

NRSA 2018/19 VERIFICATION (Front)

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002Visit: ☒ 1 ☐ 2Date: 08 / 15 / 2018Site Name: Hazel CreekState of Site Location: NCField Crew: ER4☐ This is a special State site

STREAM/RIVER VERIFICATION INFORMATION

Stream/River verified by (Mark all that apply): ☒ GPS ☒ Local Contact ☒ Signs ☐ Roads ☒ Topo. Map☐ Other (Describe Here): _____

Coordinates	Latitude	Longitude	# of Satellites	Elevation at transect A
GPS Decimal Degrees NAD 83	<u>3</u> <u>5</u> <u>.</u> <u>4</u> <u>7</u> <u>3</u> <u>6</u>	<u>-</u> <u>-</u> <u>8</u> <u>3</u> <u>.</u> <u>7</u> <u>2</u> <u>1</u> <u>7</u>	☐ ≤3 ☒ ≥4	<u>5</u> <u>3</u> <u>9</u> ☐ ft ☒ m
Location: ☒ X-Site (wadeable) ☐ Transect A (non-wadeable)				

DID YOU SAMPLE THIS SITE?

☒ YES If Yes, check one below☐ NO If No, check one below

SAMPLEABLE (Choose method used)

- ☒ Wadeable - Continuous water, greater than 50% wadeable
- ☐ Boatable
- ☐ Partial - Sampled by wading (>50% of reach sampled). Explain below.
- ☐ Partial - Sampled by boat (>50% of reach sampled). Explain below.
- ☐ Wadeable Interrupted - Not continuous water along reach
- ☐ Boatable Interrupted - Not continuous water along reach
- ☐ Altered - Stream/River Channel Present but differs from Map

ADDITIONAL SITE CHARACTERISTICS

☐ Tidally Influenced
 ☐ Blackwater
 ☐ Not Applicable

NON-SAMPLEABLE-PERMANENT

- ☐ Dry - Visited
- ☐ Dry - Not visited
- ☐ Wetland (No Definable Channel)
- ☐ Map Error (No evidence channel/waterbody ever present)
- ☐ Impounded (> 7 day residence time)
- ☐ Tidal (exceeds salinity threshold)
- ☐ Other (explain in comments)

NON-SAMPLEABLE-TEMPORARY

- ☐ Not boatable - Need a different crew - Reschedule regardless of year
- ☐ Not wadeable - Need a different crew - Reschedule regardless of year
- ☐ Other (explain in comments)

NO ACCESS

- ☐ Access Permission Denied
- ☐ Permanently Inaccessible (Unable/Unsafe to Reach Site)
- ☐ Temporarily Inaccessible-Fire, etc. - Reschedule regardless of year
- ☐ Other (explain in comments)

GENERAL COMMENTS

The entire Hazel Creek watershed is located within the Great Smoky Mountains National Park and drains into Fontana Lake. The only access to this wadeable stream is by boat from one of the boat ramps on the lake.

DIRECTIONS TO SITE

From Fontana Village Marina, NC travel by boat approximately 5 miles to the mouth of Hazel Creek. Follow the NPS access road approximately 600 meters to a bridge crossing. Site is located upstream of the bridge.

NRSA 2018/19 VERIFICATION (Back)

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Site ID: NRS18 NC RF002

Visit: ☒ 1 ☐ 2 Date: 0.8 / 1.5 / 2.0.1.8

STREAM/RIVER REACH DETERMINATION

Channel Width Used to Define Reach (m)	DISTANCE (m) FROM X-SITE		Total Reach Length Intended (m)	Comment:
	Upstream Length:	Downstream Length:		
<u>21</u>	<u>840</u>	<u>0</u>	<u>840</u>	

☐ Crew scanned or submitted a site sketch

PERSONNEL

Crew Leader: Jerry Ackerman

Name: Jon McMahan

Fish Taxonomist: John Ruiz

Name: _____

Name: Sue Dye

Name: Pete Kalla

Name: Greg White

Name: _____

NRSA 2018/19 FIELD MEASUREMENT

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002

Date: 08 / 15 / 2018

CALIBRATION INFORMATION

Instrument manufacturer and model: YSI EXO 1

Instrument ID number: 14J102574

TEMPERATURE

Thermometer
Reading (°C)

Sensor
Reading (°C)

2 0 0

Comments

Did not verify temperature

DO

Elevation

OR

Barometric
Pressure (mm Hg)

Calibration Value

Displayed Value

(m)

7 1 9

8 5

mg/L
%

8 5

mg/L
%

Comments

pH

Cal. STD 1 Description

Cal. STD 1 Value

Cal. STD 2 Description

Cal. STD 2 Value

Fisher pH 7; lot 177435; exp 10/19

7 0 0

Fisher pH 4; lot 177238; exp 10/19

4 0 0

Comments

CONDUCTIVITY

Cal. STD 1 Description

Cal. STD 1 Value

Cal. STD 2 Description

Cal. STD 2 Value

Fisher 10020us/cm; lot CC16926; exp 2/22/19

10,020

Comments

FIELD MEASUREMENT ● X-Site (wadeable) ○ Transect A (non-wadeable) ○ Other Transect: _____

Comments

Time of Day (hh:mm) 0 9 : 4 9

DO(mg/L) XX.X 9 . 6

Temp. (°C) XX.X 1 6 . 7

pH XX.XX 6 . 8 2

Specific Cond. (µS/cm) XX.X 1 1 . 6

Corrected to 25°C ? ● Y ○ N

NRSA 2018/19 SAMPLE COLLECTION (Front)

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CHEMISTRY (CHEM)
(Target Volume = 4L)

STATION COLLECTED:

☒ X-Site (wadeable)

☐ Transect A (non-wadeable)

☐ Other Transect:

No Sample Collected ☐

Sample ID

Chilled

Comments

103240

☒

WATER COLUMN CHLOROPHYLL (WCHL) (GF/F Filter)
(Target Volume = 1000mL; max vol = 2000 mL)

No Sample Collected ☐

Sample ID

Volume Filtered (ml)

Frozen

Comments

103241

1000

☒

ALGAL TOXIN (Microcystin) (MICX) (PETG bottle)
(Target Volume = 500 mL)

No Sample Collected ☐

Sample ID

Frozen

Comments

103246

☒

ALGAL TOXIN (Microcystin) (MICZ) (HDPE bottle)
(Target Volume = 500mL)

No Sample Collected ☐

Sample ID

Frozen

Comments

103247

☒

COMPOSITE PERIPHYTON

Composite Volume

No. of Transects

Comments

500

11

PERIPHYTON ASSEMBLAGE ID (PERI) (50-mL tube)

No Sample Collected ☐

Sample ID

Volume (ml)

Preserved

Comments

103242

50

☒

PERIPHYTON CHLOROPHYLL (PCHL) (GF/F Filter)

No Sample Collected ☐

Sample ID

Volume Filtered (ml)

Frozen

Comments

103243

25

☒

PERIPHYTON BIOMASS (PBIO) (GF/C Filter)

No Sample Collected ☐

Sample ID

Volume Filtered (ml)

Frozen

Comments

103244

25

☒

PERIPHYTON METAGENOMIC (PDNA) (PETG bottle)

No Sample Collected ☐

Sample ID

Frozen

Comments

103245

☒

ENTEROCOCCI (ENTE)

(Target Volume = 250 mL (Filter blank is collected during visit 1 at all revisit sites.))

No Sample Collected ☐

Blank Collected ☐

Sample ID

Time Collected (hhmm)

Depth Collected (m)

Sample Volume (mL)

Filt. Start Time (hhmm)

Volume Filtered (Target = 50 mL)

Filt. End Time (hhmm)

Time Frozen (hhmm)

103250

16:38

0.1

250

21:35

50

50

21:48

21:49

Comments

NRSA 2018/19 SAMPLE COLLECTION (Back)

Site ID: NRS18_NC_RF002

Date: 08 / 15 / 2018

BENTHIC MACROINVERTEBRATES (BERW) - WADEABLE

No Sample Collected ☐

Sample ID	Number of jars	Preserved (ETOH)	No. of Transects	Comments
1 0 3 2 4 8	2	☒	11	

REACH-WIDE BENTHOS - WADEABLE

TRANSECT		A		B		C		D		E		F		G		H		I		J		K	
SUBSTRATE	CHAN.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.	Sub.	Chan.
Fine/Sand	Pool	☐ F	☐ P	☐ F	☐ P	☐ F	☐ P	☐ F	☐ P	☐ F	☐ P	☐ F	☒ P	☐ F	☒ P	☐ F	☒ P	☐ F	☐ P	☐ F	☐ P	☐ F	☐ P
Gravel	Glide	☐ G	☐ GL	☐ G	☐ GL	☐ G	☐ GL	☒ G	☐ GL	☐ G	☐ GL	☐ G	☐ GL	☐ G	☐ GL	☐ G	☐ GL	☐ G	☐ GL	☒ G	☒ GL	☐ G	☐ GL
Coarse	Riffle	☒ C	☒ RI	☒ C	☒ RI	☒ C	☒ RI	☐ C	☐ RI	☒ C	☒ RI	☒ C	☐ RI	☒ C	☐ RI	☒ C	☐ RI	☒ C	☒ RI	☐ C	☐ RI	☒ C	☒ RI
Other:	Rapid	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☒ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA	☐ OT	☐ RA
If other, flag and explain in comments	Flag		Flag		Flag		Flag		Flag		Flag		Flag		Flag		Flag		Flag		Flag		

BENTHIC MACROINVERTEBRATES (BETB) - NONWADEABLE

No Sample Collected ☐

Sample ID	Number of jars	Preserved (ETOH)	No. of Transects	Comments
		☐		

TRANSECT BENTHOS - NONWADEABLE

Habitat: C = Coarse Substrate / LWD L = Leaf Pack F = Organic Fine Muds / Sand M = Macrophyte beds OT = Other (Flag and explain in comment section below)

Substrate: F = Fine / Sand G = Gravel C = Coarse substrate OT = Other (Flag and explain in comment section below)

Channel: P = Pool GL = Glide RI = Riffle RA = Rapid OT = Other (Flag and explain in comment section below)

TRANSECT Location (L/R):	A	B	C	D	E	F	G	H	I	J	K
Dominant Habitat: (ONE PER TRANSECT)	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT
Secondary Habitat: (ONE PER TRANSECT)	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT	☐ C ☐ L ☐ F ☐ M ☐ OT
Substrate: (ONE PER TRANSECT)	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT	☐ F ☐ C ☐ G ☐ OT
Channel: (ONE PER TRANSECT)	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT	☐ P ☐ RA ☐ RI ☐ GL ☐ OT
	Flag	Flag	Flag	Flag	Flag	Flag	Flag	Flag	Flag	Flag	Flag

Flag	Comments

NRSA 2018/19 FISH GEAR AND SAMPLING INFORMATION (Front)

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

FISH SAMPLING PROTOCOL (select one):

- ☐ Large Nonwadeable - (≥ 13 m wide)
☐ Small Nonwadeable - (≤ 12 m wide)
☒ Large Wadeable - (≥ 13 m wide)
☐ Small Wadeable - (≤ 12 m wide)

