



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STRATEGIC MONITORING PROGRAM FIELD SHEET

January 2019

Data Qualified?

Yes / No

WIN Station Name: CEDAR at Picketville Rd. Cedar River at Picketville Rd.

Date: 9/18/19

(mm/dd/yyyy)

WIN/ Field ID: G2NE1191

WBID: 2262B

Latitude: 30.22951

(Decimal Degrees)

County: Duval

ORG ID: 21 FLA

Longitude: -81.76611

(Decimal Degrees)

Receiving Body of Water: Ortega River

RQ-2019- 09-16-16

Sampling Team Members						Sampling Equipment				
Cedar River at Picketville Rd.						☒ Sample Container	☐ Van Dorn	☐ Pole		
						☐ Carboy	☐ Syringe			
						☐ Dipper	☐ Other			
						Depth Measured with <u>meter</u>				
						Equipment ID <u>0340 R13</u>				
						Collection Method				
						☒ Wading	☐ Canoe/Kayak			
						☐ From Shore	☐ Electric Motor			
						☐ Other	☐ Gasoline Motor			
Water Level: Dry/ Pooled/ <u>Low</u> / Normal / High / Flooded						Meter ID# <u>YSI Pro DSS Del</u>		Matrix: <u>Fresh</u> Marine / DI		
Photos: <u>Yes</u> No		Flow: No Flow / Intestinal / <u>Flowing</u> 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 (µmhos/cm)	Temp. (C°)
EST	925	0.1	0.05	0.1	4.8	57.0	6.64	0.13	267	23.9
CEN				S						
Biological Samples Collected: None <u>HA</u> <u>SCI</u> <u>RPS</u> Algae ID <u>LVS</u> LVI Other:										
SBIO ID Numbers:		SBIO-ID:		HA-ID:		RPS-ID:		Macrophyte-ID:		LIMS#:
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>SA900030</u>		<u>4/2020</u> ☐ <2
Metals		☒ W-ICPMS ☒ W-ICP				☒ Ice ☒ HNO3		<u>NA8344050</u>		<u>12/2019</u> ☐ <2
Filtered Nutrients		☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter				☒ Ice		<u>R7HA29007</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-BR-IC / 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-BacR ☐ PCR-GULL2				☒ Ice				
		☐ PCR-HF183 ☐ PCR-DG3 ☐ PCR-GFD				☒ Ice				
Tracers		☒ W-E8321-DI ☒ W-E8321-MS				☒ Ice				
Pesticides		☒ W-PSNP-TQ ☐ W-CT-CL-R ☐ W-E8321-DI				☒ Ice				
		☐ W-PCL-SQ-R ☐ WE8321-MS ☐ W-CARB-AA				☒ Ice				
Phytoplankton		☐ DTY-QN-C ☐ PKD-QN-C				☐ Ice				

Contains: 1:1 H2SO4
Lot No.: SA9010030
Expires: 04/10/20
See Safety Data Sheet (SDS)

Contains: 1:1 HNO3
Lot No.: NA8344050
Expires: 12/10/19
See Safety Data Sheet (SDS)

RC ACID 20-70%
DANGER
1609-650-2711
Contains: 1:1 HNO3
Lot No.: NA8344050
Expires: 12/10/19
See Safety Data Sheet (SDS)

SULFURIC ACID <51%
DANGER
1609-650-2711
Contains: 1:1 H2SO4
Lot No.: SA9010030
Expires: 04/10/20
See Safety Data Sheet (SDS)

Notes:

WIN ID/Field ID:



G2NE1191

Cedar at Picketville Rd.

Signature: A. K. Bacher

Date: 9-18-2019

LIMS EVENT ID: WIN Import ID:

Enter Field Parameters, Verify Station ID In LIMS DMT: QC Station ID, Field Parameters In LIMS DMT:

Scan/Save Field Sheets Migrate Data to WIN: Verify Data In WIN:

QA/QC Sample

WIN ID:

G2NE1191

Dupli

Field ID:

G2NE1191DUP

Cedar at Picketville Rd. Duplicate

Time Zone:

EST

CEN

Time:

930

WIN DMT Activity ID:

Parameter Suite	Parameter Methods	Preservation	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-Cl-IC / W-COLOR / W-SO4-IC / W-TDS	☒ Ice			
Physical/Aggregate (Marine)	☐ Alkalinity / W-BR-IC / W-F / W-TSS / TURBIDITY	☐ Ice			
Microbiology	☒ E Coli ☐ F Coli ☐ Enterococci	☒ Ice			
Molecular	☐ PCR-FILTER ☐ PCR-BacR ☐ PCR-GULL2 ☐ PCR-HF183 ☐ PCR-DG3 ☐ PCR-GFD	☐ Ice			
Tracers	☒ W-E3821-MS ☒ W-E3821-DI	☒ Ice			
Pesticides	☒ W-PSNP-TQ ☐ W-E3821-DI ☐ W-CT-CL-R ☐ W-PCL-SQ-R ☐ W-E-3821-MS ☐ W-CARB-AA	☒ Ice			

