

## Baseline Assessment – Stream Attributes

**Reach S-QR30 (Pipeline ROW)  
Perennial  
Spread C  
Braxton County, West Virginia**

<b>Data</b>	<b>Included</b>
Photos	✓
SWVM Form	✓
FCI Calculator and HGM Form	N/A – Perennial stream (not shadeable)
RBP Physical Characteristics Form	✓
Water Quality Data	✓
RBP Habitat Form	✓
RBP Benthic Form	✓
Benthic Identification Sheet	N/A – Low flow
Wolman Pebble Count	✓
Reference Reach Software Pebble Count Data	✓
Longitudinal Profile and Cross Sections	✓

# Spread C Stream S-QR30 (Pipeline ROW) Braxton County



Photo Type: DS, US View  
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Upstream View, DH, HK  
Lat: 38.80794 Long: -80.535715



Photo Type: DS, DS View  
Location, Orientation, Photographer Initials: Downstream Edge of ROW, Downstream View, DH, HK  
Lat: 38.80794 Long: -80.535715

## Spread C Stream S-QR30 (Pipeline ROW) Braxton County



Photo Type: US View at Center  
Location, Orientation, Photographer Initials: Center ROW, Upstream View, DH, HK  
Lat: 38.80794 Long: -80.535715



Photo Type: DS View at Center  
Location, Orientation, Photographer Initials: ROW Center, Downstream View, DH, HK  
Lat: 38.80794 Long: -80.535715

## Spread C Stream S-QR30 (Pipeline ROW) Braxton County



Photo Type: US, US View  
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Upstream View, DH, HK  
Lat: 38.80794 Long: -80.535715



Photo Type: US, DS View  
Location, Orientation, Photographer Initials: Upstream Edge of ROW, Downstream View, DH, HK  
Lat: 38.80794 Long: -80.535715

## Spread C Stream S-QR30 (Pipeline ROW) Braxton County



Photo Type: Riffle, DS View  
Location, Orientation, Photographer Initials: Upstream of Riffle, Downstream View, DH, HK  
Lat: 38.80794 Long: -80.535715



Photo Type: Riffle, US View  
Location, Orientation, Photographer Initials: Downstream of Riffle, Upstream View, DH, HK  
Lat: 38.80794 Long: -80.535715

## Spread C Stream S-QR30 (Pipeline ROW) Braxton County



Photo Type: Pool, DS View  
Location, Orientation, Photographer Initials: Upstream of Pool, Downstream View, DH, HK  
Lat: 38.80794 Long: -80.535715