☒ **Fast flowing high gradient site**

Did conditions allow for sufficient sampling? ☒ Y ☐ N
☐ Not Sure

FISH SAMPLING - NOT CONDUCTED OR SUSPENDED (select one):

- ☐ Fished - None Collected
☐ Not Fished - No Permit
☐ Not Fished - Site Conditions Prohibit Sampling (Describe in comments)
☐ Fishing Suspended - Permit Restriction (Listed species encountered)
☐ Not Fished - Equipment Failure
☐ Not Fished - No fish observed (applies to small wadeable streams only)
- ☐ Not Fished/Fishing suspended - Can't sample $\geq 50\%$ of required reach:
 - Nonwadeable and Lg. Wadeable (at least 10 CW)
 - Wadeable (at least 20 CW)

Fish Response to Electrofishing ☒ Immobilized ☐ Inhibited Swimming ☐ Escape

Final Length of Fishing Reach (m): **8 4 0**

Sampling Protocol Comments: _____

FISH GEAR INFORMATION

Water Visibility: ☒ Good ☐ Poor Water Temp (°C): **16.7** Specific Conductivity (uS/cm): **1 1 6** Corrected to 25°C? ☒ Y ☐ N

Primary Electrofishing Gear Model: **Smith-Root LR-24**

Volts: (50-1000) **6 0 0** **OR** ☐ High ☐ Low Pulse Width (ms): _____

☐ BOAT (Motor)

of Netters (1): **1**

Wave Form: ☐ AC ☐ DC

Watts: likely 400 (bp),
2500 or 5000 (boat/raft)

Total Shock (button) Time (s): **6 8 0 0**

☐ RAFT (No motor)

Anodes

☒ Pulsed DC

Pulse Rate:
pps or Hz **6 0**

Total Fishing Time (min): **2 7 0**

☒ BACKPACK

Number: **1**

☐ BANK OR TOWED UNIT

Diameter: **11**

☒ in.
☐ cm

% of Power:
(Smith Root GPP only)

Amps: (may not be
provided for bp) **0 3**

Length Sampled (m): **8 4 0**

Secondary Electrofishing Gear Model: _____

Volts: (50-1000) _____ **OR** ☐ High ☐ Low Pulse Width (ms): _____

☐ BOAT (Motor)

of Netters (1): _____

Wave Form: ☐ AC ☐ DC

Watts: likely 400 (bp),
2500 or 5000 (boat/raft)

Total Shock (button) Time (s): _____

☐ RAFT (No motor)

Anodes

☐ Pulsed DC

Pulse Rate:
pps or Hz _____

Total Fishing Time (min): _____

☐ BACKPACK

Number: _____

☐ BANK OR TOWED UNIT

Diameter: _____

☐ in.
☐ cm

% of Power:
(Smith Root GPP only)

Amps: (may not be
provided for bp) _____

Length Sampled (m): _____

Primary Seine Net: ☐ BAG SEINE ☐ MINNOW SEINE

No. of crew members: _____

Height (m): _____ Length (m): _____ Mesh (mm): _____ Avg. Haul Length (m): _____ No. of Hauls: _____ Total Seining Time (min): _____ Length Sampled (m): _____

Secondary Seine Net: ☐ BAG SEINE ☐ MINNOW SEINE

No. of crew members: _____

Height (m): _____ Length (m): _____ Mesh (mm): _____ Avg. Haul Length (m): _____ No. of Hauls: _____ Total Seining Time (min): _____ Length Sampled (m): _____

GEAR INFORMATION COMMENTS

NRSA 2018/19 FISH GEAR AND SAMPLING INFORMATION (Back)

Reviewed by (initial): _____

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Date: 08 / 15 / 2018

QA VOUCHER SAMPLE INFORMATION (VERT)

NO VOUCHERS PRESERVED ☒

Sample ID	# of Jars	Preserved	Comments
<u> </u>	<u> </u>	☒	

PHOTO VOUCHER FILE INFORMATION

Page	Line	Photo File Name (SiteID_V(Visit#)_Tag#) (e.g.: NRS18_OR_11158_V1_Tag01)	Sequence (e.g. a-c)	Comments	Page	Line	Photo File Name (SiteID_V(Visit#)_Tag#) (e.g.: NRS18_OR_11158_V1_Tag01)	Sequence (e.g. a-c)	Comments

FISH TISSUE PLUG SAMPLES (FPLG)

NO SAMPLE COLLECTED ☒

Collection Method: ☐ ELECTROFISHING ☐ HOOK & LINE ☐ SEINING ☐ OTHER:

Sample ID	Common Name	Length(mm)	Weight(g)	Comments
<u> </u>				

NRSA 2018/19 FISH COLLECTION

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002

Date: 0 8 / 1 5 / 2 0 1 8

Page _____ of _____

I did not evaluate the native/
introduced status for fish collection. ☐ Y

Line #	Common Name	Hy-brid?	Intro-duced?	Tally and Counts								Anom Count	Mortality Count	VOUCHER			Voucher Tag #	Vouchers Retained	Flag
				<150 mm		150-300 mm		300-460 mm		>460 mm				Unk/Rng	QA	Photo			
1	SMALLMOUTH BASS	○	○		14									○	○	○			
2	MOTTLED SCULPIN	○	○		74									○	○	○			
3	RIVER CHUB	○	○		55									○	○	○			
4	WARPAINT SHINER	○	○		29									○	○	○			
5	NORTHERN HOG SUCKER	○	○		3		1							○	○	○			
6	TENNESSEE SHINER	○	○		63									○	○	○			
7	CENTRAL STONEROLLER	○	○		4									○	○	○			
8	GREENSIDE DARTER	○	○		2									○	○	○			
9	LONGNOSE DACE	○	○		10									○	○	○			
10	BLUEGILL	○	○		2									○	○	○			
11	GREEN SUNFISH	○	○		5									○	○	○			
12	ROCK BASS	○	○		1									○	○	○			
13	BROWN TROUT	○	○				1							○	○	○			
14		○	○											○	○	○			

Flag	Comments	Flag	Comments

Flag codes: K = No measurement made, F1,F2, etc. = flags assigned by each field crew. Explain all flags in comments.

2194249191

NRSA 2018/19 WHOLE FISH TISSUE COLLECTION

Reviewed by (initial): _____

☐ WADEABLE

☐ BOATABLE

Site ID: NRS18_NC_RF002

Date: / /

PAGE: OF

WHOLE FISH TISSUE FILLET SAMPLE (FTIS)

SAMPLE ID:

NO SAMPLE COLLECTED ☐

☐ FISH ARE ALL THE SAME SPECIES

☐ FISH ALL WITHIN 75% OF LARGEST SPECIMEN

	Common Name	Total Length (mm)	Frozen	Comments
.01			☐	
.02			☐	
.03			☐	
.04			☐	
.05			☐	
.06*			☐	
.07*			☐	
.08*			☐	
.09*			☐	
.10*			☐	

*Additional specimens for smaller fish species to ensure sufficient tissue is available for chemical analysis of fillet tissue.

Date: 08 / 15 / 2018

TRANSECT: ☒ A ☐ B ☐ C ☐ D ☐ E ☐ F
☐ G ☐ H ☐ I ☐ J ☐ K ☐ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES																																			
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None																																			
Left	0	0	SA	100		Cover in Channel Flag						RIPARIAN VEGETATION COVER																																			
Lctr	6.1	32	SA	100		Filamentous Algae						Flag	Canopy (>5 m high) Left Bank Flag:					Right Bank Flag:																													
Ctr	12.2	30	GC	10		Macrophytes							Woody Vegetation Type																																		
Rctr	18.2	33	SB	10		Woody Debris >0.3 m (BIG)							BIG Trees (Trunk >0.3 m DBH)																																		
Right	24.3	0	SA	100		Brush/Woody Debris <0.3 m (SMALL)							SMALL Trees (Trunk <0.3 m DBH)																																		
SUBSTRATE SIZE CLASS CODES RS = Bedrock (Smooth) - (Larger than a car) RR = Bedrock (Rough) - (Larger than a car) RC = Concrete/Asphalt XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car) SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick) CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball) GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball) GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble) SA = Sand (0.06 to 2 mm) - (Gritty- up to Ladybug size) FN = Silt / Clay / Muck - (Not Gritty) HP = Hardpan - (Firm, Consolidated Fine Substrate) WD = Wood - (Any Size) OT = Other (Write comment below)						Embed. (%)						Understory (0.5 to 5 m high)																																			
						0						Woody Vegetation Type																																			
						0						Overhanging Veg. ≤1 m of Surface																																			
												Undercut Banks																																			
												Boulders																																			
												Artificial Structures																																			
												Ground Cover (<0.5 m high)																																			
												Woody Shrubs & Saplings																																			
												Non-Woody Herbs, Grasses, & Forbs																																			
												Barren, Bare Dirt or Duff																																			
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS								HUMAN INFLUENCE 0 = Not Present P = > 10 m C = Within 10 m plot B = On Bank																																			
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIOMETER (0-17 Max) Flag												Wall/Dike/Revetment /Riprap/Dam																															
Left	40	0		<table border="1"> <tr> <td>CenUp</td> <td>9</td> <td></td> <td>CenR</td> <td>16</td> <td></td> </tr> <tr> <td>CenL</td> <td>13</td> <td></td> <td>Left</td> <td>17</td> <td></td> </tr> <tr> <td>CenDwn</td> <td>3</td> <td></td> <td>Right</td> <td>16</td> <td></td> </tr> </table>												CenUp	9		CenR	16		CenL	13		Left	17		CenDwn	3		Right	16		Buildings													
CenUp	9		CenR	16																																											
CenL	13		Left	17																																											
CenDwn	3		Right	16																																											
Right	12	0														Pavement/Cleared Lot																															
Wetted Width XX.XX m		24.3														Road/Railroad																															
Bar Width XX.X m		0														Pipes (Inlet/Outlet)																															
Bankfull Width XXX.X m		24.9														Landfill/Trash																															
Bankfull Height XX.X m		0.3														Park/Lawn																															
Incised Height XX.X m		1.7														Row Crops																															
Flag	Comments													Pasture/Range/Hay Field																																	
														Logging Operations																																	
														Mining Activity																																	

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

 Site ID: **NRS18 NC RF002**

 Date: **0 8 / 1 5 / 2 0 1 8**

 TRANSECT: **OA** **OB** **OC** **OD** **OE** **OF**
OG **OH** **OI** **OJ** **OK** **Extra Side Channel**