Contains: 1:1 HNO₃
Lot No.: NA9099030
Expires: 04/09/20
See Safety Data Sheet (SDS)

Contains: 1:1 H₂SO₄
Lot No.: SA9010030
Expires: 04/10/20
See Safety Data Sheet (SDS)

Blank

Parameter Suite	Parameter Methods	Preservation	Lot#	Expiration	pH Check
Preserved Nutrients	☒ W-NH3 / ☒ W-NO2NO3 / ☒ W-TKN / ☒ W-TOC / ☒ W-S-A-TP	☒ Ice ☒ H ₂ SO ₄	SA9010030	4/2020	☒ < 2
Metals	☒ W-ICPMS ☒ W-ICP	☒ Ice ☒ HNO ₃	NA9099030	4/2020	☒ < 2
Filtered Nutrients	☒ W-PO4-F ☒ Field Filtered 0.45 µm Filter	☒ Ice	R7HA29007		
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			
Tracers	☒ W-E3821-MS ☒ W-E3821-DI	☒ Ice			
Pesticides	☒ W-PSNP-TQ ☐ W-E3821-DI ☐ W-CT-CL-R ☐ W-PCL-SQ-R ☐ W-E3821-MS ☐ W-CARB-AA	☐ Ice ☐ Other			

Notes:

Field ID: _____

location: Cedar at Picketville rd.

Signature: *Walter Sacher*

Date: 9-18-2019

LIMS EVENT ID: _____ WIN Import ID: _____

Enter Field Parameters, Verify Station ID In LIMS DMT: _____ QC Station ID, Field Parameters In LIMS DMT: _____

Scan/Save Field Sheets _____ Migrate Data to WIN: _____ Verify Data In WIN: _____

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

SAMPLE ID G2NE1191 ORG ID _____ LATITUDE _____
 COUNTY Duval STORET # _____ LONGITUDE _____
 DATE 9-18-2019 TIME 0925 SAMPLING AGENCY FDEP/NE ROL
 SITE NAME Cedar Crk @ Picketville Rd Cedar River at Picketville Rd.
 FIELD ID/NAME _____ RECEIVING BODY OF WATER _____

RIPARIAN ZONE / STREAM FEATURES

Meter ID: _____

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural ☐ 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 1.5 m wide 0.1 m/s 0.1 m/s m deep m deep m deep
Width of Riparian Vegetation (m) on Each Buffer Side Left Bank: <u>718m</u> Right Bank: <u>718m</u>				Hydrologic Modification Score (per FT 3101) ☐			
High Water Mark: <u>0.1</u> + <u>0.6</u> = <u>0.7</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 ☒ 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 Depth (M) Temp. (°C) pH (SU) D.O. (MG/L) D.O. Sat (%) Cond. (UMHO/CM) Salinity (PPT) SECCHI (M) Top: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Mid: <u>0.05</u> <u>23.9</u> <u>6.64</u> <u>4.8</u> <u>57</u> <u>267</u> <u>0.13</u> <u>0.18</u> Bottom: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ System Type: Stream ☒ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) ☐		
Woody Debris (Snags) <u>2.5</u> <u>7</u> ☐ Undercut Banks / Roots <u>2.5</u> <u>7</u> ☐ Leaf Packs or Mat <u><1</u> ☐ ☐ Aquatic Vegetation ☐ ☐ ☐ Rock or Shell Rubble ☐ ☐ ☐ Sand <u>94.5</u> <u>36</u> ☐ Mud / Muck / Silt <u>3</u> ☐ ☐ Other ☐ ☐ ☐ Other ☐ ☐ ☐			Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐ Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐ Water Sample Taken? ☒ Yes ☐ No Sample Preserved? ☒ Yes ☐ No Lot Number: <u>SA9010030</u> Exp: <u>4/2020</u> Algae Sample Taken? ☐ Yes ☒ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____		
ABUNDANCE Not Obs. Rare Common Abundant Periphyton: ☒ ☐ ☐ ☐ Fish: ☐ ☒ ☐ ☐ Aquatic Plants: ☒ ☐ ☐ ☐ Iron/Sulfur Bacteria: ☐ ☒ ☐ ☐			CLARITY Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque ☐		
SAMPLING TEAM <u>J. Parrish / A. Kelmbacher</u>			SIGNATURE <u>[Signature]</u> <u>9-18-2019</u>		

