



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STRATEGIC MONITORING PLAN FIELD SHEET

January 2020

Meter Passed End
of Day CCV
Yes ☒ No

WIN Station Name: Cow Creek at OsteenMaytown Road (2952) **Date:** 12/9/2021
WIN/Field ID: G2CE0086 **WBID:** 2952 **ENR:** **Latitude:** 28.839704
County: VOLUSIA **Org ID:** 21FLCEN **Longitude:** -81.024834
Receiving Body of Water: - **RQ:** RQ-2021-08-09-19

Sampling Team Members		WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
☒	Katie March		x		x	x
☒	Victoria Schwartz	x		x		
☐						
☐						

Sampling Equipment	
☒ Sample Container	☐ Carboy
☐ Dipper	☐ Van Dorn
☒ Syringe	☐ Pole
Depth measured with: Secchi	
Secchi Equipment ID: Knothead	
Collection Method	
☐ Wading	☒ Canoe/Kayak
☐ From Shore	☐ Electric Motor
☐ Other	☐ Gasoline Motor

Water Level: ☒ Normal ☐ Low ☐ High ☐ Dry ☐ Pooled ☐ Flooded						Meter ID# CRAW DADDY					
Photos: YES		Flow: FLOW		Tide:		Tide Times: High: Low:					
Biological Samples Collected: ☐ None ☒ HA ☐ SCI ☒ RPS ☒ Algae ID ☒ LVS ☐ LVI Other:											
SBIO ID Numbers: SBIO 83530 MACROPHYTES 12035 RPS 9839 HA 17138						LIMS 2294556					
Notes: SUNNY No SCI due to low flow HA/RPS/LVS conducted from canoe DO did not pass CCV											

Duplicate Sample

Time Zone: EST	Time:	Field ID:	(WIN ID_DUP)
WIN DMT Activity ID:			

Blank

Time Zone:	Time:	Field ID:	(Blank Type_DDDMMYYY)
DI Source:	Location:		
DI Type:	Equipment ID:		
DI Container (Name/ID):		DI Container Type:	

LIMS EVENT ID: CEN-DIST-2021-12-10-02 WIN Import ID: 30736
Enter Field Parameters, Verify Station ID In LIMS DMT: EB 1/7/22 QC Station ID, Field Parameters In LIMS DMT: KWM 1/25/22
(Initials/Date) (Initials/Date)
Scan/Save Field Sheets KWM 1/25/22 Migrate Data to WIN: KWM 1/25/22 Verify Data In WIN:
(Initials/Date) (Initials/Date) (Initials/Date)



RQ-RQ-2021-08-09-19

Customer: WQAP

Project ID: SMP

Collected By: Katie March, Victoria Schwartz

Field Report Prepared By: Katie March

Sampling Agency: FDEP

Place Label Here

WIN ID/Field ID:



G2CE0086

Location: Cow Creek at OsteenMaytown Road (2952)

Comments: Attn Cheryl Swanson: Algal ID collected for RPS

Matrix: Fresh

(Check one)