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER		VISUAL RIPARIAN ESTIMATES					
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)		0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None					
Left	0	0	SA	100		Cover in Channel Flag		RIPARIAN VEGETATION COVER					
Lctr	5.8	15	CB	20		Filamentous Algae	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	Canopy (>5 m high)		Left Bank	Flag:	Right Bank	Flag:
Ctr	11.6	55	GC	10		Macrophytes	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	Woody Vegetation Type		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	
Rctr	17.4	43	CB	50		Woody Debris >0.3 m (BIG)	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	BIG Trees (Trunk >0.3 m DBH)		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	
Right	23.1	10	SA	100		Brush/Woody Debris <0.3 m (SMALL)	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	SMALL Trees (Trunk <0.3 m DBH)		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4		☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4	
SUBSTRATE SIZE CLASS CODES						Embed. (%)		Understory (0.5 to 5 m high)					
RS = Bedrock (Smooth) - (Larger than a car)						0		Woody Vegetation Type					
RR = Bedrock (Rough) - (Larger than a car)						0		Woody Shrubs & Saplings					
RC = Concrete/Asphalt								Non-Woody Herbs, Grasses, & Forbs					
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)								Ground Cover (<0.5 m high)					
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)								Woody Shrubs & Saplings					
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)								Non-Woody Herbs, Grasses and Forbs					
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)								Barren, Bare Dirt or Duff					
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)													
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)						100							
FN = Silt / Clay / Muck - (Not Gritty)						100							
HP = Hardpan - (Firm, Consolidated Fine Substrate)						0							
WD = Wood - (Any Size)													
OT = Other (Write comment below)													
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank					
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)				Wall/Dike/Revetment /Riprap/Dam		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Left	22	0		Flag				Buildings		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Right	90	0		CenUp 5 CenR 14				Pavement/Cleared Lot		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Wetted Width XX.XX m		23.1		CenL 10 Left 14				Road/Railroad		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Bar Width XX.X m		0		CenDwn 15 Right 16				Pipes (Inlet/Outlet)		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Bankfull Width XXX.X m		23.9						Landfill/Trash		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Bankfull Height XX.X m		0.4						Park/Lawn		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Incised Height XX.X m		1.6						Row Crops		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
Flag	Comments							Pasture/Range/Hay Field		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
								Logging Operations		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	
								Mining Activity		☐ 0 ☐ P ☐ C ☐ B		☐ 0 ☐ P ☐ C ☐ B	

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG OH OI OJ OK ☐ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES																								
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None																								
Left	0	0	SA	100		Cover in Channel Flag						RIPARIAN VEGETATION COVER																								
Lctr	4.03	23	GC	10		Filamentous Algae	☐	☐	☐	☐	☐	Canopy (>5 m high)	Left Bank	Flag:	Right Bank	Flag:																				
Ctr	8.05	22	CB	0		Macrophytes	☐	☐	☐	☐	☐	Woody Vegetation Type	☐	☐	☐	☐	☐																			
Rctr	12.08	52	SA	100		Woody Debris >0.3 m (BIG)	☐	☐	☐	☐	☐	BIG Trees (Trunk >0.3 m DBH)	☐	☐	☐	☐	☐																			
Right	16.10	24	GF	10		Brush/Woody Debris <0.3 m (SMALL)	☐	☐	☐	☐	☐	SMALL Trees (Trunk <0.3 m DBH)	☐	☐	☐	☐	☐																			
SUBSTRATE SIZE CLASS CODES RS = Bedrock (Smooth) - (Larger than a car) 0 RR = Bedrock (Rough) - (Larger than a car) 0 RC = Concrete/Asphalt XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car) SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick) CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball) GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball) GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble) SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size) 100 FN = Silt / Clay / Muck - (Not Gritty) 100 HP = Hardpan - (Firm, Consolidated Fine Substrate) 0 WD = Wood - (Any Size) OT = Other (Write comment below)						Live Trees or Roots	☐	☐	☐	☐	☐	Understory (0.5 to 5 m high)																								
						Overhanging Veg. ≤1 m of Surface	☐	☐	☐	☐	☐	Woody Vegetation Type	☐	☐	☐	☐	☐																			
						Undercut Banks	☐	☐	☐	☐	☐	Woody Shrubs & Saplings	☐	☐	☐	☐	☐																			
						Boulders	☐	☐	☐	☐	☐	Non-Woody Herbs, Grasses, & Forbs	☐	☐	☐	☐	☐																			
						Artificial Structures	☐	☐	☐	☐	☐	Ground Cover (<0.5 m high)																								
												Woody Shrubs & Saplings	☐	☐	☐	☐	☐																			
BANK MEASUREMENTS						CANOPY COVER MEASUREMENTS						HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank																								
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max) Flag <table border="1" style="margin: 10px auto; width: 80%;"> <tr> <td>CenUp</td> <td>6</td> <td></td> <td>CenR</td> <td>14</td> <td></td> </tr> <tr> <td>CenL</td> <td>14</td> <td></td> <td>Left</td> <td>17</td> <td></td> </tr> <tr> <td>CenDwn</td> <td>8</td> <td></td> <td>Right</td> <td>16</td> <td></td> </tr> </table>						CenUp	6		CenR	14		CenL	14		Left	17		CenDwn	8		Right	16		Wall/Dike/Revetment /Riprap/Dam	☐	☐	☐	☐	☐	☐	☐	☐
CenUp	6		CenR							14																										
CenL	14		Left							17																										
CenDwn	8		Right							16																										
Left	19	0								Buildings	☐	☐	☐	☐	☐	☐	☐	☐																		
Right	80	0								Pavement/Cleared Lot	☐	☐	☐	☐	☐	☐	☐	☐																		
Wetted Width XX.XX m	16.10			Road/Railroad	☐	☐	☐	☐	☐	☐	☐	☐																								
Bar Width XX.X m	0			Pipes (Inlet/Outlet)	☐	☐	☐	☐	☐	☐	☐	☐																								
Bankfull Width XXX.X m	16.4			Landfill/Trash	☐	☐	☐	☐	☐	☐	☐	☐																								
Bankfull Height XX.X m	0.3			Park/Lawn	☐	☐	☐	☐	☐	☐	☐	☐																								
Incised Height XX.X m	2.0			Row Crops	☐	☐	☐	☐	☐	☐	☐	☐																								
Flag	Comments					Pasture/Range/Hay Field	☐	☐	☐	☐	☐	☐	☐	☐																						
						Logging Operations	☐	☐	☐	☐	☐	☐	☐	☐																						
						Mining Activity	☐	☐	☐	☐	☐	☐	☐	☐																						

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG OH OI OJ OK ☐ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER		VISUAL RIPARIAN ESTIMATES					
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)		0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None					
Left	0	0	SA	100		Cover in Channel Flag		RIPARIAN VEGETATION COVER					
Lctr	4.6	27	SB	10		Filamentous Algae	☐ 1 ☐ 2 ☐ 3 ☐ 4	Canopy (>5 m high)		Left Bank	Flag:	Right Bank	Flag:
Ctr	9.2	18	CB	0		Macrophytes	☐ 1 ☐ 2 ☐ 3 ☐ 4	Woody Vegetation Type		☐ C ☐ E ☐ M ☐ N		☐ C ☐ E ☐ M ☐ N	
Rctr	13.8	27	GF	0		Woody Debris >0.3 m (BIG)	☐ 1 ☐ 2 ☐ 3 ☐ 4	BIG Trees (Trunk >0.3 m DBH)		☐ 1 ☐ 2 ☐ 3 ☐ 4		☐ 1 ☐ 2 ☐ 3 ☐ 4	
Right	18.4	0	SB	10		Brush/Woody Debris <0.3 m (SMALL)	☐ 1 ☐ 2 ☐ 3 ☐ 4	SMALL Trees (Trunk <0.3 m DBH)		☐ 1 ☐ 2 ☐ 3 ☐ 4		☐ 1 ☐ 2 ☐ 3 ☐ 4	
SUBSTRATE SIZE CLASS CODES						Embed. (%)		Understory (0.5 to 5 m high)					
RS = Bedrock (Smooth) - (Larger than a car)						0		Woody Vegetation Type					
RR = Bedrock (Rough) - (Larger than a car)						0		Woody Shrubs & Saplings					
RC = Concrete/Asphalt								Non-Woody Herbs, Grasses, & Forbs					
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)								Ground Cover (<0.5 m high)					
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)								Woody Shrubs & Saplings					
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)								Non-Woody Herbs, Grasses and Forbs					
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)								Barren, Bare Dirt or Duff					
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)													
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)						100							
FN = Silt / Clay / Muck - (Not Gritty)						100							
HP = Hardpan - (Firm, Consolidated Fine Substrate)						0							
WD = Wood - (Any Size)													
OT = Other (Write comment below)													
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank					
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)				Wall/Dike/Revetment /Riprap/Dam		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Left	11	0		Flag				Buildings		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Right	90	0		CenUp 14 CenR 15				Pavement/Cleared Lot		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Wetted Width XX.XX m		18.4		CenL 9 Left 17				Road/Railroad		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Bar Width XX.X m		0		CenDwn 13 Right 17				Pipes (Inlet/Outlet)		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Bankfull Width XXX.X m		18.7						Landfill/Trash		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Bankfull Height XX.X m		0.2						Park/Lawn		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Incised Height XX.X m		1.7						Row Crops		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
Flag	Comments							Pasture/Range/Hay Field		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
								Logging Operations		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	
								Mining Activity		☐ P ☐ C ☐ B		☐ P ☐ C ☐ B	

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD ● E OF**
OG OH OI OJ OK ○ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER		VISUAL RIPARIAN ESTIMATES							
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)		0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None							
Left	0	0	SB	60		Cover in Channel Flag		RIPARIAN VEGETATION COVER							
Lctr	4.65	31	SB	15		Filamentous Algae	● 1 2 3 4	Canopy (>5 m high)		Left Bank	Flag:	Right Bank	Flag:		
Ctr	9.30	38	CB	10		Macrophytes	○ ● 2 3 4	Woody Vegetation Type		● C E M N		● C E M N			
Rctr	13.95	41	SA	100		Woody Debris >0.3 m (BIG)	○ ● 2 3 4	BIG Trees (Trunk >0.3 m DBH)		○ 1 2 ● 4		○ 1 ● 3 4			
Right	18.60	0	CB	0		Brush/Woody Debris <0.3 m (SMALL)	○ ● 2 3 4	SMALL Trees (Trunk <0.3 m DBH)		○ 1 2 ● 4		○ 1 ● 3 4			
SUBSTRATE SIZE CLASS CODES						Embed. (%)		Understory (0.5 to 5 m high)							
RS = Bedrock (Smooth) - (Larger than a car)						0		Woody Vegetation Type							
RR = Bedrock (Rough) - (Larger than a car)						0		Woody Shrubs & Saplings							
RC = Concrete/Asphalt								Non-Woody Herbs, Grasses, & Forbs							
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)								Ground Cover (<0.5 m high)							
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)								Woody Shrubs & Saplings							
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)								Non-Woody Herbs, Grasses and Forbs							
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)								Barren, Bare Dirt or Duff							
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)						100									
FN = Silt / Clay / Muck - (Not Gritty)						100									
HP = Hardpan - (Firm, Consolidated Fine Substrate)						0									
WD = Wood - (Any Size)															
OT = Other (Write comment below)															
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank							
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)						Wall/Dike/Revetment /Riprap/Dam		● P C B		● P C B	
Left	19	0		Flag						Buildings		● P C B		● P C B	
Right	90	0		CenUp 6 CenR 11						Pavement/Cleared Lot		● P C B		● P C B	
Wetted Width XX.XX m		18.60		CenL 16 Left 16						Road/Railroad		● P C B		● P C B	
Bar Width XX.X m		05		CenDwn 11 Right 17						Pipes (Inlet/Outlet)		● P C B		● P C B	
Bankfull Width XXX.X m		19.7								Landfill/Trash		● P C B		● P C B	
Bankfull Height XX.X m		0.3								Park/Lawn		● P C B		● P C B	
Incised Height XX.X m		1.5								Row Crops		● P C B		● P C B	
Flag	Comments									Pasture/Range/Hay Field		● P C B		● P C B	
										Logging Operations		● P C B		● P C B	
										Mining Activity		● P C B		● P C B	

