

Baseline Assessment – Stream Attributes

REVISIT

*ADDITIONAL FIELD VISITS WERE COMPLETED ON 3-24-2022.
LIMITED ACCESS DUE TO EXISTING SPAN; HOWEVER, ADDITIONAL DATA COULD BE COLLECTED.

Reach S-C40 (Temporary Access Road) Perennial Spread F Monroe County, West Virginia

Data	Included
Photos	✓*
SWVM Form	✓*
FCI Calculator and HGM Form	N/A – PERENNIAL (NOT SHADEABLE)
RBP Physical Characteristics Form	✓*
Water Quality Data	✓*
RBP Habitat Form	✓*
RBP Benthic Form	✓*
Benthic Identification Sheet	N/A – NO HABITAT/OUTSIDE WV COLLECTION SEASON
Wolman Pebble Count	✓*
Reference Reach Software Pebble Count Data	✓*
Longitudinal Profile and Cross Sections	N/A – LIMITED ACCESS/EXISTING SPAN

Spread F Stream S-C40 (Temporary Access Road) Monroe County



Photo Type: US Edge of TMB, Looking Down
Location, Orientation, Photographer Initials: Upstream Edge of Bridge, Looking Down View, AK/TF (8/18/2021)



Photo Type: US Edge of TMB, US View
Location, Orientation, Photographer Initials: Upstream Edge of Bridge, Upstream View, AK/TF (8/18/2021)

Spread F Stream S-C40 (Temporary Access Road) Monroe County

37.425372° N, -80.693417° W



Photo Type: DS Edge of TMB, Looking Downstream
Location, Orientation, Photographer Initials: Downstream Edge of Bridge, Looking Downstream, AK/TF (8/18/2021)

37.425372° N, -80.693417° W



Photo Type: DS Edge of TMB, DS View
Location, Orientation, Photographer Initials: Downstream Edge of Bridge, Downstream View, AK/TF (8/18/2021)

Spread F Stream S-C40 (Temporary Access Road) Monroe County

37.425372° N, -80.693417° W



Photo Type: View Going Down AR, N

Location, Orientation, Photographer Initials: View Going Down Access Road, Facing North, AK/TF (8/18/2021)

37.425372° N, -80.693417° W



Photo Type: View Going Up AR, S

Location, Orientation, Photographer Initials: View Going Up Access Road, Facing South, AK/TF (8/18/2021)

"Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-C40"

Spread F Stream S-C40 (Temporary Access Road) Monroe County

37.425372° N, -80.693417° W



Photo Type: DS, US View
Location, Orientation, Photographer Initials: Downstream, Upstream View, BB/ABK (3/24/2022)

37.425372° N, -80.693417° W



Photo Type: DS, DS View
Location, Orientation, Photographer Initials: Downstream, Downstream View, BB/ABK (3/24/2022)

Spread F Stream S-C40 (Temporary Access Road) Monroe County

37.425372° N, -80.693417° W



Photo Type: View Up AR, S
Location, Orientation, Photographer Initials: View Up Access Road, South, BB/ABK (3/24/2022)

37.425372° N, -80.693417° W



Photo Type: View Down AR, N
Location, Orientation, Photographer Initials: View Down Access Road, North, BB/ABK (3/24/2022)

Spread F Stream S-C40 (Temporary Access Road) Monroe County

37.425372° N, -80.693417° W



Photo Type: US, US View

Location, Orientation, Photographer Initials: Upstream, Upstream View, BB/ABK (3/24/2022)

37.425372° N, -80.693417° W



Photo Type: US, DS View

Location, Orientation, Photographer Initials: Upstream, Downstream View, BB/ABK (3/24/2022)

"Q:\Charleston\2021 Projects\21-0244- MVP- STREAM AND WETLAND CONDITIONS ASSESSMENT AND SURVEY PLAN\002 - Pre-Crossing Monitoring\Spread F\S-C40\Photos - Spread F - S-C40 - March 24, 2022 (21-0244-002).docx"