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: <u>Cedar River site</u>					County: <u>Duval</u>		Date: <u>9/18/19</u>		Investigators: <u>J. Parrish</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>G2NE1191</u>	
0	1	N	N		60	1	N	N		Secchi depth <u>10</u> Estimated? <u>0</u>	
	2					2					
	3					3				# points ranked 4-6 <u>0</u> total points assessed <u>99</u> % points ranked 4-6 <u>0</u>	
	4					4					
	5			96		5			96	Check accompanying data collected at same site/date: Algal mat sample <u>-</u> Linear Veg Survey <u>✓</u> Habitat Assessment <u>✓</u> SCI/Biorecon <u>✓</u> Water sample <u>✓</u> RQ-2019-09-16-16	
	6					6					
	7					7					
	8					8					
	9					9					
10				10							
11				11							
10	1	N	N		70	1	N	N		Algal Thickness Rank	
	2					2					
	3					3				N	rough, no algae, slimy, algae up to 1mm
	4					4				3	>1mm - 6mm
	5			96		5			96	4	>6mm - 20mm
	6					6				5	>20mm - 10 cm
	7					7				6	>10 cm
	8					8					
	9					9					
20	1	N	N		80	1	N	N		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.	
	2					2					
	3					3				Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.	
	4					4					
	5			96		5			96	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%.	
	6					6					
	7					7					
	8					8					
	9					9					
10				10							
11				11							
30	1	N	N		90	1	N	N		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.	
	2					2					
	3					3				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%.	
	4					4					
	5			96		5			96		
	6					6					
	7					7					
	8					8					
	9					9					
40	1	N	N		100	1	N	N			
	2					2					
	3					3					
	4					4					
	5			96		5			96		
	6					6					
	7					7					
	8					8					
	9					9					
50	1	N	N			1	N	N			
	2					2					
	3					3					
	4					4					
	5			96		5			96		
	6					6					
	7					7					
	8					8					
	9					9					

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

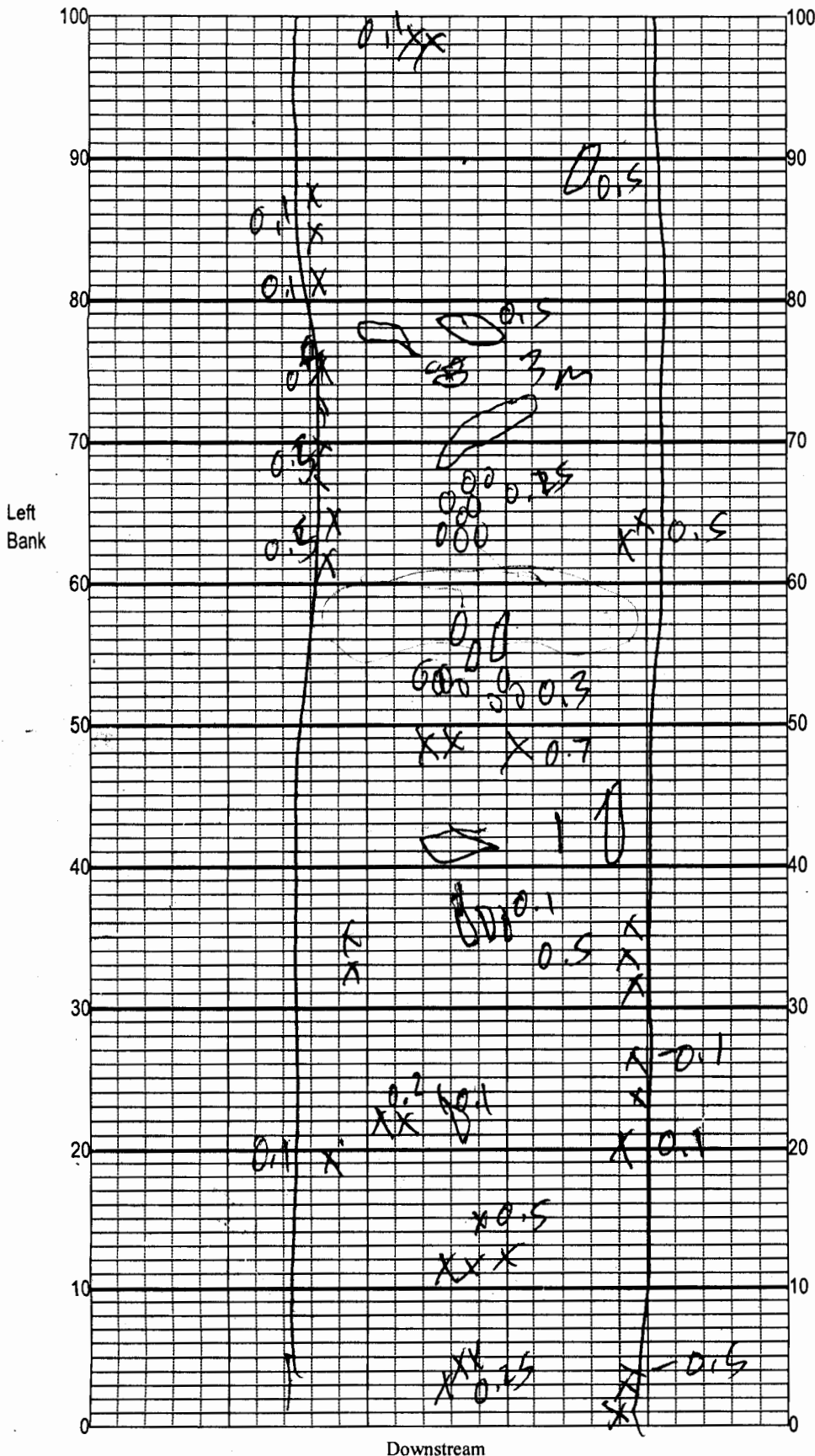
SAMPLING AGENCY: NE ROC		STORET STATION NUMBER: 62 NE 1191	DATE (MM/DD/YY): 9/18/19	RECEIVING BODY OF WATER:
REMARKS:	COUNTY: Dural	LOCATION: Cedar e Picketville	FIELD ID/NAME:	