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG OH OI OJ OK ☐ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES																
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None																
Left	0	0	XB	25		Cover in Channel Flag						RIPARIAN VEGETATION COVER																
Lctr	3.14	101	CB	10		Filamentous Algae	☐	☐	☐	☐	☐	Canopy (>5 m high)	Left Bank	Flag:	Right Bank	Flag:												
Ctr	6.28	108	GC	0		Macrophytes	☐	☐	☐	☐	☐	Woody Vegetation Type	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐						
Rctr	9.42	69	GF	0		Woody Debris >0.3 m (BIG)	☐	☐	☐	☐	☐	BIG Trees (Trunk >0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐						
Right	12.55	0	SA	100		Brush/Woody Debris <0.3 m (SMALL)	☐	☐	☐	☐	☐	SMALL Trees (Trunk <0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐						
SUBSTRATE SIZE CLASS CODES						Understory (0.5 to 5 m high)						Woody Vegetation Type																
RS = Bedrock (Smooth) - (Larger than a car)						Live Trees or Roots						☐						☐	☐	☐	☐	☐	☐	☐				
RR = Bedrock (Rough) - (Larger than a car)						Overhanging Veg. ≤1 m of Surface						☐						☐	☐	☐	☐	☐	☐	☐				
RC = Concrete/Asphalt						Undercut Banks						☐						☐	☐	☐	☐	☐	☐	☐				
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)						Boulders						☐						☐	☐	☐	☐	☐	☐	☐				
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)						Artificial Structures						☐						☐	☐	☐	☐	☐	☐	☐				
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)												Ground Cover (<0.5 m high)						Woody Shrubs & Saplings										
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)												☐						☐	☐	☐	☐	☐	☐	☐				
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)												☐						☐	☐	☐	☐	☐	☐	☐				
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)												☐						☐	☐	☐	☐	☐	☐	☐				
FN = Silt / Clay / Muck - (Not Gritty)												☐						☐	☐	☐	☐	☐	☐	☐				
HP = Hardpan - (Firm, Consolidated Fine Substrate)												☐						☐	☐	☐	☐	☐	☐	☐				
WD = Wood - (Any Size)												☐						☐	☐	☐	☐	☐	☐	☐				
OT = Other (Write comment below)												☐						☐	☐	☐	☐	☐	☐	☐				
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank																				
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)								Wall/Dike/Revetment /Riprap/Dam				Buildings												
Left	44	0.95		Flag								☐				☐	☐	☐	☐	☐	☐	☐						
Right	40	0		CenUp 11 CenR 11								☐				☐	☐	☐	☐	☐	☐	☐						
				CenL 16 Left 17								☐				☐	☐	☐	☐	☐	☐	☐						
				CenDwn 15 Right 17								☐				☐	☐	☐	☐	☐	☐	☐						
Wetted Width XX.XX m				12.55												Pavement/Cleared Lot				☐				☐	☐	☐	☐	☐
Bar Width XX.X m				0												Road/Railroad				☐				☐	☐	☐	☐	☐
Bankfull Width XXX.X m				16.2												Pipes (Inlet/Outlet)				☐				☐	☐	☐	☐	☐
Bankfull Height XX.X m				0.4												Landfill/Trash				☐				☐	☐	☐	☐	☐
Incised Height XX.X m				0.7												Park/Lawn				☐				☐	☐	☐	☐	☐
Flag	Comments											Row Crops				☐				☐	☐	☐	☐	☐				
												Pasture/Range/Hay Field				☐				☐	☐	☐	☐	☐				
												Logging Operations				☐				☐	☐	☐	☐	☐				
												Mining Activity				☐				☐	☐	☐	☐	☐				

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: NRS18 NC RF002 Date: 0 8 / 1 5 / 2 0 1 8 TRANSECT: OA OB OC OD OE OF
OG OH OI OJ OK Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES						
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None						
Left	0	0	GC	0		Cover in Channel Flag						RIPARIAN VEGETATION COVER						
Lctr	4.0	19	XB	25		Filamentous Algae	0	1	2	3	4		Canopy (>5 m high)		Left Bank	Flag:	Right Bank	Flag:
Ctr	8.0	105	SB	20		Macrophytes	0	1	2	3	4		Woody Vegetation Type	0	C	E	M	N
Rctr	12.0	59	SA	100		Woody Debris >0.3 m (BIG)	0	1	2	3	4		BIG Trees (Trunk >0.3 m DBH)	0	1	2	3	4
Right	16.0	0	SA	100		Brush/Woody Debris <0.3 m (SMALL)	0	1	2	3	4		SMALL Trees (Trunk <0.3 m DBH)	0	1	2	3	4
SUBSTRATE SIZE CLASS CODES						Embed. (%)						Understory (0.5 to 5 m high)						
RS = Bedrock (Smooth) - (Larger than a car)						0						Woody Vegetation Type						
RR = Bedrock (Rough) - (Larger than a car)						0						Woody Shrubs & Saplings						
RC = Concrete/Asphalt												Non-Woody Herbs, Grasses, & Forbs						
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)												Ground Cover (<0.5 m high)						
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)												Woody Shrubs & Saplings						
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)												Non-Woody Herbs, Grasses and Forbs						
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)												Barren, Bare Dirt or Duff						
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)																		
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)						100												
FN = Silt / Clay / Muck - (Not Gritty)						100												
HP = Hardpan - (Firm, Consolidated Fine Substrate)						0												
WD = Wood - (Any Size)																		
OT = Other (Write comment below)																		
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank										
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)				Wall/Dike/Revetment /Riprap/Dam										
Left	30	0		Flag				Buildings										
Right	22	0		Flag				Pavement/Cleared Lot										
Wetted Width XX.XX m		16.0		CenUp	11		CenR	15		Road/Railroad								
Bar Width XX.X m		0		CenL	14		Left	17		Pipes (Inlet/Outlet)								
Bankfull Width XXX.X m		17.6		CenDwn	8		Right	17		Landfill/Trash								
Bankfull Height XX.X m		0.4								Park/Lawn								
Incised Height XX.X m		0.6								Row Crops								
Flag	Comments									Pasture/Range/Hay Field								
										Logging Operations								
										Mining Activity								

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG ● H OI OJ OK ○ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES																									
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None																									
Left	0	0	SA	100		Cover in Channel Flag						RIPARIAN VEGETATION COVER																									
Lctr	3.38	48	CB	10		Filamentous Algae	●	○	○	○	○	Flag:	Canopy (>5 m high)		Left Bank	Flag:	Right Bank		Flag:																		
Ctr	6.75	55	SA	100		Macrophytes	○	●	○	○	○		Woody Vegetation Type	●	○	○	○	○		○	○	○	○	○													
Rctr	10.13	33	SA	100		Woody Debris >0.3 m (BIG)	○	●	○	○	○		BIG Trees (Trunk >0.3 m DBH)	○	○	○	○	○		○	○	○	○	○													
Right	13.5	0	SB	50		Brush/Woody Debris <0.3 m (SMALL)	○	●	○	○	○		SMALL Trees (Trunk <0.3 m DBH)	○	○	○	○	○		○	○	○	○	○													
SUBSTRATE SIZE CLASS CODES RS = Bedrock (Smooth) - (Larger than a car) Embed. (%) 0 RR = Bedrock (Rough) - (Larger than a car) 0 RC = Concrete/Asphalt XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car) SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick) CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball) GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball) GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble) SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size) 100 FN = Silt / Clay / Muck - (Not Gritty) 100 HP = Hardpan - (Firm, Consolidated Fine Substrate) 0 WD = Wood - (Any Size) OT = Other (Write comment below)						Live Trees or Roots	○	○	○	○	○		Woody Vegetation Type	○	○	○	○	○		○	○	○	○	○													
						Overhanging Veg. ≤1 m of Surface	○	○	○	○	○		Woody Shrubs & Saplings	○	○	○	○	○		○	○	○	○	○													
						Undercut Banks	○	○	○	○	○		Non-Woody Herbs, Grasses, & Forbs	○	○	○	○	○		○	○	○	○	○													
						Boulders	○	○	○	○	○		Ground Cover (<0.5 m high)																								
						Artificial Structures	○	○	○	○	○		Woody Shrubs & Saplings	○	○	○	○	○		○	○	○	○	○													
													Non-Woody Herbs, Grasses and Forbs	○	○	○	○	○		○	○	○	○	○													
							Barren, Bare Dirt or Duff	○	○	○	○	○		○	○	○	○	○																			
BANK MEASUREMENTS						CANOPY COVER MEASUREMENTS						HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank																									
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIOMETER (0-17 Max) Flag <table border="1" style="margin: 10px auto; width: 80%;"> <tr> <td>CenUp</td><td>15</td><td></td><td>CenR</td><td>17</td><td></td></tr> <tr> <td>CenL</td><td>16</td><td></td><td>Left</td><td>17</td><td></td></tr> <tr> <td>CenDwn</td><td>16</td><td></td><td>Right</td><td>17</td><td></td></tr> </table>						CenUp	15		CenR	17		CenL	16		Left	17		CenDwn	16		Right	17		Wall/Dike/Revetment /Riprap/Dam	○	○	○	○		○	○	○	○
CenUp	15		CenR							17																											
CenL	16		Left							17																											
CenDwn	16		Right							17																											
Left	9	0								Buildings	○	○	○	○		○	○	○	○																		
Right	65	0								Pavement/Cleared Lot	○	○	○	○		○	○	○	○																		
Wetted Width XX.XX m	13.5			Road/Railroad	○	○	○	○		○	○	○	○																								
Bar Width XX.X m	0			Pipes (Inlet/Outlet)	○	○	○	○		○	○	○	○																								
Bankfull Width XXX.X m	18.1			Landfill/Trash	○	○	○	○		○	○	○	○																								
Bankfull Height XX.X m	0.2			Park/Lawn	○	○	○	○		○	○	○	○																								
Incised Height XX.X m	0.8			Row Crops	○	○	○	○		○	○	○	○																								
Flag	Comments					Pasture/Range/Hay Field	○	○	○	○		○	○	○	○																						
						Logging Operations	○	○	○	○		○	○	○	○																						
						Mining Activity	○	○	○	○		○	○	○	○																						