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME <u>UNT to Painter Run</u>	LOCATION	
STATION # <u>S-C40</u> RIVERMILE _____	STREAM CLASS <u>Perennial</u>	
LAT <u>37.425372</u> LONG <u>-80.693417</u>	COUNTY <u>Monroe</u>	
STORET # _____	AGENCY <u>POTESTA</u>	
INVESTIGATORS <u>ABK/BB</u>		
FORM COMPLETED BY ABK	DATE <u>3-24-2022</u> TIME <u>930</u>	REASON FOR SURVEY <u>Baseline Assessment Revisit</u>

WEATHER CONDITIONS	<p>Now</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) <input type="checkbox"/> %cloud cover _____ <input checked="" type="checkbox"/> clear/sunny </div> <div style="width: 45%;"> <p>Past 24 hours</p> <input type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____% </div> </div>	<p>Has there been a heavy rain in the last 7 days?</p> <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <p>Air Temperature <u>42</u> °F °C</p> <p>Other _____</p>
SITE LOCATION/MAP	<p>Draw a map of the site and indicate the areas sampled (or attach a photograph)</p>	
STREAM CHARACTERIZATION	<p>Stream Subsystem</p> <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Tidal <p>Stream Origin</p> <input type="checkbox"/> Glacial <input type="checkbox"/> Spring-fed <input type="checkbox"/> Non-glacial montane <input checked="" type="checkbox"/> Mixture of origins <input type="checkbox"/> Swamp and bog <input type="checkbox"/> Other _____ <p>Stream Type</p> <input type="checkbox"/> Coldwater <input checked="" type="checkbox"/> Warmwater <p>Catchment Area _____ km²</p>	

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	Predominant Surrounding Landuse <input type="checkbox"/> Forest <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Field/Pasture <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Other _____ <input type="checkbox"/> Residential		Local Watershed NPS Pollution <input type="checkbox"/> No evidence <input checked="" type="checkbox"/> Some potential sources <input type="checkbox"/> Obvious sources Local Watershed Erosion <input checked="" type="checkbox"/> None <input type="checkbox"/> Moderate <input type="checkbox"/> Heavy	
RIPARIAN VEGETATION (18 meter buffer)	Indicate the dominant type and record the dominant species present <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Grasses <input type="checkbox"/> Herbaceous Dominant species present _____			
INSTREAM FEATURES	Estimated Reach Length <u>14</u> ft m Estimated Stream Width <u>2.5</u> ft m Sampling Reach Area <u>35</u> ft ² m ² Area in km ² (m ² x1000) _____ km ² Estimated Stream Depth <u>0.10</u> ft m Surface Velocity <u>0.41</u> ft/sec m/sec Stream Dry <input type="checkbox"/>		Canopy Cover <input checked="" type="checkbox"/> Partly open <input type="checkbox"/> Partly shaded <input type="checkbox"/> Shaded High Water Mark _____ m Proportion of Reach Represented by Stream Morphology Types Riffle ³⁵ _____ % Run ⁸⁰ _____ % Pools _____ % Channelized <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Dam Present <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
LARGE WOODY DEBRIS	LWD _____ m ² Density of LWD _____ m ² /km ² (LWD/ reach area)		N/A	
AQUATIC VEGETATION	Indicate the dominant type and record the dominant species present <input type="checkbox"/> Rooted emergent <input type="checkbox"/> Rooted submergent <input type="checkbox"/> Rooted floating <input type="checkbox"/> Free floating <input type="checkbox"/> Floating Algae <input type="checkbox"/> Attached Algae Dominant species present <u>N/A</u> Portion of the reach with aquatic vegetation _____ %			
WATER QUALITY	Temperature <u>10.1</u> °C Specific Conductance <u>283.4</u> us/cm Dissolved Oxygen <u>11.9</u> mg/L pH <u>7.90</u> su Turbidity <u>8.40</u> NTU WQ Instrument Used <u>YSI</u>		Water Odors <input checked="" type="checkbox"/> Normal/None <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Fishy <input type="checkbox"/> Other _____ Water Surface Oils <input type="checkbox"/> Slick <input type="checkbox"/> Sheen <input type="checkbox"/> Globbs Flecks <input checked="" type="checkbox"/> None <input type="checkbox"/> Other _____ Turbidity (if not measured) <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Opaque <input type="checkbox"/> Stained <input type="checkbox"/> Other _____	
SEDIMENT/SUBSTRATE	Odors <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Anaerobic <input type="checkbox"/> None <input type="checkbox"/> Other _____ Oils <input checked="" type="checkbox"/> Absent <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Profuse		Deposits <input type="checkbox"/> Sludge <input type="checkbox"/> Sawdust <input type="checkbox"/> Paper fiber <input type="checkbox"/> Sand <input type="checkbox"/> Relict shells <input type="checkbox"/> Other _____ Looking at stones which are not deeply embedded, are the undersides black in color? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	0
Gravel	2-64 mm (0.1"-2.5")	20			
Sand	0.06-2mm (gritty)	40	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	10			

