



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION WATER QUALITY MONITORING PROGRAM FIELD SHEET

October 2017

PAGE 1 OF 1

Data Qualified?
Yes / No

Location/STORET Station Name: Cow Creek @ Putnam Co. Blvd

Date: 12/28/2017
(mm/dd/yyyy)

STORET # G2NE1143

WBID: 2583

Latitude: 29.67721

County: Putnam RQ: 2017-12-25-17 ORG ID: 21 FLA

Longitude: 81.60530
(Decimal Degrees)

Receiving Body of Water: CSJR Field ID: See label

Sampling Team Members					WQ Measurements	Sample Collection	Documentation	Preservation	Preservation Check
<u>John Powers</u>									

Sampling Equipment			
☒ Sample Container	☐ Van Dorn	☒ Pole	
☐ Carboy	☐ Syringe		
☐ Dipper	☐ Other		
Equipment ID ORTHO # <u>7</u>			

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

Water Level: Dry / Low / Normal / Above Normal / Flooded

Meter ID# QANTA #1 Matrix: Fresh / Marine / DI

Photos: Yes / No Flow: No Flow / Intertidal / Flowing / NA Tide: Rising / Falling / Slack / NA Tide Times: High / Low

Time Zone	Time	Sample Depth (m)	Total Depth (m)	DO (mg/L)	DO (%SAT)	pH	Salinity (PPTH)	Secchi Disk (m)	Sp COND (µmhos/cm)	Temp. (C°)
EST	<u>1100</u>	<u>0.3</u>	<u>1.0</u>	<u>6.36</u>	<u>64.2</u>	<u>7.6</u>	<u>0.7</u>	<u>0.8</u>	<u>1300</u>	<u>15.3</u>
CEN					<u>64.7</u>					

Biological Samples Collected: None / HA / SCI / RPS / Algae ID / LVS / 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			☒ <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-CH-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-SUC-AA-R ☐ W-UHERB-AA ☐ W-AHERB-AA	☐ Ice			
Pesticides	☐ W-PSNP-TQ ☐ W-UHERB-AA ☐ W-AHERB-AA ☐ W-PCL-SQ-R ☐ W-PYR-AA-R ☐ W-GLYPH ☐ W-SUC-AA-R	☐ Ice ☐ Other			

Contains: 1:1 Sulfuric Acid
Lot No.: SA7275010
Expires: 10/02/18
See Safety Data Sheet (SDS)

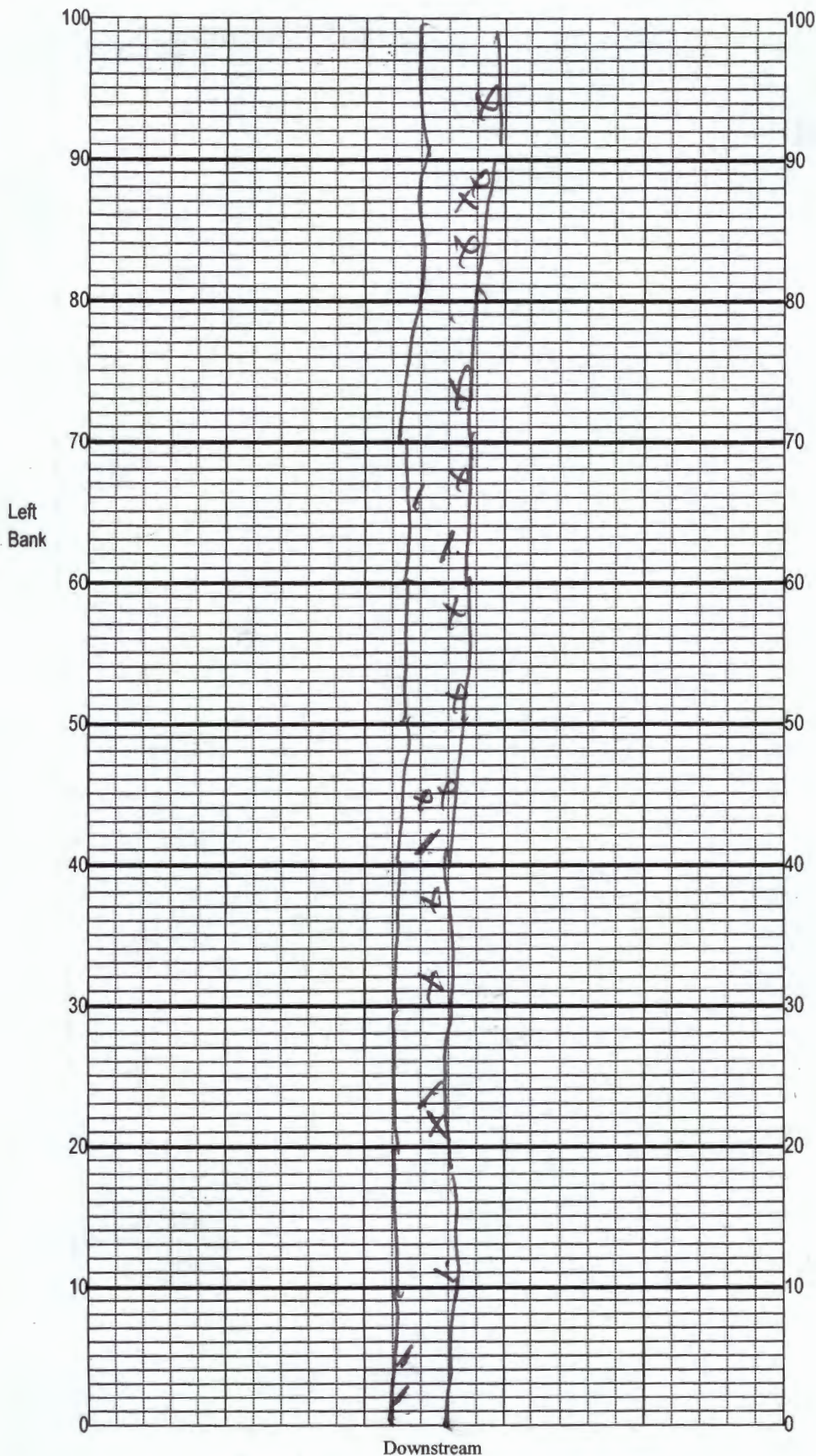
Place Preservative
(If Available)

