlet | County: Orange | Date: 2/13/23 | Investigators: M. Bearden + V. Schwartz

~~STORET~~ WIN Station Number: G4CE0107

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
0	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	N	✓	
	8	3		
	9	4		
10	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	3	✓	
	8	4		
	9	5		
20	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	4	✓	
	8	3		
	9	4		
30	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	3	✓	
	8	4		
	9	5		
40	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	4	✓	
	8	4		
	9	4		
50	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	3	✓	
	8	3		
	9	4		

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
60	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	3	✓	
	8	4		
	9	4		
70	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	N	✓	
	8	4		
	9	N		
80	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	N	✓	
	8	N		
	9	4		
90	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	N	✓	
	8	5		
	9	N		
100	1	X		
	2	X		
	3	X		
	4	N	✓	
	5	N	✓	0
	6	N	✓	
	7	N	✓	
	8	4		
	9	4		

Secchi depth	0.7 (VOB)
Estimated?	

# points ranked 4-6	18
total points assessed	66
% points ranked 4-6	27

Check accompanying data collected at same site/date.	
Algal mat sample	✓
Linear Veg Survey	✓
Habitat Assessment	✓
SCI/Biorecon	
Water sample	✓

RQ- 2023-02-13-16

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

Could not access Right shore (deep + mucky) ≈ 8 m wide canal

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%.