WQ = Downstream Readings

HABITAT ASSESSMENT FIELD DATA SHEET - HG - USE ON ALL STREAMS (FRONT)

STREAM NAME <u>UNT to Painter Run</u>		LOCATION	
STATION # <u>S-C40</u> RIVERMILE <u> </u>		STREAM CLASS <u>Perennial</u>	
LAT <u>37.425372</u> LONG <u>-80.693417</u>		COUNTY <u>Monroe</u>	
STORET #		AGENCY <u>POTESTA</u>	
INVESTIGATORS <u>ABK/BB</u>			
FORM COMPLETED BY ABK		DATE <u>3-24-2022</u> TIME <u>930</u> AM PM	REASON FOR SURVEY Baseline Assessment Revisit

	Habitat Parameter	Condition Category			
		Optimal	Suboptimal	Marginal	Poor
Parameters to be evaluated in sampling reach	1. Epifaunal Substrate/ Available Cover <input type="checkbox"/> N/A SCORE 15	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	2. Embeddedness SCORE 12	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	3. Velocity/Depth Regime <input type="checkbox"/> N/A SCORE 9	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/depth regime (usually slow-deep).
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	4. Sediment Deposition SCORE 14	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	5. Channel Flow Status <input type="checkbox"/> N/A SCORE 16	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
		20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

Habitat Parameter	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
6. Channel Alteration SCORE <u>14</u>	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.				
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
7. Frequency of Riffles (or bends) <input type="checkbox"/> N/A SCORE <u>14</u>	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.				
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE <u>7</u> SCORE <u>5</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.				
	Left Bank	10	9	8	7	6	5	4	3	2	1	0								
	Right Bank	10	9	8	7	6	5	4	3	2	1	0								
9. Vegetative Protection (score each bank) SCORE <u>8</u> SCORE <u>8</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.				
	Left Bank	10	9	8	7	6	5	4	3	2	1	0								
	Right Bank	10	9	8	7	6	5	4	3	2	1	0								
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE <u>4</u> SCORE <u>4</u>	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.				
	Left Bank	10	9	8	7	6	5	4	3	2	1	0								
	Right Bank	10	9	8	7	6	5	4	3	2	1	0								

Total Score 130

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME <u>UNT to Painter Run</u>		LOCATION	
STATION # <u>S-C40</u> <u>RIVERMILE</u>		STREAM CLASS <u>Perennial</u>	
LAT <u>37.425372</u> LONG <u>-80.693417</u>		COUNTY <u>Monroe</u>	
STORET #		AGENCY <u>POTESTA</u>	
INVESTIGATORS <u>ABK/BB</u>			LOT NUMBER
FORM COMPLETED BY ABK		DATE <u>3-24-2022</u> TIME <u>930</u>	REASON FOR SURVEY <small>Baseline Assessment Revisit</small>

HABITAT TYPES	Indicate the percentage of each habitat type present <input type="checkbox"/> Cobble _____% <input type="checkbox"/> Snags _____% <input type="checkbox"/> Vegetated Banks _____% <input type="checkbox"/> Sand _____% <input type="checkbox"/> Submerged Macrophytes _____% <input type="checkbox"/> Other (_____) _____%
SAMPLE COLLECTION	Gear used <input type="checkbox"/> D-frame <input type="checkbox"/> kick-net <input type="checkbox"/> Other _____ How were the samples collected? <input type="checkbox"/> wading <input type="checkbox"/> from bank <input type="checkbox"/> from boat Indicate the number of jabs/kicks taken in each habitat type. <input type="checkbox"/> Cobble _____ <input type="checkbox"/> Snags _____ <input type="checkbox"/> Vegetated Banks _____ <input type="checkbox"/> Sand _____ <input type="checkbox"/> Submerged Macrophytes _____ <input type="checkbox"/> Other (_____) _____
GENERAL COMMENTS	<p>No suitable benthic habitat, flow too low, out of benthic collection season.</p>