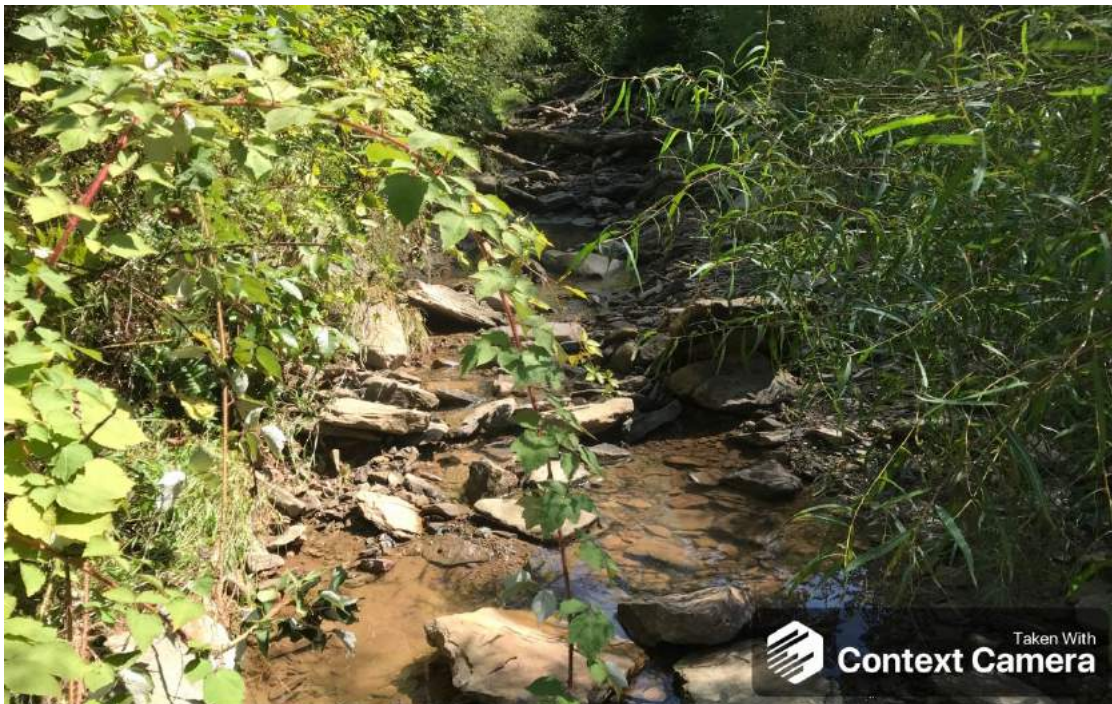


Photo Type: Pool, US View  
Location, Orientation, Photographer Initials: Downstream of Pool, Upstream View, DH, HK  
Lat: 38.80794 Long: -80.535715



## PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME _____	LOCATION _____	
STATION # _____ RIVERMILE _____	STREAM CLASS _____	
LAT _____ LONG _____	RIVER BASIN _____	
STORET # _____	AGENCY _____	
INVESTIGATORS _____		
FORM COMPLETED BY _____	DATE _____ TIME _____	REASON FOR SURVEY _____

<b>WEATHER CONDITIONS</b>	<b>Now</b> _____% storm (heavy rain) rain (steady rain) showers (intermittent) %cloud cover _____ clear/sunny	<b>Past 24 hours</b> _____%	<b>Has there been a heavy rain in the last 7 days?</b> Yes No <b>Air Temperature</b> _____ °C <b>Other</b> _____
<b>SITE LOCATION/MAP</b>	<b>Draw a map of the site and indicate the areas sampled (or attach a photograph)</b> <p>The map shows a stream flow from top to bottom. On the left, a yellow arrow labeled 'Flow In' points down, with 'NG' above it. A vertical line labeled 'Timber Matt' is to the right of the flow in. Below it, a yellow arrow labeled 'Flow Out' points down. A horizontal line labeled 'Silt Fence' is at the top. Below it, a green area labeled 'Buffer Zone' contains a blue line labeled 'S-QR30' with a blue arrow pointing left. Below that, a yellow vertical line labeled 'Pipe' is shown. Below the pipe, another green area labeled 'Buffer Zone' is shown. At the bottom, another horizontal line labeled 'Silt Fence' is shown. A blue line labeled '75x10 ft LOD' is shown with an arrow pointing to it. A north arrow is at the bottom right.</p>		
<b>STREAM CHARACTERIZATION</b>	<b>Stream Subsystem</b> Perennial _____ Intermittent _____ Tidal _____ <b>Stream Origin</b> Glacial _____ Non-glacial montane _____ Swamp and bog _____ Spring-fed _____ Mixture of origins _____ Other _____		
	<b>Stream Type</b> Coldwater _____ Warmwater _____ <b>Catchment Area</b> _____ km <sup>2</sup>		



# PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

<b>WATERSHED FEATURES</b>	<b>Predominant Surrounding Landuse</b> Forest _____ Field/Pasture _____ Agricultural _____ Residential _____ Commercial _____ Industrial _____ Other _____	<b>Local Watershed NPS Pollution</b> No evidence <input type="checkbox"/> Some potential sources Obvious sources _____ <b>Local Watershed Erosion</b> None _____ Moderate _____ Heavy _____
<b>RIPARIAN VEGETATION (18 meter buffer)</b>	<b>Indicate the dominant type and record the dominant species present</b> Trees _____ Shrubs _____ Grasses _____ Herbaceous _____ <b>Dominant species present</b> _____	
<b>INSTREAM FEATURES</b>	Estimated Reach Length _____ m Estimated Stream Width _____ m Sampling Reach Area _____ m <sup>2</sup> Area in km <sup>2</sup> (m <sup>2</sup> x1000) _____ km <sup>2</sup> Estimated Stream Depth _____ m Surface Velocity _____ m/sec (at thalweg)	<b>Canopy Cover</b> Partly open _____ Partly shaded _____ Shaded _____ <b>High Water Mark</b> _____ m <b>Proportion of Reach Represented by Stream Morphology Types</b> Riffle _____ % Run _____ % Pool _____ % <b>Channelized</b> Yes _____ No _____ <b>Dam Present</b> Yes _____ No _____
<b>LARGE WOODY DEBRIS</b>	LWD _____ m <sup>2</sup> Density of LWD _____ m <sup>2</sup> /km <sup>2</sup> (LWD/ reach area)	
<b>AQUATIC VEGETATION</b>	<b>Indicate the dominant type and record the dominant species present</b> Rooted emergent _____ Rooted submergent _____ Rooted floating _____ Free floating _____ Floating Algae _____ Attached Algae _____ <b>Dominant species present</b> _____ Portion of the reach with aquatic vegetation _____ %	
<b>WATER QUALITY (DS, US)</b>	Temperature _____ °C Specific Conductance _____ Dissolved Oxygen _____ pH _____ Turbidity _____ WQ Instrument Used _____	<b>Water Odors</b> Normal/None _____ Sewage _____ Petroleum _____ Chemical _____ Fishy _____ Other _____ <b>Water Surface Oils</b> Slick _____ Sheen _____ Globs _____ Flecks _____ None _____ Other _____ <b>Turbidity (if not measured)</b> Clear _____ <input type="checkbox"/> Slightly turbid _____ Turbid _____ Opaque _____ Stained _____ Other _____
<b>SEDIMENT/SUBSTRATE</b>	<b>Odors</b> Normal _____ Sewage _____ Petroleum _____ Chemical _____ Anaerobic _____ None _____ Other _____ <b>Oils</b> Absent _____ Slight _____ Moderate _____ Profuse _____ <b>Deposits</b> Sludge _____ Sawdust _____ Paper fiber _____ Sand _____ Relict shells _____ Other _____ <b>Looking at stones which are not deeply embedded, are the undersides black in color?</b> Yes _____ 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			Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)		Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)				

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

STREAM NAME	LOCATION	
STATION # _____ RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS		
FORM COMPLETED BY	DATE _____ TIME _____ AM PM	REASON FOR SURVEY

	Habitat Parameter	Condition Category			
		Optimal	Suboptimal	Marginal	Poor
Parameters to be evaluated in sampling reach	<b>1. Epifaunal Substrate/ Available Cover</b>	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.
	<b>SCORE</b>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	<b>2. Embeddedness</b>	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.
	<b>SCORE</b>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	<b>3. Velocity/Depth Regime</b>	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).
	<b>SCORE</b>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	<b>4. Sediment Deposition</b>	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.
	<b>SCORE</b>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	<b>5. Channel Flow Status</b>	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.
	<b>SCORE</b>	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				
Parameters to be evaluated broader than sampling reach	<b>6. Channel Alteration</b>	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.				
	<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	<b>7. Frequency of Riffles (or bends)</b>	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.				
	<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	<b>8. Bank Stability (score each bank)</b>	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.				
	Note: determine left or right side by facing downstream.																				
	SCORE ____ (LB)	Left Bank	10	9			8	7	6			5	4	3			2	1	0		
SCORE ____ (RB)	Right Bank	10	9			8	7	6			5	4	3			2	1	0			
	<b>9. Vegetative Protection (score each bank)</b>	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.				
	SCORE ____ (LB)	Left Bank	10	9			8	7	6			5	4	3			2	1	0		
	SCORE ____ (RB)	Right Bank	10	9			8	7	6			5	4	3			2	1	0		
	<b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b>	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.				
	SCORE ____ (LB)	Left Bank	10	9			8	7	6			5	4	3			2	1	0		
	SCORE ____ (RB)	Right Bank	10	9			8	7	6			5	4	3			2	1	0		

**Total Score** \_\_\_\_\_

## BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME	LOCATION	
STATION # _____ RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS	LOT NUMBER	
FORM COMPLETED BY	DATE _____ TIME _____	REASON FOR SURVEY

<b>HABITAT TYPES</b>	<b>Indicate the percentage of each habitat type present</b> Cobble _____% Snags _____% Vegetated Banks _____% Sand _____% Submerged Macrophytes _____% Other ( _____ ) _____%
<b>SAMPLE COLLECTION</b>	<b>Gear used</b> D-frame kick-net Other _____ <b>How were the samples collected?</b> wading from bank from boat <b>Indicate the number of jabs/kicks taken in each habitat type.</b> Cobble _____ Snags _____ Vegetated Banks _____ Sand _____ Submerged Macrophytes _____ Other ( _____ ) _____
<b>GENERAL COMMENTS</b>	