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: NRS18 NC RF002 Date: 0 8 / 1 5 / 2 0 1 8 TRANSECT: OA OB OC OD OE OF
OG OH ● I OJ OK ○ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES						
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None						
Left	0	0	FN	100		Cover in Channel Flag						RIPARIAN VEGETATION COVER						
Lctr	6.1	42	SA	100		Filamentous Algae	●	1	2	3	4		Canopy (>5 m high)		Left Bank	Flag:	Right Bank	Flag:
Ctr	12.2	89	XB	25		Macrophytes	○	●	2	3	4		Woody Vegetation Type	●	C	E	M	N
Rctr	18.3	48	SA	100		Woody Debris >0.3 m (BIG)	○	●	2	3	4		BIG Trees (Trunk >0.3 m DBH)	○	1	2	3	4
Right	24.4	0	SB	30		Brush/Woody Debris <0.3 m (SMALL)	○	1	●	3	4		SMALL Trees (Trunk <0.3 m DBH)	○	1	2	3	4
SUBSTRATE SIZE CLASS CODES						Understory (0.5 to 5 m high)						Woody Vegetation Type						
RS = Bedrock (Smooth) - (Larger than a car)						Live Trees or Roots						○						
RR = Bedrock (Rough) - (Larger than a car)						Overhanging Veg. ≤1 m of Surface						○						
RC = Concrete/Asphalt						Undercut Banks						○						
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)						Boulders						○						
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)						Artificial Structures						●						
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)												Ground Cover (<0.5 m high)						
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)												Woody Shrubs & Saplings						
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)												○						
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)												Non-Woody Herbs, Grasses, & Forbs						
FN = Silt / Clay / Muck - (Not Gritty)												○						
HP = Hardpan - (Firm, Consolidated Fine Substrate)												Barren, Bare Dirt or Duff						
WD = Wood - (Any Size)												○						
OT = Other (Write comment below)																		
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank										
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)				Wall/Dike/Revetment /Riprap/Dam										
Left	38	0		Flag				●										
Right	21	0		Flag				●										
Wetted Width XX.XX m		24.4		CenUp	15		CenR	17		Buildings								
Bar Width XX.X m		0		CenL	13		Left	17		●								
Bankfull Width XXX.X m		25.5		CenDwn	6		Right	16		Pavement/Cleared Lot								
Bankfull Height XX.X m		0.4								●								
Incised Height XX.X m		0.6								Road/Railroad								
										●								
										Pipes (Inlet/Outlet)								
										●								
										Landfill/Trash								
										●								
										Park/Lawn								
										●								
										Row Crops								
										●								
										Pasture/Range/Hay Field								
										●								
										Logging Operations								
										●								
										Mining Activity								
										●								

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG OH OI J OK ☐ Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES															
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None															
Left	0	0	SB	75		Cover in Channel Flag						RIPARIAN VEGETATION COVER															
Lctr	7.53	73	SA	100		Filamentous Algae	☐	☐	☐	☐	☐	Canopy (>5 m high)	Left Bank	Flag:	Right Bank	Flag:											
Ctr	15.05	25	GC	0		Macrophytes	☐	☐	☐	☐	☐	Woody Vegetation Type	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
Rctr	22.58	61	GF	0		Woody Debris >0.3 m (BIG)	☐	☐	☐	☐	☐	BIG Trees (Trunk >0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
Right	30.10	0	CB	10		Brush/Woody Debris <0.3 m (SMALL)	☐	☐	☐	☐	☐	SMALL Trees (Trunk <0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
SUBSTRATE SIZE CLASS CODES						Understory (0.5 to 5 m high)						Woody Vegetation Type															
RS = Bedrock (Smooth) - (Larger than a car)						Live Trees or Roots						☐						☐	☐	☐	☐	☐	☐	☐			
RR = Bedrock (Rough) - (Larger than a car)						Overhanging Veg. ≤1 m of Surface						☐						☐	☐	☐	☐	☐	☐	☐			
RC = Concrete/Asphalt						Undercut Banks						☐						☐	☐	☐	☐	☐	☐	☐			
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)						Boulders						☐						☐	☐	☐	☐	☐	☐	☐			
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)						Artificial Structures						☐						☐	☐	☐	☐	☐	☐	☐			
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)												Ground Cover (<0.5 m high)						Woody Shrubs & Saplings									
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)												☐						☐	☐	☐	☐	☐	☐	☐			
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)												☐						☐	☐	☐	☐	☐	☐	☐			
FN = Silt / Clay / Muck - (Not Gritty)												☐						☐	☐	☐	☐	☐	☐	☐			
HP = Hardpan - (Firm, Consolidated Fine Substrate)												☐						☐	☐	☐	☐	☐	☐	☐			
WD = Wood - (Any Size)												☐						☐	☐	☐	☐	☐	☐	☐			
OT = Other (Write comment below)												☐						☐	☐	☐	☐	☐	☐	☐			
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank																			
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max)								Wall/Dike/Revetment /Riprap/Dam				☐				☐	☐	☐	☐	☐			
Left	24	0		Flag								Buildings				☐				☐	☐	☐	☐	☐			
Right	40	0		CenUp 8 CenR 13								Pavement/Cleared Lot				☐				☐	☐	☐	☐	☐			
Wetted Width XX.XX m		30.10		CenL 16 Left 17								Road/Railroad				☐				☐	☐	☐	☐	☐			
Bar Width XX.X m		0		CenDwn 10 Right 17								Pipes (Inlet/Outlet)				☐				☐	☐	☐	☐	☐			
Bankfull Width XXX.X m		31.7										Landfill/Trash				☐				☐	☐	☐	☐	☐			
Bankfull Height XX.X m		0.5										Park/Lawn				☐				☐	☐	☐	☐	☐			
Incised Height XX.X m		2.6										Row Crops				☐				☐	☐	☐	☐	☐			
Flag	Comments											Pasture/Range/Hay Field				☐				☐	☐	☐	☐	☐			
												Logging Operations				☐				☐	☐	☐	☐	☐			
												Mining Activity				☐				☐	☐	☐	☐	☐			

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG OH OI OJ K Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER						VISUAL RIPARIAN ESTIMATES															
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)						0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None															
Left	0	0	RR	0		Cover in Channel Flag						RIPARIAN VEGETATION COVER															
Lctr	4.27	29	SB	10		Filamentous Algae	☐	☐	☐	☐	☐	Canopy (>5 m high)	Left Bank	Flag:	Right Bank	Flag:											
Ctr	8.55	44	CB	10		Macrophytes	☐	☐	☐	☐	☐	Woody Vegetation Type	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
Rctr	12.82	17	SB	20		Woody Debris >0.3 m (BIG)	☐	☐	☐	☐	☐	BIG Trees (Trunk >0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
Right	17.10	0	SA	100		Brush/Woody Debris <0.3 m (SMALL)	☐	☐	☐	☐	☐	SMALL Trees (Trunk <0.3 m DBH)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐					
SUBSTRATE SIZE CLASS CODES						Understory (0.5 to 5 m high)						Woody Vegetation Type															
RS = Bedrock (Smooth) - (Larger than a car)						Live Trees or Roots						☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
RR = Bedrock (Rough) - (Larger than a car)						Overhanging Veg. ≤1 m of Surface						☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
RC = Concrete/Asphalt						Undercut Banks						☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car)						Boulders						☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick)						Artificial Structures						☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
FN = Silt / Clay / Muck - (Not Gritty)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
HP = Hardpan - (Firm, Consolidated Fine Substrate)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
WD = Wood - (Any Size)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
OT = Other (Write comment below)												☐						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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NRSA 2018/19 PHAB: CHANNEL/RIPARIAN CROSS-SECTION - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18 NC RF002** Date: **0 8 / 1 5 / 2 0 1 8** TRANSECT: **OA OB OC OD OE OF**
OG ● H OI OJ OK ● Extra Side Channel

SUBSTRATE CROSS-SECTIONAL INFORMATION						FISH COVER		VISUAL RIPARIAN ESTIMATES																							
	Dist LB XX.XX m	Depth XXX cm	Size Class Code	Embed. 0-100%	Flag	0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)		0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%) D = Deciduous C = Coniferous E = Broadleaf Evergreen M = Mixed N = None																							
Left	0	0	FN	100		Cover in Channel Flag		RIPARIAN VEGETATION COVER																							
Lctr	4.43	39	XB	70		Filamentous Algae	● 1 2 3 4	Canopy (>5 m high) Left Bank Flag: Right Bank Flag:																							
Ctr	8.85	27	GF	0		Macrophytes	● 1 2 3 4	Woody Vegetation Type ● C E M N																							
Rctr	13.28	40	SA	100		Woody Debris >0.3 m (BIG)	● 1 2 3 4	BIG Trees (Trunk >0.3 m DBH) ● 1 2 3 4																							
Right	17.70	0	FN	100		Brush/Woody Debris <0.3 m (SMALL)	● 1 2 3 4	SMALL Trees (Trunk <0.3 m DBH) ● 1 2 3 4																							
SUBSTRATE SIZE CLASS CODES RS = Bedrock (Smooth) - (Larger than a car) 0 RR = Bedrock (Rough) - (Larger than a car) 0 RC = Concrete/Asphalt XB = Large Boulder (1000 to 4000 mm) - (Meterstick to car) SB = Small Boulder (250 to 1000 mm) - (Basketball to meterstick) CB = Cobble (64 to 250 mm) - (Tennis ball to Basketball) GC = Coarse Gravel (16 to 64 mm) - (Marble to Tennis ball) GF = Fine Gravel (2 to 16 mm) - (Ladybug to marble) SA = Sand (0.06 to 2 mm) - (Gritty - up to Ladybug size) 100 FN = Silt / Clay / Muck - (Not Gritty) 100 HP = Hardpan - (Firm, Consolidated Fine Substrate) 0 WD = Wood - (Any Size) OT = Other (Write comment below)						Live Trees or Roots	● 1 2 3 4	Understory (0.5 to 5 m high)																							
						Overhanging Veg. ≤1 m of Surface	● 1 2 3 4	Woody Vegetation Type ● C E M N																							
						Undercut Banks	● 1 2 3 4	Woody Shrubs & Saplings ● 1 2 3 4																							
						Boulders	● 1 2 3 4	Non-Woody Herbs, Grasses, & Forbs ● 1 2 3 4																							
						Artificial Structures	● 1 2 3 4	Ground Cover (<0.5 m high)																							
								Woody Shrubs & Saplings ● 1 2 3 4																							
								Non-Woody Herbs, Grasses and Forbs ● 1 2 3 4																							
								Barren, Bare Dirt or Duff ● 1 2 3 4																							
BANK MEASUREMENTS				CANOPY COVER MEASUREMENTS				HUMAN INFLUENCE 0 = Not Present P = >10 m C = Within 10 m plot B = On Bank																							
	Bank Angle 0 - 360	Undercut Dist. (m)	Flag	DENSIMETER (0-17 Max) Flag <table border="1" style="margin: 10px auto; width: 80%;"> <tr> <td>CenUp</td> <td>5</td> <td></td> <td>CenR</td> <td>10</td> <td></td> </tr> <tr> <td>CenL</td> <td>14</td> <td></td> <td>Left</td> <td>17</td> <td></td> </tr> <tr> <td>CenDwn</td> <td>7</td> <td></td> <td>Right</td> <td>17</td> <td></td> </tr> </table>						CenUp	5		CenR	10		CenL	14		Left	17		CenDwn	7		Right	17		Wall/Dike/Revetment /Riprap/Dam ● P C B			
CenUp	5		CenR							10																					
CenL	14		Left							17																					
CenDwn	7		Right							17																					
Left	12	0								Buildings ● P C B																					
Right	70	0								Pavement/Cleared Lot ● P C B																					
Wetted Width XX.XX m	17.70									Road/Railroad ● P C B																					
Bar Width XX.X m	0			Pipes (Inlet/Outlet) ● P C B																											
Bankfull Width XXX.X m	18.			Landfill/Trash ● P C B																											
Bankfull Height XX.X m	0.7			Park/Lawn ● P C B																											
Incised Height XX.X m	1.2			Row Crops ● P C B																											
Flag	Comments			Pasture/Range/Hay Field ● P C B																											
				Logging Operations ● P C B																											
				Mining Activity ● P C B																											

Flag codes: K = Sample not collected; U = Suspect sample; F1, F2, etc. = flag assigned by field crew. Explain all flags in comment sections.

