CHECK LIST FOR WATER CHEMISTRY DATA ASSOCIATED WITH SCI/BIORECON BIOASSESSMENT

RQ#: 2014-05-12-64 Event ID # 2014-05-13-01

Sampling Date: 05/12/14 Sampling Crew: S. Ernst / G. Schmitt

Site(s)/STORET #: Citrus Blue Spring trRun 645W0015

STORET/LIMS: WBID-1329S

Sonde: (Pass) / failed CCV
Parameter(s): _____

82° 18' 55.363
28° 58' 9.124

☑ 1. LIMS Input SO / 06/30/14 (Initials / Date)

☑ 2. QC 1 JA / 8-4-14 (Initials / Date) ☐ 3. QC 2 J / 6-30-15 (Initials / Date)

☑ 4. SIM File Generated J / 6-30-15 (Initials / Date)

☐ 5. STORET Upload _____ / _____ (Initials / Date)

Biology:

SBIO ID# 72852-Spring event
VPDB ID# 8437

☑ 5. **Site and Event Set up in SBio ?** 06/30/14

☑ 6. Habitat Data and YSI Data Entered Into SBIO SO / 06/30/14 (Initials / Date)

☑ 7. Habitat Data and YSI Data QC JA / 8-4-14 (Initials / Date)

☐ 8. RPS and flow entered into spreadsheets SO / 06/30 (Initials / Date) 9. QC _____ / _____ (Initials / Date)

ENTERED ON NEW SBIO2 6-30-15 JA

☑ 10. LVS entered into VPDB JA / 8-4-14 (Initials / Date) 11. LVS Data QC _____ / _____ (Initials / Date)

12. Invertebrates Sent To Tallahassee ☐ or Analyzed In Tampa ☐

☐ 13. Invertebrate Data Entered Into SBIO _____ / _____ (Initials / Date)

☐ 14. Invertebrate Data QC _____ / _____ (Initials / Date)

☐ 15. Field Paperwork Filed In Biology Lab _____ / _____ (Initials / Date)

☐ 16. Data Marked Complete _____ / _____

Citrus Blue Spring Head

Form FD 9000-32 **FDEP Linear Stream Vegetation Survey (DEP SOP FS 7320)** Revised 6/12/12

Waterbody: G4SW000,15 | Date: 05/12 | County: Marion | Storet Number: G4SW000,15

Analyst: Gitta Schmitt | Signature: Gitta Schmitt

Comments: SPRING

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1 m^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	X		X								
Bacopa caroliniana											
Bacopa monneri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Cephalanthus occidentalis	X		X		X						
Ceratophyllum demersum	X				X						
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes											
Eleocharis (wispy viviparous)											
Hydrilla verticillata	D	C	C	X	X						
Hydrocotle		X									
Hygrophila polysperma											
Hymenocallis											
Itea virginica											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna	A	C	C	X	X						
Limnophila sessiflora											
Ludwigia leptocarpa octo	X										
Ludwigia palustris											
Ludwigia peruviana				X							
Ludwigia repens ✓				X							✓
Luziola fluitans											
Amaranthus			X	X	X						
Ewalteri	X										
Bacharis	X		X								
if no Dominant or Co-Dominant were selected, indicate with an "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											
Najas guadelupensis		X	X	X	X						
Nuphar luteum											
Orontium aquaticum											
Panicum hemitomon											
Panicum repens											
Panicum rigidulum											
Pistia stratioides	X	X	X	X	X						
Polygonum glabra											
Polygonum hydropiperoides											
Polygonum punctatum	X										
Pontedaria cordata	X	X		X							
Potamogeton illinoensis											
Ruellia simplex											
Sacciolepis striata											
Sagittaria kurziana grasslike	X		X								✓
Sagittaria lancifolia											
Sagittaria latifolia											
Salix caroliniana	X			X							
Salvinia minima	X	X									
Samolus parviflora											
Saururus cernuus											
Typha											
Vallisneria americana											
Zizania aquatica											
Luziola fluitans											
Rumex ✓	X	X			X						
Lemna ✓	X										
Osmunda regalis		X									
Rhyncospora**	X	X		X							✓
Phyla nodiflora ✓		X									
Muhlenbergia ✓	X	X	X								
Sabatia calycina ✓		X	X	X	X						✓
~~Purple flower~~	X		X								✓