☒ GRAB☐ COMPOSITE

Date	Time	DO (mg/L)	DO (%SAT)	Temp. (C°)	pH	Sample Depth (m)	Secchi Disk (m)	Total Depth (m)	Sp COND (µmhos/cm)	Salinity (PPT _h)		
	1220 EST	4.38	47.6	19.3	3.95	0.3	0.4 ☐ VOB (S)	1.9	93.8	0.04		
12/9/2021												
	1223 EST	4.09	44.2	19	3.74	1.4			93.6	0.04		
Parameter Suite		Parameter Methods				Preservation		pH Check	# Bottles sent to Lab	Bottle Group		
Preserved Nutrients (P-500ML)		☒ W-NH3 / W-NO2NO3 / W-TKN / W-TOC / W-S-A-TP				☒ Ice ☒ H2SO4*		☒ <2	1	A		
		Lot #	SA1105060		Exp:	4/30/22						
Metals (P-500ML)		☒ W-ICPMS ☒ W-ICP ☒ W-HARD				☒ Ice ☒ HNO3*		☒ <2	1	A		
		Lot #	NA1105100		Exp:	6/7/22						
Filtered Nutrients (P125ML)		☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter				☒ Ice			1	A		
		Filter Lot #	17135566									
		Syringe Lot #	1112035									
Chlorophyll (BP-1L)		☒ CHLSUITE-W				☒ Ice			1	A		
Physical/Aggregate (Fresh) (P-1L)		☒ Alkalinity / W-F / W-TSS / TURBIDITY / W-Cl-IC / W-COLOR / W-SO4-IC / W-TDS				☒ Ice			1	A		
Physical/Aggregate (Marine) (P-1L)		☐ Alkalinity / W-BR-IC / W-F / W-TSS / TURBIDITY				☐ Ice						
Macroinvertebrates (PJ-2L)		☐ MI-FW-QLDC	Formalin Lot #			☐ Formalin						
Periphyton (PT-50ML)		☒ ALGAE-ID				☒ Ice			1	B		
Microbiology (Contract Lab Bottle)		☒ E Coli ☐ F Coli ☐ Enterococci ☐ Contract Lab				☒ Ice			1	A		
Molecular (QPCR-P-500ML)		☐ PCR-HF183 ☐ PCR-BacR ☐ PCR-DG3 ☐ PCR-GULL2 ☐ PCR-GFD ☐				☐ Ice						
Tracers (BG-500ML)		☐ W-E8321-DI ☐ W-E8321-MS				☐ Ice						
Pesticides (BG-500ML) (BG-1L)		☒ W-E8321-DI	☒ WE8321-MS	☒ W-PSNP-TQ	W-CT-CL-R	☒ Ice			5	A		
Phytoplankton/Periphyton		W-PCL-TQ-R	W-CAR8-AA (5 ml of MCAA** Buffer Solution)	DTY-QN-C	PKD-QN-BV	☐ Ice						
Name: Katie March Victoria Schwartz						Signature: Victoria Schwartz			Date: 12/9/21			

*2.0 ml of Preservative used unless noted otherwise.

**MCAA: Monochloroacetic acid buffer solution

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

SAMPLE ID 83530 ORG ID _____ LATITUDE 28.839704
 COUNTY Volusia STORET # G2CE0086 LONGITUDE -81.024834
 DATE 12/9/21 TIME 12:20 SAMPLING AGENCY 212CEN
 SITE NAME Cow Creek at Osteen-Maytown road
 FIELD ID/NAME G2CE0086 RECEIVING BODY OF WATER _____

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural <u>100</u> 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 <u>new</u> <u>13</u> m wide _____ m/s <u>0.045</u> m/s _____ m/s _____ m deep <u>1.9</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>0.4</u> + <u>1.9</u> = <u>2.3</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 <u>N/A</u> ☐ Absent ☐ Slight ☐ Moderate ☐ Profuse			Sediment Odors <u>N/A</u> ☐ 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></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				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>0.3</u></td> <td><u>19.3</u></td> <td><u>3.95</u></td> <td><u>4.38</u></td> <td><u>47.6</u></td> <td><u>93.8</u></td> <td><u>0.04</u></td> <td><u>0.4</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><u>1.4</u></td> <td><u>19.0</u></td> <td><u>3.74</u></td> <td><u>4.09</u></td> <td><u>44.2</u></td> <td><u>93.6</u></td> <td><u>0.04</u></td> <td><u>0.4</u></td> </tr> </tbody> </table> TOTAL DEPTH <u>1.9</u> Meter ID: <u>Craw Daddy</u>						Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)	Top:	<u>0.3</u>	<u>19.3</u>	<u>3.95</u>	<u>4.38</u>	<u>47.6</u>	<u>93.8</u>	<u>0.04</u>	<u>0.4</u>	Mid:								☐ VOB	Bottom:	<u>1.4</u>	<u>19.0</u>	<u>3.74</u>	<u>4.09</u>	<u>44.2</u>	<u>93.6</u>	<u>0.04</u>	<u>0.4</u>
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Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐			Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐			Color Tannic ☒ Green (Algae) ☐ Clear ☐ Other (Specify) ☐																																																																													
Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: _____ Exp: _____			Algae Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: <u>10E</u> Exp: _____			Clarity Clear ☐ Slightly Turbid ☐ Turbid ☒ Opaque ☐																																																																													
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AMBIENT FIELD CONDITIONS / NOTES: <u>Conducted from canoe</u> <u>NO SCI - low flow</u> ☒ The antecedent hydrologic conditions have been met to my best knowledge.																																																																																			
SAMPLING TEAM <u>Katie March + Victoria Schwartz</u>					SIGNATURE: <u>[Signature]</u>		DATE: <u>12/9/21</u>																																																																												