4803036914

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

TRANSECT: ☐ A-B ☒ B-C ☐ C-D ☐ D-E ☐ E-F
☐ F-G ☐ G-H ☐ H-I ☐ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____

Total Reach Length (m): _____

STATION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	50	23.1	☒	0	☒	RI	☒	☒	
1	55		☒		☒	RI	☒	☒	
2	63		☒		☒	RI	☒	☒	
3	92		☒		☒	RI	☒	☒	
4	93		☒		☒	RI	☒	☒	
*5	95	14.4	☒	0	☒	RI	☒	☒	
6	68		☒		☒	RA	☒	☒	
*7	70		☒		☒	RI	☒	☒	
8	81		☒		☒	RI	☒	☒	
9	76		☒		☒	RA	☒	☒	
10			☒		☒		☒	☒	
11			☒		☒		☒	☒	
12			☒		☒		☒	☒	
13			☒		☒		☒	☒	
14			☒		☒		☒	☒	

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

Station (5 or 7) 5		LFT SA	LCTR SB	CTR SB	RCTR CB	RGT SA	FLAG 																																									
SUBSTRATE RS = BEDROCK (SMOOTH) - (LARGER THAN A CAR) RR = BEDROCK (ROUGH) - (LARGER THAN A CAR) RC = CONCRETE/ASPHALT XB = LG. BOULDER (1000 TO 4000 mm) - METERSTICK TO CAR) SB = SM. BOULDER (250 TO 1000 mm) - BASKETBALL TO METERSTICK) CB = COBBLE (64 TO 250 mm) - (TENNIS BALL TO BASKETBALL) GC = COARSE GRAVEL (16 TO 64 mm) - (MARBLE TO TENNIS BALL)		LARGE WOODY DEBRIS (10 cm small end diameter; 1.5 m length)																																														
GF = FINE GRAVEL (2 TO 16 mm) - (LADYBUG TO MARBLE) SA = SAND (0.06 TO 2 mm) - (GRITTY - UP TO LADYBUG SIZE) FN = SILT/CLAY/MUCK - (NOT GRITTY) HP = HARDPAN - (FIRM, CONSOLIDATED FINE SUBSTRATE) WD = WOOD - (ANY SIZE) OT = OTHER (FLAG AND EXPLAIN IN COMMENTS)		FILL IN IF UNMARKED BOXES ARE ZERO ☐ FLAG: 																																														
FLAG		COMMENTS (for SUBSTRATE and LWD)		<table border="1"> <thead> <tr> <th rowspan="2">DIAMETER LARGE END</th> <th colspan="3">PIECES ALL/PART IN BANKFULL CHANNEL</th> <th colspan="3">PIECES BRIDGE ABOVE BANKFULL CHANNEL</th> </tr> <tr> <th>Length 1.5-5m</th> <th>5-15m</th> <th>>15m</th> <th>Length 1.5-5m</th> <th>5-15m</th> <th>>15m</th> </tr> </thead> <tbody> <tr> <td>0.1-<0.3 m</td> <td align="center">4</td> <td align="center">0</td> <td align="center">0</td> <td align="center">1</td> <td align="center">0</td> <td align="center">0</td> </tr> <tr> <td>0.3-0.6 m</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">1</td> <td align="center">0</td> </tr> <tr> <td>0.6-0.8 m</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> </tr> <tr> <td>>0.8 m</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> <td align="center">0</td> </tr> </tbody> </table>				DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHANNEL			PIECES BRIDGE ABOVE BANKFULL CHANNEL			Length 1.5-5m	5-15m	>15m	Length 1.5-5m	5-15m	>15m	0.1-<0.3 m	4	0	0	1	0	0	0.3-0.6 m	0	0	0	0	1	0	0.6-0.8 m	0	0	0	0	0	0	>0.8 m	0	0	0	0	0	0
DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHANNEL			PIECES BRIDGE ABOVE BANKFULL CHANNEL																																												
	Length 1.5-5m	5-15m	>15m	Length 1.5-5m	5-15m	>15m																																										
0.1-<0.3 m	4	0	0	1	0	0																																										
0.3-0.6 m	0	0	0	0	1	0																																										
0.6-0.8 m	0	0	0	0	0	0																																										
>0.8 m	0	0	0	0	0	0																																										

* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = flags assigned by each field crew. Explain all flags in comments.

04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

TRANSECT: ☐ A-B ☐ B-C ☒ C-D ☐ D-E ☐ E-F
☐ F-G ☐ G-H ☐ H-I ☐ I-J ☐ J-K

Total Reach Length (m):

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☒ D-E ☐ E-F
☐ F-G ☐ G-H ☐ H-I ☐ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____

Total Reach Length (m): _____

STATION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	62	18.4	☒	0	☒	RA	☒	☒	
1	62		☒		☒	RI	☒	☒	
2	63		☒		☒	RA	☒	☒	
3	63		☒		☒	RA	☒	☒	
4	71		☒		☒	RI	☒	☒	
*5	55	20.9	☒	0	☒	RI	☒	☒	
6	58		☒		☒	RI	☒	☒	
*7	60		☒		☒	RI	☒	☒	
8	51		☒		☒	RI	☒	☒	
9	49		☒		☒	RA	☒	☒	
10			☒		☒		☒	☒	
11			☒		☒		☒	☒	
12			☒		☒		☒	☒	
13			☒		☒		☒	☒	
14			☒		☒		☒	☒	

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

Station (5 or 7) 5		LFT XB	LCTR CB	CTR GF	RCTR XB	RGT SA	FLAG
SUBSTRATE RS = BEDROCK (SMOOTH) - (LARGER THAN A CAR) RR = BEDROCK (ROUGH) - (LARGER THAN A CAR) RC = CONCRETE/ASPHALT XB = LG. BOULDER (1000 TO 4000 mm) - METERSTICK TO CAR) SB = SM. BOULDER (250 TO 1000 mm) - BASKETBALL TO METERSTICK) CB = COBBLE (64 TO 250 mm) - (TENNIS BALL TO BASKETBALL) GC = COARSE GRAVEL (16 TO 64 mm) - (MARBLE TO TENNIS BALL)		LARGE WOODY DEBRIS (10 cm small end diameter; 1.5 m length)					
FLAG		COMMENTS (for SUBSTRATE and LWD)					

* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = flags assigned by each field crew. Explain all flags in comments.

04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☒ E-F
☐ F-G ☐ G-H ☐ H-I ☐ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____ Total Reach Length (m): _____

STA-TION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	51	18.6	☐	0	☐	RI	☐	☐	
1	60		☐		☐	RI	☐	☐	
2	97		☐		☐	RI	☒	☐	
3	62		☐		☐	RI	☒	☐	
4	65		☐		☐	RA	☒	☐	
*5	62	17.8	☐	0	☐	RI	☒	☐	
6	71		☐		☐	GL	☒	☐	
*7	94		☐		☒	GL	☒	☐	
8	124		☐		☐	GL	☒	☐	
9	114		☐		☒	GL	☐	☐	
10			☐		☐		☐	☐	
11			☐		☐		☐	☐	
12			☐		☐		☐	☐	
13			☐		☐		☐	☐	
14			☐		☐		☐	☐	

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

Station (5 or 7) 5		LFT SB	LCTR SB	CTR GC	RCTR SB	RGT SB	FLAG 																																									
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* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = flags assigned by each field crew. Explain all flags in comments.

04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☐ E-F
☒ F-G ☐ G-H ☐ H-I ☐ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____

Total Reach Length (m): _____

STATION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	150	12.5	☒		☒	PO	☒	☒	
1	93		☒		☒	RI	☒	☒	
2	81		☒		☒	RI	☒	☒	
3	87		☒		☒	RI	☒	☒	
4	84		☒		☒	RI	☒	☒	
*5	94	14.5	☒	0	☒	RI	☒	☒	
6	79		☒		☒	RI	☒	☒	
*7	60		☒		☒	RI	☒	☒	
8	72		☒		☒	RI	☒	☒	
9	52		☒		☒	RI	☒	☒	
10			☒		☒		☒	☒	
11			☒		☒		☒	☒	
12			☒		☒		☒	☒	
13			☒		☒		☒	☒	
14			☒		☒		☒	☒	

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

Station (5 or 7) 5		LFT GC	LCTR CB	CTR GF	RCTR CB	RGT GC	FLAG
SUBSTRATE RS = BEDROCK (SMOOTH) - (LARGER THAN A CAR) RR = BEDROCK (ROUGH) - (LARGER THAN A CAR) RC = CONCRETE/ASPHALT XB = LG. BOULDER (1000 TO 4000 mm) - METERSTICK TO CAR) SB = SM. BOULDER (250 TO 1000 mm) - BASKETBALL TO METERSTICK) CB = COBBLE (64 TO 250 mm) - (TENNIS BALL TO BASKETBALL) GC = COARSE GRAVEL (16 TO 64 mm) - (MARBLE TO TENNIS BALL)		LARGE WOODY DEBRIS (10 cm small end diameter; 1.5 m length)					
FLAG		COMMENTS (for SUBSTRATE and LWD)					

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHANNEL			PIECES BRIDGE ABOVE BANKFULL CHANNEL		
	Length 1.5-5m	5-15m	>15m	Length 1.5-5m	5-15m	>15m
0.1-<0.3 m	5	0	0	4	1	0
0.3-0.6 m	0	2	0	3	1	0
0.6-0.8 m	0	0	0	0	1	0
>0.8 m	0	0	0	0	0	0

* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = flags assigned by each field crew. Explain all flags in comments.