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

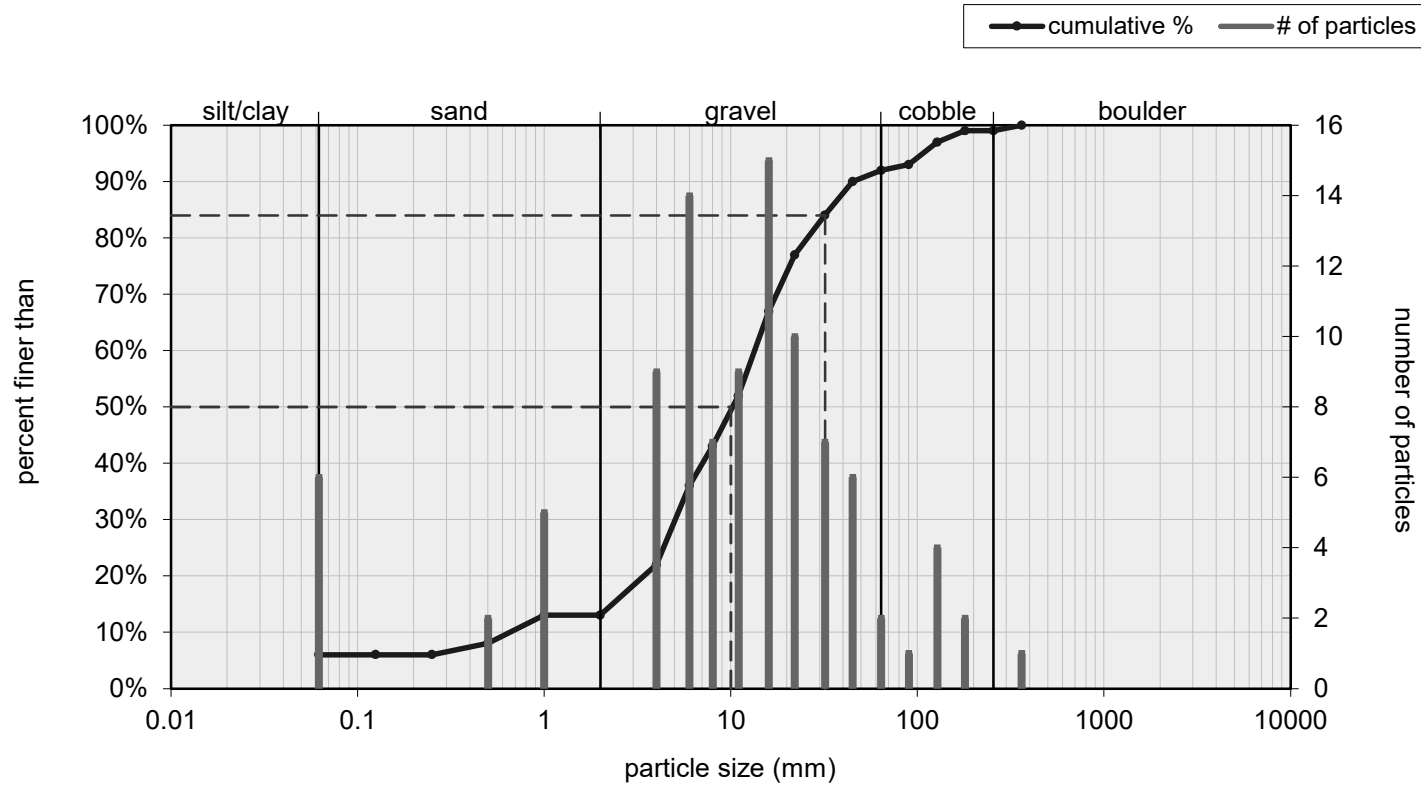
Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

Bankfull Channel Pebble Count, UNT to Painter Run



Size (mm)		Size Distribution		Type	
D16	2.5	mean	8.9	silt/clay	6%
D35	5.8	dispersion	3.6	sand	7%
D50	10	skewness	-0.05	gravel	79%
D65	15			cobble	7%
D84	32			boulder	1%
D95	110				