** Corniculata

Eupatorium coelestinum * w/ 2 + leaves

DEP-SOP-001/01: Form FD 9000-3 (9/19/12)

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SAMPLE ID _____ ORG ID 21PLTPA LATITUDE _____

COUNTY Citrus STORET # 21SW0015 LONGITUDE _____

DATE 05.12.14 TIME 15:00 SAMPLING AGENCY FDEP

SITE NAME Citrus Blue Spring - 21SW0015

FIELD ID/NAME _____ RECEIVING BODY OF WATER _____

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)
✓				✓			

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

_____ m wide

0.01 m/s	0.03 m/s	0.01 m/s
1.2 m deep	1.2 m deep	1.2 m deep

Width of Riparian Vegetation (m) on Each Buffer Side

Left Bank: >18 Right Bank: >18

Hydrologic Modification Score (per FT 3101): _____

High Water Mark: _____ (m) + _____ (above present water level) = _____ (present depth) (above bed)

Artificially Impounded ☐ Yes ☑ No

Artificially Channelized: ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ 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

	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. (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:								1.3 ☑ VOB
Mid:								
Bottom	1.308	23.11	7.32	3.22	37.7	353	0.17	SITE DEPTH 1.3

Meter ID: YSI 6920-11 Bio I

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) _____

Algae Sample Taken? (Spring Run) ☑ Yes ☐ No

Sample Preserved? ☐ Yes ☑ No

Lot Number: _____ Exp: _____

Clarity ☑ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque

ABUNDANCE

	Absent	Rare	Common	Abundant
Periphyton:	☐	☐	☑	☐
Fish:	☐	☐	☑	☐
Aquatic Plants:	☐	☐	☐	☑
Iron/Sulfur Bacteria:	☑	☐	☐	☐

System Type: Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☑ Spring Head

WEATHER CONDITIONS / NOTES:

Sunny, Clear + Hot

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

SAMPLING TEAM S. Ernst / G. Schmitt

SIGNATURE: _____

DATE: 05/12/14

DEP-SOP-001/01: Form FD 9000-5
STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: / SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
	G4SW0014	05/12/14	Withlacoochee

REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Citrus	Citrus Blue Spring	G4SW0015

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 9	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 11	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 4	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 20 Primary Score 44	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** 20 (Spring 86 Year)	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 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 8 Left Bank 7	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful 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 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 root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	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 10 Left Bank 9 Secondary Score 75	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

119 **TOTAL SCORE**

Date:	Analyst:	Signature:
05/12/14	G. Schmitt / S. Ernst	

RPS# 7285 6-30-15 JA

Form FD 9000-25 **FDEP Rapid Periphyton Survey (DEP SOP FS 7230)** Revised 6/12/12

Site: Citrus Blue Spring | County: Citrus | Date: 05-12-14 | Investigators: S. Bryant & S. Schmitt

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

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N - 6)	Canopy Cover
40	1	3	
	2	3	
	3	3	
	4	2	
	5	1	92
	6		
	7		
	8		
	9		
50	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
60	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
70	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N - 6)	Canopy Cover
80	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
90	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
100	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		

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

Secchi depth:

Check accompanying data collected at same site/date.	
Algal mat sample	N
Habitat Assessment	Y
Linear Veg. Survey	Y
SCI/Biorecon (circle 1)	Y
Water sample	Y
RQ: 2014-05-12-64	