### 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

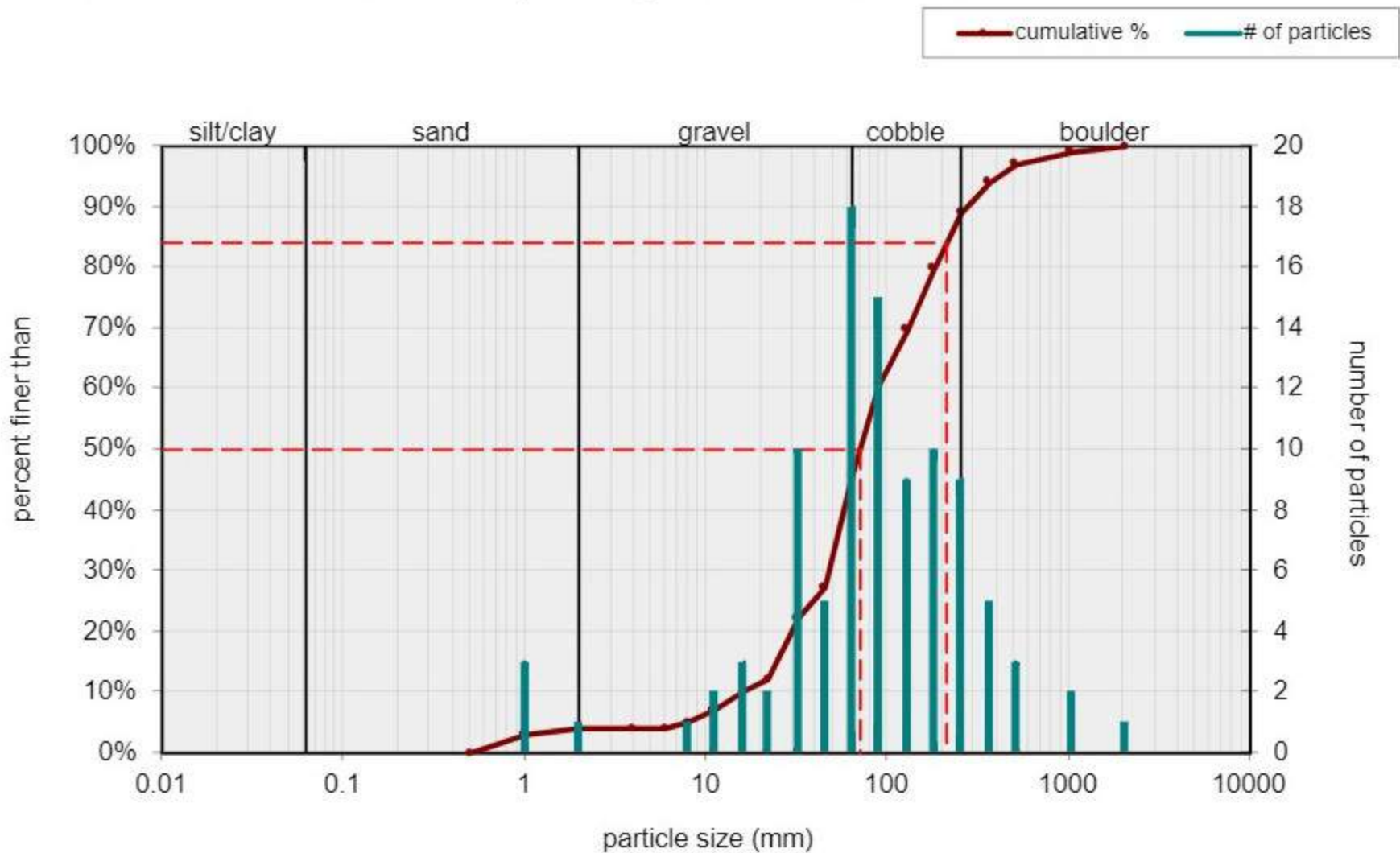
### FIELD OBSERVATIONS OF MACROBENTHOS

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)