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

SAMPLING AGENCY: <u>21 FL CEN</u>		STORET STATION NUMBER: <u>GACE0086</u>	DATE (MM/DD/YY): <u>12/9/21</u>	RECEIVING BODY OF WATER:
REMARKS: <u>No SQ - low flow</u>	COUNTY: <u>Volusia</u>	LOCATION: <u>GACE0086</u>	FIELD ID/NAME: <u>Cow Creek</u>	

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more major productive habitats present (snags, tree roots, aquatic <u>vegetation</u> , 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>10</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>5</u> <i>0.045 sec.</i>	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>14</u> ----- Primary Score <u>35</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 or straightening 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>19</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 woody 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 woody root zone with raw, eroded areas.
Right Bank <u>9</u> Left Bank <u>9</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>10</u> Left Bank <u>10</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> ----- Secondary Score <u>75</u>	10 9	8 7 6	5 4	3 2 1

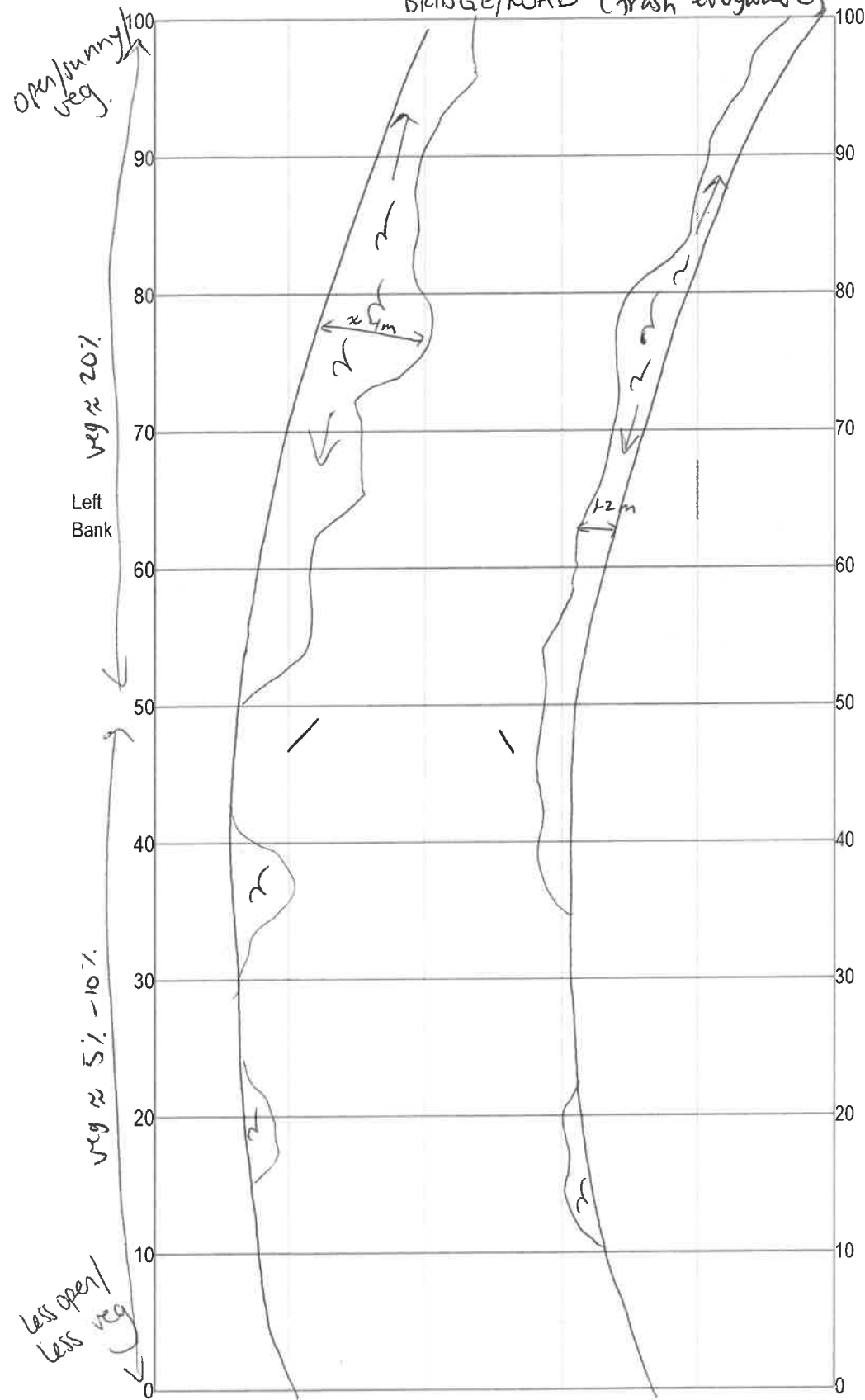
110

TOTAL SCORE

Date: <u>12/9/21</u>	Analyst: <u>Katie March + Victoria Schwartz</u>	Signature: <u>K March / V Schwartz</u>
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DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet

BRIDGE/ROAD (trash everywhere)



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

width = 11-15m
avg = 13m

Location: Cow Creek
Date: 12/9/21
Sampler: Katie Marsh/Victoria Schwal

100 m: Latitude 28.839704
Longitude -81.024834

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

☒ *	Snags	<u><1</u>
☐	Roots/undercut banks	_____
☐	Leaf Packs (or mats)	_____