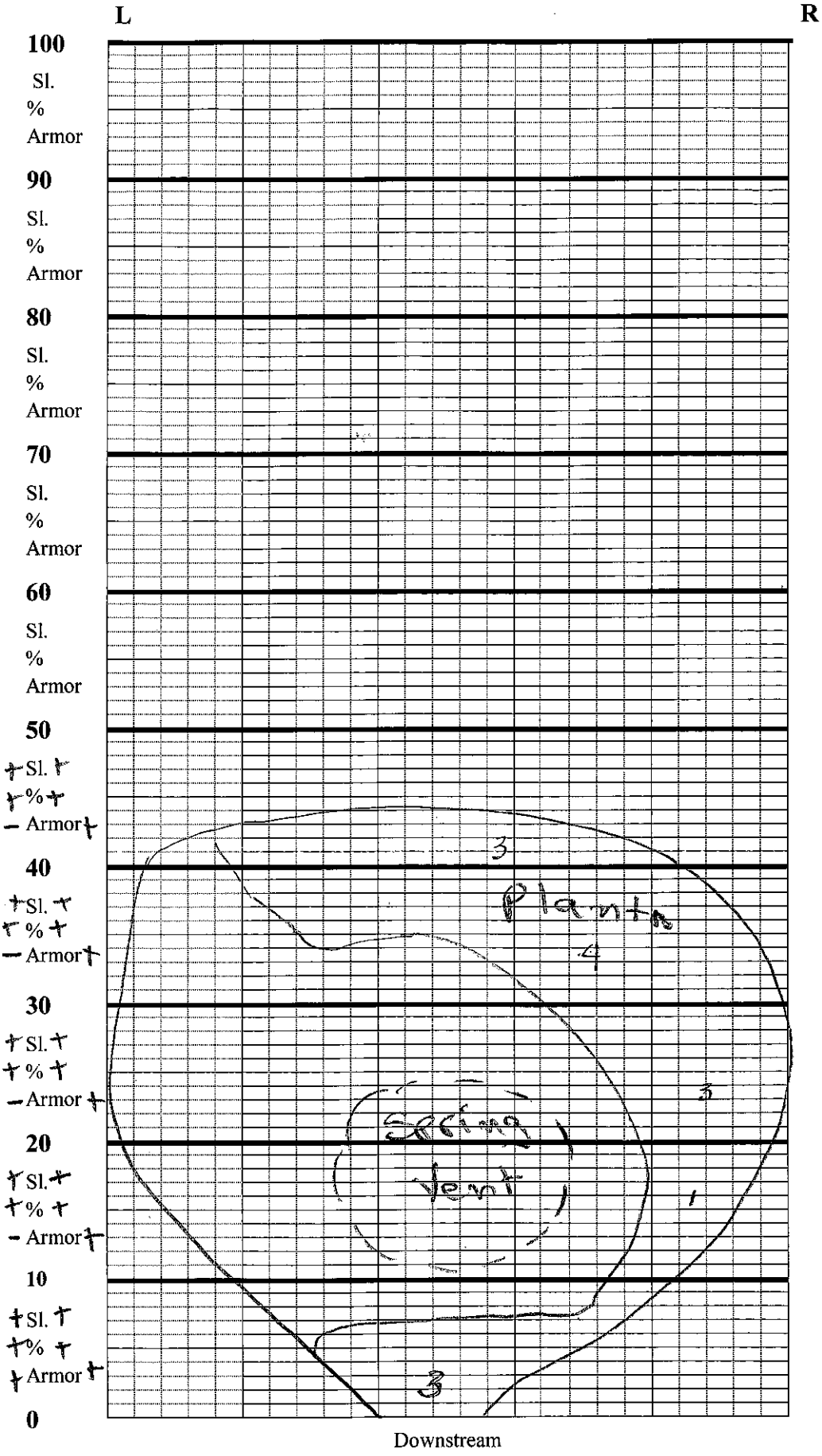
Algal Thickness Rank	
N	rough, no algae; slimy; algae to 1 mm
3	>1mm - 6 mm
4	>6 - 20 mm
5	>20 mm - 10 cm
6	>10 cm

Record "N" for points deeper than the Secchi depth; algae are presumed absent. Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. Note if thickness estimated for deep points which can be seen but not reached.

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 an 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%.

Stream/River Habitat Sketch Sheet, Form FD 9000-4 (March07, 2013)
Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).



macro = 14 m

Location: Citrus Blue Spring
Date: 05.12.14
Samplers: S. Faust, G. Schmitt

Substrates: Code key, draw proportionate habitat abundance. %

- ☐ Snags ____
- ☑ Roots/undercut banks 3m
- ☐ Leaf Packs (or mats) ____
- ☑ Macrophytes 13m
- ☐ _____
- ☐ _____

Total observed___

☐ Pools Range expected___

Velocity measured at _____ meter mark.

WQ & chemistry taken at 20 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:

Prod. hab	1	2	3	4	5
Sweeps (Maj)	10	7	5	4	3
Sweeps (Min)	10	6	5	4	5