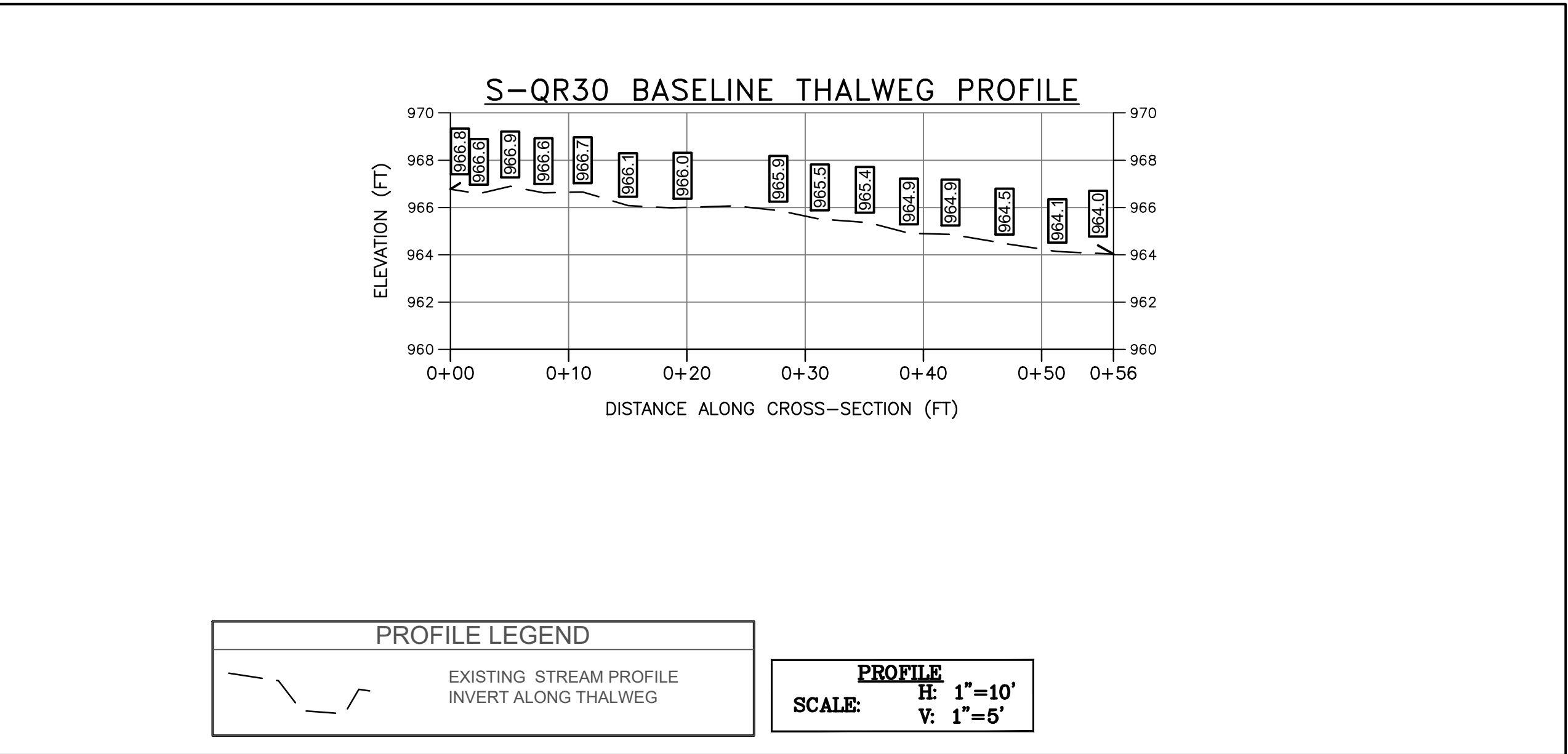
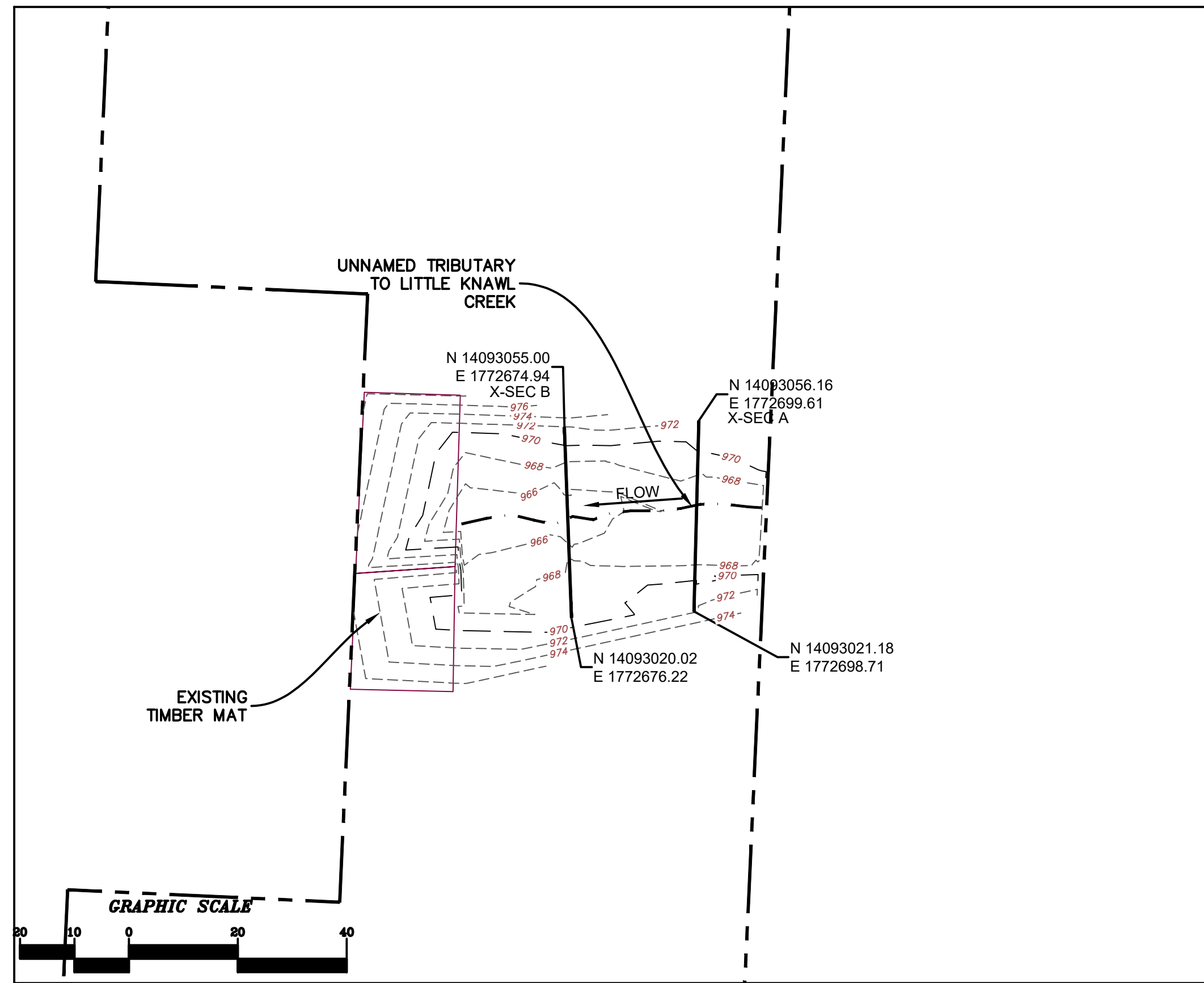
Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
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, S-QR30, UNT to Little Knawl Creek



Size (mm)		Size Distribution		Type			
D16	25	mean	72.5	silt/clay	0%	bedrock	1%
D35	52	dispersion	2.9	sand	4%		
D50	71	skewness	0.01	gravel	41%		
D65	110			cobble	43%		
D84	210			boulder	11%		
D95	410						



AS-BUILT TABLE: S-QR30 CROSS SECTION A

PT. LOC.	PRE-CROSSING			AS-BUILT	
	NORTHING	EASTING	ELEV.	VERT. DIFF.	HORZ. DIFF.
TS-L	14093027.8200	1772699.2610	969.617'		
BS-L	14093032.2100	1772699.2790	966.858'		
THW	14093040.8200	1772699.9350	966.657'		
BS-R	14093042.9600	1772700.1140	966.876'		
TS-R	14093048.0300	1772700.9190	968.995'		