☒ ~	Aquatic Macrophytes	<u>~15</u> (avg)
☐	_____	_____
☐	_____	_____
☐	Pools	total # observed = _____ # range expected = _____

Average width 13 m

Average depth 1.9 m

Velocity measured at 50 meter mark.

WQ & chemistry taken at 50 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:

- * Dark water (low visibility)
- via canoe (pools expected)
- Veg. along shoreline increases past 50m US
- No SCI due to low flow
- Iguana spotted climbing tree (weird)

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: <u>Cow Creek</u>					County: <u>Johnson</u>		Date: <u>12/9/21</u>		Investigators: <u>Katie Manda</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	STORET Station Number: <u>G2620066</u>
0	1	2			60	1	X			Secchi depth <u>0.4</u> Estimated?
	2	2				2	X			
	3	2				3	2			
	4	2				4	2			
	5	2		40		5	2		12	
	6	2				6	X			
	7	2				7	X			
	8	2				8	X			
	9	2				9	X			
10	1	2			70	1	X			# points ranked 4-6 total points assessed % points ranked 4-6
	2	2				2	X			
	3	2				3	4			
	4	2				4	2			
	5	2		32		5	2		0	
	6	2				6	2			
	7	2				7	X			
	8	2				8	X			
	9	2				9	X			
20	1	2			80	1	X			Check accompanying data collected at same site/date. Algal mat sample ☒ Linear Veg Survey ☒ Habitat Assessment ☒ SCI/Biorecon ☒ Water sample ☒ RQ-
	2	2				2	X			
	3	2				3	2			
	4	2				4	2			
	5	2		15		5	2		0	
	6	2				6	2			
	7	2				7	X			
	8	2				8	X			
	9	2				9	X			
30	1	2			90	1	X			
	2	2				2	X			
	3	2				3	4			
	4	2				4	2			
	5	2		20		5	2		0	
	6	2				6	2			
	7	2				7	X			
	8	2				8	X			
	9	2				9	X			
40	1	2			100	1	X			
	2	2				2	X			
	3	2				3	2			
	4	2				4	2			
	5	2		8		5	2		0	
	6	2				6	2			
	7	2				7	2			
	8	2				8	X			
	9	2				9	X			
50	1	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%.					
	2	2								
	3	2								
	4	2								
	5	2		16						
	6	2								
	7	2								
	8	2								
	9	2								

[illegible]