Notes:

Field ID:
G2NE114312282017
Cow Creek @ Putnam Co. Blvd
STORET
G2NE1143

Signature: John Powers Date: 12/28/17
Field Parameters Entered into LIMS: JP 1/2/18 (Initials/Date) Field Parameters QC in LIMS: BP 1/2/18 (Initials/Date)
Date Migrated to STORET: _____ Field Sheets Scanned/Saved: _____

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: Cow Creek @ PUTNAM CO. BLVD

Date: 12-28-17

Sampler: J. Parnish, P. O'Connor

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	_____ %
☐	_____ %
☐	_____ %
☐ 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

6% Root
3% Snag

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

78153 ✓

SAMPLING AGENCY: NE ROC		STORET STATION NUMBER: G2NE1143	DATE (MM/DD/YY): 12-28-17	RECEIVING BODY OF WATER: LSJR
REMARKS:	COUNTY: Putnam	LOCATION: Cow Creek @ Putnam Co. Blvd		FIELD ID/NAME: G2NE1143

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>8</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>4</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>5</u> Primary Score <u>23</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>5</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>4</u> Left Bank <u>4</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>5</u> Left Bank <u>5</u> Secondary Score <u>43</u>	10 9	8 7 6	5 4	3 2 1

66

TOTAL SCORE

Date: 12-28-17	Analyst: P. O'Connor, J. Parrish	Signature: <i>P. O'Connor</i>
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DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

7853 ✓

SAMPLE ID _____ ORG ID 21 FIA LATITUDE 29.67721
 COUNTY Putnam STORET # GENE1143 LONGITUDE 81.6053
 DATE 12-28-17 TIME 1100 SAMPLING AGENCY DEAR NED ROE
 SITE NAME Cow Creek @ Putnam Co. Blvd
 FIELD ID/NAME G2NE1143 RECEIVING BODY OF WATER LSJR