04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

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TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☐ E-F
☐ F-G ☒ G-H ☐ H-I ☐ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____

Total Reach Length (m): _____

STATION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	105	16.0	☐	0	☐	RA	☐	☐	
1	60		☐		☐	RA	☐	☐	
2	77		☐		☐	RI	☐	☐	
3	68		☐		☐	RI	☐	☐	
4	67		☐		☐	RA	☒	☐	
*5	50	16.0	☐	0	☐	RI	☒	☐	
6	56		☐		☒	RI	☒	☐	
*7	36		☐		☐	RI	☒	☐	
8	46		☐		☒	RI	☒	☐	
9	57		☐		☐	GL	☒	☐	
10			☐		☐		☐	☐	
11			☐		☐		☐	☐	
12			☐		☐		☐	☐	
13			☐		☐		☐	☐	
14			☐		☐		☐	☐	

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

Station (5 or 7) LFT LCTR CTR RCTR RGT FLAG
SUBSTRATE

RS = BEDROCK (SMOOTH) - (LARGER THAN A CAR)
RR = BEDROCK (ROUGH) - (LARGER THAN A CAR)
RC = CONCRETE/ASPHALT
XB = LG. BOULDER (1000 TO 4000 mm) - METERSTICK TO CAR)
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GF = FINE GRAVEL (2 TO 16 mm) - (LADYBUG TO MARBLE)
SA = SAND (0.06 TO 2 mm) - (GRITTY - UP TO LADYBUG SIZE)
FN = SILT/CLAY/MUCK - (NOT GRITTY)
HP = HARDPAN - (FIRM, CONSOLIDATED FINE SUBSTRATE)
WD = WOOD - (ANY SIZE)
OT = OTHER (FLAG AND EXPLAIN IN COMMENTS)

FLAG COMMENTS (for SUBSTRATE and LWD)

LARGE WOODY DEBRIS
(10 cm small end diameter; 1.5 m length)

FILL IN IF UNMARKED BOXES ARE ZERO ☐

FLAG: _____

DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHANNEL			PIECES BRIDGE ABOVE BANKFULL CHANNEL		
	Length 1.5-5m	5-15m	>15m	Length 1.5-5m	5-15m	>15m
0.1-<0.3 m	5	0	1	4	0	0
0.3-0.6 m	2	1	1	1	2	1
0.6-0.8 m	0	0	0	0	0	0
>0.8 m	0	0	0	0	0	0

* = Measure Bar Width at Station 0 and Mid-Station (5 or 7).

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04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☐ E-F
☐ F-G ☐ G-H ☒ H-I ☐ I-J ☐ J-K

Total Reach Length (m):

CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

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04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☐ E-F
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For Transect A-B ONLY: Increment (m) X.X:

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CHANNEL UNIT CODES: PO = Pool GL = Glide RI = Riffle RA = Rapid CA = Cascade FA = Falls DR = Dry

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6364573600

NRSA 2018/19 PHAB: THALWEG PROFILE & WOODY DEBRIS - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

TRANSECT: ☐ A-B ☐ B-C ☐ C-D ☐ D-E ☐ E-F
☐ F-G ☐ G-H ☐ H-I ☒ I-J ☐ J-K

THALWEG PROFILE

For Transect A-B ONLY: Increment (m) X.X: _____

Total Reach Length (m): _____

STATION	THALWEG DEPTH (cm) (XXX)	WETTED WIDTH (m) (XXX.X)	BAR WIDTH*		SOFT /SMALL SEDI-MENT	CHANNEL UNIT CODE	SIDE CHANNEL	BACK WATER	THALWEG PROFILE COMMENTS
			Present	XX.X					
0	89	24.4	☒	0	☒	RA	☒	☒	
1	72		☒		☒	RI	☒	☒	
2	76		☒		☒	RI	☒	☒	
3	75		☒		☒	RI	☒	☒	
4	80		☒		☒	RI	☒	☒	
*5	78	18.4	☒	0	☒	RA	☒	☒	
6	58		☒		☒	RI	☒	☒	
*7	60		☒		☒	RI	☒	☒	
8	59		☒		☒	RI	☒	☒	
9	60		☒		☒	RI	☒	☒	
10			☒		☒		☒	☒	
11			☒		☒		☒	☒	
12			☒		☒		☒	☒	
13			☒		☒		☒	☒	
14			☒		☒		☒	☒	

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DIAMETER LARGE END	PIECES ALL/PART IN BANKFULL CHANNEL			PIECES BRIDGE ABOVE BANKFULL CHANNEL																																						
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0.3-0.6 m	6	1	1	0	1	0																																				
0.6-0.8 m	1	0	0	0	0	0																																				
>0.8 m	0	0	0	0	1	0																																				

Flag Codes: K = no measurement made; U = suspect measurement; F1, F2, etc. = flags assigned by each field crew. Explain all flags in comments.

04/16/2018 NRSA18 Phab Thalweg Profile - Wadeable

6364573600

NRSA 2018/19 PHAB: SLOPE AND BEARING - WADEABLE ONLY

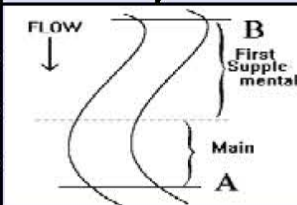
Reviewed by (initial): _____

Site ID: **NRS18_NC_RF002**

Date: **08 / 15 / 2018**

MAIN (always used)				FIRST SUPPLEMENTAL			SECOND SUPPLEMENTAL			FLAG
TRANSECT & METHOD	Slope(%) or Elev. Diff. (cm)	BEARING	PROPOR-TION %	Slope(%) or Elev. Diff. (cm)	BEARING	PROPOR-TION %	Slope(%) or Elev. Diff. (cm)	BEARING	PROPOR-TION %	
A < B	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	7 4 .	3 0 4	1 0 0						
B < C	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	8 7 .	2 9 6	1 0 0						
C < D	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	5 2 . 5	3 2 2	1 0 0						
D < E	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	1 6 3 .	3 6 0	1 0 0						
E < F	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	6 7 .	3 3 6	1 0 0						
F < G	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	6 4 . 5	2 9 0	1 0 0						
G < H	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	6 8 .	2 7 4	1 0 0						
H < I	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	1 8 7 .	2 7 4	1 0 0						
I < J	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	1 5 9 .	2 3 4	1 0 0						
J < K	☐ CL ☒ TR ☐ HL ☐ LA ☐ Other	1 4 4 . 5	2 3 4	1 0 0						

Flag	Comments



Flag codes: U = Suspect sample; F1, F2, M (M = Method - used for method comment only) = flag assigned by field crew. Explain all flags in comment sections.
 CL=Clinometer; HL=Hand Level; LA=Laser rangefinder with electronic clinometer; TR=Surveyor's level.

NRSA 2018/19 DISCHARGE - WADEABLE ONLY

Reviewed by (initial): _____

Site ID: NRS18 NC RF002

Date: 08 / 15 / 2018

Velocity Area

Distance Units ☐ ft ☐ cm		Depth Units ☐ ft ☐ cm		Velocity Units ☐ ft/s XX.X ☐ m/s X.XX	
Dist. from Bank	Depth	Velocity		Flag	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Timed Filling

Repeat	Volume (L)	Time (s)	Flag
1			
2			
3			
4			
5			

Neutral Buoyant Object

Measure the stream depth using a wading rod or meter stick at points approximately equal to the following proportions of the total width: 0.1, 0.3, 0.5, 0.7, and 0.9.

	Float 1	Float 2	Float 3
Float Dist. ☐ ft ☐ m			
Float Time (s)			
Flag			

Cross Sections on Float Reach

	Upper Section	Middle Section	Lower Section
Width ☐ ft ☐ m			
Depth 1 ☐ ft ☐ cm			
Depth 2			
Depth 3			
Depth 4			
Depth 5			

Q Value

If discharge is determined directly in field, record value here: Q = 95.177

☒ cfs
☐ m³/s

Flag

Flag	Comments

Flag Codes: Z = Last station measured (if not Station 20); F1, F2, etc. = Miscellaneous flags assigned by each field crew.
Explain all flags in comments section.
04/16/2018 NRSA18 Discharge

5312491487

NRSA 2018/19 TORRENT EVIDENCE ASSESSMENT

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002

Date: 08 / 15 / 2018

Please fill in any of the following that are evident.

EVIDENCE OF TORRENT SCOURING:

- | | |
|-----------------------|--|
| ☐ | 01 - Stream channel has a recently devegetated corridor two or more times the width of the low flow channel. This corridor lacks riparian vegetation with possible exception of fireweed, even-aged alder or cottonwood seedlings, grasses, or other herbaceous plants. |
| ☐ | 02 - Stream substrate cobbles or large gravel particles are NOT IMBRICATED. (Imbricated means that they lie with flat sides horizontal and that they are stacked like roof shingles -- imagine the upstream direction as the top of the "roof.") In a torrent scour or deposition channel, the stones are laying in unorganized patterns, lying "every which way." In addition many of the substrate particles are angular (not "water-worn.") |
| ☐ | 03 - Channel has little evidence of pool-riffle structure. (For example, could you ride a mountain bike down the channel?) |
| ☐ | 04 - The stream channel is scoured down to bedrock for substantial portion of reach. |
| ☐ | 05 - There are gravel or cobble berms (little levees) above bankfull level. |
| ☐ | 06 - Downstream of the scoured reach (possibly several miles), there are massive deposits of sediment, logs, and other debris. |
| ☐ | 07 - Riparian trees have fresh bark scars at many points along the stream at seemingly unbelievable heights above the channel bed. |
| ☐ | 08 - Riparian trees have fallen into the channel as a result of scouring near their roots. |

EVIDENCE OF TORRENT DEPOSITS:

- | | |
|-----------------------|--|
| ☐ | 09 - There are massive deposits of sediment, logs, and other debris in the reach. They may contain wood and boulders that, in your judgement, could not have been moved by the stream at even extreme flood stage. |
| ☐ | 10 - If the stream has begun to erode newly laid deposits, it is evident that these deposits are "MATRIX SUPPORTED." This means that the large particles, like boulders and cobbles, are often not touching each other, but have silt, sand, and other fine particles between them (their weight is supported by these fine particles -- in contrast to a normal stream deposit, where fines, if present, normally "fill-in" the interstices between coarser particles.) |

NO EVIDENCE:

- | | |
|----------------------------------|---|
| ☒ | 11 - No evidence of torrent scouring or torrent deposits. |
|----------------------------------|---|

COMMENTS

Site ID: NRS18_NC_RF002Date: 08 / 15 / 2018**CHANNEL PATTERN (Fill in one):**

- ☐ One Channel
- ☐ Anastomosing (complex) channel - (Relatively long major and minor channels branching and rejoining.)
- ☐ Braided channel - (Multiple short channels branching and rejoining - mainly one channel broken up by numerous mid-channel bars.)

CHANNEL CONSTRAINT (Fill in one):

- ☐ Channel very constrained in V-shaped valley (i.e. it is very unlikely to spread out over valley or erode a new channel during flood)
- ☐ Channel is in Broad Valley but channel movement by erosion during floods is constrained by incision (Flood flows do not commonly spread over valley floor or into multiple channels.)
- ☐ Channel is in Narrow Valley but is not very constrained, but limited in movement by relatively narrow valley floor ($< \sim 10 \times$ bankfull width)
- ☐ Channel is Unconstrained in Broad Valley (i.e. during flood it can fill off-channel areas and side channels, spread out over flood plain, or easily cut new channels by erosion)

CONSTRAINING FEATURES (Fill in one):

- ☐ Bedrock (i.e. channel is a bedrock-dominated gorge)
- ☐ Hillslope (i.e. channel constrained in narrow V-shaped valley)
- ☐ Terrace (i.e. channel is constrained by its own incision into river/stream gravel/soil deposits)
- ☐ Human Bank Alterations (i.e. constrained by rip-rap, landfill, dike, road, etc.)
- ☐ No constraining features

Percent of channel length with margin in contact with constraining feature: 75 % ----->
(0-100%)

Bankfull width: 21 (m)

Valley width (Visual Estimated Average): 100 (m)

Note: Be sure to include distances between both sides of valley border for valley width.