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>8</u>	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 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 <u>6</u>	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity <u>7</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 <u>10</u> 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>33</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). <u>10</u> 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>12</u>	20 19 18 17 16	15 14 13 <u>12</u> 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. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 <u>6</u>	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	Width of vegetation greater than 18 m Right Bank <u>10</u> Left Bank <u>10</u>	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	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. Right Bank <u>9</u> Left Bank <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
Secondary Score <u>62</u> <u>93</u>	10 <u>9</u>	8 7 6	5 4	3 2 1

TOTAL SCORE

Date: <u>9/18/19</u>	Analyst: <u>Jerry Lunn</u>	Signature:
----------------------	----------------------------	------------

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Location: Cedar @ pickensville
 Date: 9/18/19
 Sampler: JP/AV

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

Substrates: Code key, draw proportionate habitat abundance.	%
☒ Snags	<u>3.5</u>
☒ Roots/undercut banks	<u>2.5</u>
☒ Leaf Packs (or mats)	<u><1</u>
☐ Aquatic Macrophytes	_____
☐ _____	_____
☐ _____	_____
☐ Pools	total # observed = _____ # range expected = _____

Average width _____ m
 Average depth _____ m

Velocity measured at _____ meter mark.

WQ & chemistry taken at _____ 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:

<2 M of Macrophytes was observed while doing the LVS? YES or NO

leaf = 0.8 <2m
 snag = 0.15
 root = 0.15
1.5m wide 3 = 2.9
1.5m wide

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

Waterbody: Cedar @ Pickersville	Date: 9/18/15	County: Polk	Storet Number: 62NE1191
Analyst: J. Ann	Signature: J. Ann		

Comments:

HERBACEOUS SPECIES		Meter Mark										Specimen collected (check)	HERBACEOUS SPECIES		Meter Mark										Specimen collected (check)
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100				0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
Alternanthera philoxeroides													Micranthemum glomeratum												
Bacopa caroliniana													Micranthemum umbrosum												
Bacopa monnieri													Myriophyllum aquaticum												
Bidens mitis													Najas guadelupensis												
Boehmeria cylindrica													Nuphar luteum												
Centella asiatica													Orontium aquaticum												
Ceratophyllum demersum													Panicum hemitomon												
Chara													Panicum repens												
Cicuta maculata													Panicum rigidulum												
Cladium jamaicense													Pistia stratioides												
Colocasia esculenta													Polygonum glabra												
Commelina diffusa													Polygonum hydropiperoides												
Commelina virginica													Polygonum punctatum												
Crinum americanum													Pontedaria cordata												
Diodia virginiana													Potamogeton illinoensis												
Eichhornia crassipes													Ruellia simplex												
Eleocharis (wispy viviparous)													Sagittaria striata												
Hydrilla verticillata													Sagittaria furziara												
Hydrocotyle													Sagittaria lancifolia												
Hygrophila polysperma													Sagittaria latifolia												
Hymenocallis													Salvinia minima												
Lachnanthes caroliniana													Samolus parviflora												
Landoltia punctata													Saururus cernuus												
Lemna													Sparganium americanum												
Limnophila sessiflora													Typha												
Ludwigia leptocarpa													Vallisneria americana												
Ludwigia palustris													Zizania aquatica												
Ludwigia peruviana																									
Ludwigia repens																									