RIPARIAN ZONE / STREAM FEATURES

Meter ID: QUANTA #1

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category): Forest/Natural ☐ Silviculture ☐ Field/Pasture ☐ Agricultural ☐ Residential ☐ Commercial ☐ Industry ☐ Other (Specify) ☐ <u>10</u> <u>5</u> <u>10</u> <u>70</u> <u>5</u> <u> </u> <u> </u> <u> </u>								Landscape Development Intensity Index (LDI) <u> </u>	
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>2</u> m wide <u> </u> m/s <u>0.05</u> m/s <u> </u> m/s <u> </u> m deep <u>0.4</u> m deep <u> </u> 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) <u>5-6</u>					
High Water Mark: <u>0.5</u> + <u>0.4</u> = <u>0.9</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 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <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></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>0.45</u></td> </tr> <tr> <td>Mid:</td> <td><u>0.3</u></td> <td><u>15.3</u></td> <td><u>7.6</u></td> <td><u>6.36</u></td> <td><u>64.7</u></td> <td><u>1300</u></td> <td><u>0.7</u></td> </tr> <tr> <td>Bottom:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u>4.0</u></td> </tr> </tbody> </table>						Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)	Top:							<u>0.45</u>	Mid:	<u>0.3</u>	<u>15.3</u>	<u>7.6</u>	<u>6.36</u>	<u>64.7</u>	<u>1300</u>	<u>0.7</u>	Bottom:							<u>4.0</u>
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Woody Debris (Snags) <u>3</u> Undercut Banks / Roots <u>6</u> Leaf Packs or Mat Aquatic Vegetation Rock or Shell Rubble..... Sand..... Mud / Muck / Silt <u>90+</u> Other Other			System Type: Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other (Specify) ☒ <u>Drill 4</u>			Water Odors Normal ☒ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐ Water Sample Taken? ☐ Yes ☐ No Sample Preserved? ☐ Yes ☐ No Lot Number: _____ Exp: _____																																		
			Water Surface Oils Normal ☒ Sheen ☐ Globbs ☐ Slick ☐ Other ☐ Color Tannic ☐ Green (Algae) ☐ Clear ☒ Other (Specify) ☐			Clarity Clear ☐ Slightly Turbid ☒ Turbid ☐ Opaque ☐																																		
ABUNDANCE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Not Obs.</th> <th>Rare</th> <th>Common</th> <th>Abundant</th> </tr> </thead> <tbody> <tr> <td>Periphyton:</td> <td>☐</td> <td>☒</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Fish:</td> <td>☒</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Aquatic Plants:</td> <td>☒</td> <td>☐</td> <td>☐</td> <td>☐</td> </tr> <tr> <td>Iron/Sulfur Bacteria:</td> <td>☐</td> <td>☒</td> <td>☐</td> <td>☐</td> </tr> </tbody> </table>				Not Obs.	Rare	Common	Abundant	Periphyton:	☐	☒	☐	☐	Fish:	☒	☐	☐	☐	Aquatic Plants:	☒	☐	☐	☐	Iron/Sulfur Bacteria:	☐	☒	☐	☐	AMBIENT FIELD CONDITIONS / NOTES: <u>ground cover 80%</u> <u>coral Ardisia + Wild Coffee</u> <u>High conductivity due to Agricultural Irrigation</u> <u>Secchi 0.45</u> Hydrologic Disturbance Scoring ☐ 1-2 ☐ 3-4 ☐ 5-6 ☐ 7-8 ☐ 9-10 ☒ The antecedent hydrologic conditions have been met to my best knowledge.												
	Not Obs.	Rare	Common	Abundant																																				
Periphyton:	☐	☒	☐	☐																																				
Fish:	☒	☐	☐	☐																																				
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Iron/Sulfur Bacteria:	☐	☒	☐	☐																																				
SAMPLING TEAM <u>J. Parrish, P. O'Connor</u>			SIGNATURE <u>[Signature]</u>																																					

781531 20 KAS 9844

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Cow Creek @ Putnam Co. Blvd County: Putnam Date: 12-28-17 Investigators: J. Parrish, P. O'Connor

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: 621531
0	1	N			60	1	N			Secchi depth Estimated?
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
10	1	N			70	1	N			# points ranked 4-6 total points assessed % points ranked 4-6
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
20	1	N			80	1	N			Check accompanying data collected at same site/date.
	2					2				
	3					3				
	4					4				
	5			96		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
30	1	N			90	1	N			Algal mat sample N Linear Veg Survey J Habitat Assessment J SCI/Biorecon N Water sample J RQ-
	2					2				
	3					3				
	4					4				
	5			92		5			94	
	6					6				
	7					7				
	8					8				
	9					9				
40	1	N			100	1	N			Algal Thickness Rank
	2					2				
	3					3				
	4					4				
	5			94		5			96	
	6					6				
	7					7				
	8					8				
	9					9				
50	1	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. 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									
	3									
	4	X								
	5			90						
	6									
	7									
	8									
	9	N								

Waterbody: COW Creek @ Putnam Riv	Date: 12-28-17	County: Put Nam	Storet Number: G2NE1143
Analyst: J Parrish, PO'Connor	Signature: PO'Connor		

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.

Typha
Vallisneria americana
Zizania aquatica

No
Aquatic
Vegetation