If you cannot see the valley borders, record the distance you can see and fill this bubble: ☐

Percent of Channel Margin Examples

100%



100%



50%



50%

COMMENTS

NRSA 2018/19 ASSESSMENT (Front)

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002

Date: 08 / 15 / 2018

Elevation at transect K: 544 ☐ ft ☒ m

WATERSHED ACTIVITIES AND DISTURBANCES OBSERVED

(Intensity: Blank=Not observed, L=Low, M=Moderate, H=Heavy)

ALL ACTIVITIES WERE EVALUATED: ☐

Residential	Recreational	Agricultural	Industrial	Stream Management
☐ L ☐ M ☐ H Residences ☐ L ☐ M ☐ H Maintained Lawns ☐ L ☐ M ☐ H Construction ☐ L ☐ M ☐ H Pipes, Drains ☐ L ☐ M ☐ H Dumping ☒ L ☐ M ☐ H Roads ☒ L ☐ M ☐ H Bridges/Causeway ☐ L ☐ M ☐ H Sewage Treatment	☒ L ☐ M ☐ H Hiking Trails ☐ L ☐ M ☐ H Parks, Campgrounds ☒ L ☐ M ☐ H Primitive Parks, Camping ☐ L ☐ M ☐ H Trash/Litter ☐ L ☐ M ☐ H Surface Films, Scums, or Slicks	☐ L ☐ M ☐ H Cropland ☐ L ☐ M ☐ H Pasture ☐ L ☐ M ☐ H Livestock Use ☐ L ☐ M ☐ H Orchards ☐ L ☐ M ☐ H Poultry ☐ L ☐ M ☐ H Feedlot ☐ L ☐ M ☐ H Water Withdrawal	☐ L ☐ M ☐ H Industrial Plants ☐ L ☐ M ☐ H Mines/Quarries ☐ L ☐ M ☐ H Oil/Gas Wells ☐ L ☐ M ☐ H Power Plants ☐ L ☐ M ☐ H Logging ☐ L ☐ M ☐ H Evidence of Fire ☐ L ☐ M ☐ H Odors ☐ L ☐ M ☐ H Commercial	☐ L ☐ M ☐ H Chemical Treatment ☒ L ☐ M ☐ H Angling Pressure ☐ L ☐ M ☐ H Dredging ☐ L ☐ M ☐ H Channelization ☐ L ☐ M ☐ H Water Level Fluctuations ☐ L ☐ M ☐ H Fish Stocking ☐ L ☐ M ☐ H Dams

SITE CHARACTERISTICS (200m radius)

WATERBODY CHARACTER

PRISTINE: ☒ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 **Highly Disturbed**

APPEALING: ☒ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 **Unappealing**

BEAVER

Beaver Signs: ☒ Absent ☐ Rare ☐ Common

Beaver Flow Modifications: ☒ None ☐ Minor ☐ Major

DOMINANT LAND USE

Dominant Land Use Around 'X' ☒ Forest ☐ Agriculture ☐ Range ☐ Urban ☐ Suburban/Town

If Forest, Dominant Age Class ☐ 0 - 25 yrs. ☐ 26 - 75 yrs. ☒ > 75 yrs.

WEATHER

Partly cloudy to overcast, 75-85F.

CONDITIONS AND LOCAL CONTACTS

Must contact National Park Service for permit.

OBSERVATIONS (e.g. accessibility, boating, fishing, swimming, health concerns):

Accessible by boating in from Fontana Lake or backpacking. Observed several fly fishermen.

NRSA 2018/19 ASSESSMENT (Back)

Reviewed by (initial): _____

Site ID: NRS18_NC_RF002

Date: 0_8 / 1_5 / 2_0_1_8

GENERAL ASSESSMENT AND COMMENTS

INVASIVE OR NUISANCE SPECIES OF LOCAL INTEREST

Record species of plants and animals that were observed. Examples would be Zebra Mussel or New Zealand Mud Snail, or invasive plants or animals of concern to a particular state. Indicate your level of confidence in your identification, and provide some idea of how prevalent it is in the sampling reach or adjacent riparian area.

Species (Common Name)	Confidence	Prevalence	Comments
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	
	☐ LOW ☐ HIGH	☐ DOMINANT ☐ SPARSE ☐ COMMON	

FC-1: NRSA1819 Flag and Comment Summary Form

Reviewed by (Initial): _____

Site ID: NRS18_NC_RF002Date: 08/15/2018

Sample Type	Station Or Page	Flag	Comments
ASSESS	ALL 1	CONDITIONS	Must contact National Park Service for permit.
ASSESS	ALL 1	OBSERVATIONS	Accessible by boating in from Fontana Lake or backpacking. Observed several fly fishermen.
ASSESS	ALL 1	WEATHER	Partly cloudy to overcast, 75-85F.
CALIB	ALL 1	TEMP_CALIBRATION_C	Did not verify temperature
FPLG	ALL 1	FPLG_COMMENT	Fish plug not required for reference sites.
FTIS	ALL 1	FTIS_COMMENT	Fish tissue not required for reference sites.
VERIF	ALL 1	DRCTNS	From Fontana Village Marina, NC travel by boat approximately 5 miles to the mouth of Hazel Creek. Follow the NPS access road ap
VERIF	ALL 1	GEN_COM	The entire Hazel Creek watershed is located within the Great Smoky Mountains National Park and drains into Fontana Lake. The or

FORM T1: NRSA18/19 SITE AND SAMPLE STATUS/WATER CHEMISTRY LAB TRACKING

Site ID: NRS18_NC_RF002Visit #: ☒ 1 ☐ 2State of Site Location: NCCrew: ER4Date Collected: 08 / 15 / 2018

Site Status - Is Site Sampleable?

☒ YES - Check one below☐ NO - Complete Verification (using app or paper) to provide more information

- ☒ Wadeable - Continuous water, greater than 50% wadeable
- ☐ Boatable
- ☐ Partial - Sampled by wading (>50% of reach sampled). Explain here:
- ☐ Partial - Sampled by boat (>50% of reach sampled). Explain here:
- ☐ Wadeable Interrupted - Not continuous water along reach
- ☐ Boatable Interrupted - Not continuous water along reach
- ☐ Altered - Stream/River Channel Present but differs from Map

Partially Sampled Comments:

Sample Status - Immediate Shipped Samples

Sender: Jerry AckermanSender Phone: 706 - 202 - 7356Shipped by: ☐ FedEx ☐ UPS ☐ Hand Delivery ☐ Other:Airbill/Tracking Number: 411846836152Date Sent: 08 / 16 / 2018

Sample ID	Sample Type	Not Collected	In Box	Comments/Reasons for sample type not being collected
<u>103240</u>	CHEM	☐	☒	
<u>103241</u>	WCHL	☐	☒	
<u>103244</u>	PBIO	☐	☒	
<u>103243</u>	PCHL	☐	☒	

Shipping to: ☒ WRS ☐ State Lab - Provide Lab Name:

Batched Shipped Samples

Sample Type	Not Collected	Comments/Reason for sample not being collected	Sample Type	Not Collected	Comments/Reason for sample not being collected
ENTE	☐		BERW	☐	
FPLG	☒	Fish plug not required for reference sites.	BETB	☐	
FTIS	☒	Fish tissue not required for reference sites.	VERT	☒	
MICX	☐		PERI	☐	
MICZ	☐				
PDNA	☐				

Field Data Submission via (check one): ☐ Electronic APP ☐ Paper Forms ☐ Partial App/Paper Form ☐ Fillable PDF

Water Chemistry Lab	Completed by Lab	Save completed form as:	Tracking Related Inquiries:
Attn: Phil Monaco, CSS c/o Willamette Research Station 3080 SE Clearwater Dr. Corvallis, OR 97333 Phone: 541-754-4720 Email: monaco.phil@epa.gov	Date Received: ____/____/____ Received by: _____	SiteID V# T1 Email to: sampletracking@epa.gov	Marlys Cappaert Phone: 541-754-4467 Michelle Gover Phone: 541-754-4793 Chris Turner Phone: 715-829-3737

0406186601

FORM T2: NRSA18/19 FROZEN BATCHED TRACKING

State of Site Location: NC Crew: ER4 Date Sent: 0 8 / 2 3 / 2 0 1 8

Sender: _____ Sender Phone: _____ - _____ - _____

Shipped by: ☐ FedEx ☐ UPS ☐ Hand Delivery Airbill/Tracking Number: _____

Site ID: NRS18_NC_RF002 Visit: ☒ 1 ☐ 2 Date Collected: 0 8 / 1 5 / 2 0 1 8

Sample ID	Sample Type	Included in cooler?	Comments
1 0 3 2 5 0	ENTE	☒	
	FPLG	☐	Fish plug not required for reference sites.
1 0 3 2 4 6	MICX	☒	
1 0 3 2 4 7	MICZ	☒	
1 0 3 2 4 5	PDNA	☒	

☒ GLEC - Traverse City

☐ STATE LAB (provide details below)

State Lab Name:

State Lab address:

City:

State:

Zip Code:

Save completed form as :

Tracking Related Inquiries:

SiteID V# T2

Email to :

sampletracking@epa.gov

Marlys Cappaert

Phone: 541-754-4467

Michelle Gover

Phone: 541-754-4793

Chris Turner

Phone: 715-829-3737

8670482410

04/16/2018 NRSA18 Tracking T2 - Frozen Batched

FORM T3: NRSA18/19 NON-CHILLED BATCHED TRACKING

State of Site Location: NC Crew: ER4 Date Sent: 0 8 / 1 6 / 2 0 1 8

Sender: _____ Sender Phone: _____ - _____ - _____

Shipped by: ☐ FedEx ☐ UPS ☐ Hand Delivery Airbill/Tracking Number: _____

Site ID: NRS18_NC_RF002 Visit: ☒ 1 ☐ 2 Date Collected: 0 8 / 1 5 / 2 0 1 8

Sample ID	Sample Type	Included in cooler?	# of Jars	Comments
1 0 3 2 4 8	BERW	☒	2	
	BETB	☐		
	VERT	☐		
1 0 3 2 4 2	PERI	☒		

☒ GLEC - Traverse City

☐ STATE LAB (provide details below)

State Lab Name:

State Lab address:

City: _____ State: _____ Zip Code: _____

Save completed form as :

Tracking Related Inquiries:

SiteID V# T3

Email to :

sampletracking@epa.gov

Marlys Cappaert
Phone: 541-754-4467

Michelle Gover
Phone: 541-754-4793

Chris Turner
Phone: 715-829-3737

2469589788

04/16/2018 NRSA18 Tracking T3 - Non-chilled Batched