Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: **Drainage way to Notchy Creek**	Date/Time: **05/12/2022 11:00**
Assessors/Affiliation: **Phillip R. Boggs, Mark V Mining and Engineering, Inc.**	Project ID : **HD-2022-2**
Site Name/Description: **Clear Development, LLC Thorn Hill Quarry**	
Site Location: **911 TN-131, Thorn Hill, Tennessee 37881**	
HUC (12 digit): **0601 02051004**	Lat/Long : **N36.34735 W83.44744**
Previous Rainfall (7-days) : **2.67 Inches per KTNBEANS4 Station**	
Precipitation this Season vs. Normal: abnormally wet elevated average **low** abnormally dry unknown Source of recent & seasonal precipitation data : **KTNBEANS4 Station & NOAA Rogersville, TN**	
Watershed Size : **≈ 29.2 Acres**	County: **Grainger**
Soil Type(s) / Geology : **Bradyville Rock Outcrop Talbott Complex & Townley-Montevallo complex** Source: **Web Soil Survey**	
Surrounding Land Use : **Forest, Pasture and Undeveloped Land**	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate **Slight** Absent	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	**X**	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	**X**	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	**N/A**	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	**N/A**	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	**X**	Stream
6. Presence of fish (except *Gambusia*)	**X**	Stream
7. Presence of naturally occurring ground water table connection	**X**	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	**X**	Stream
9. Evidence watercourse has been used as a supply of drinking water	**X**	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

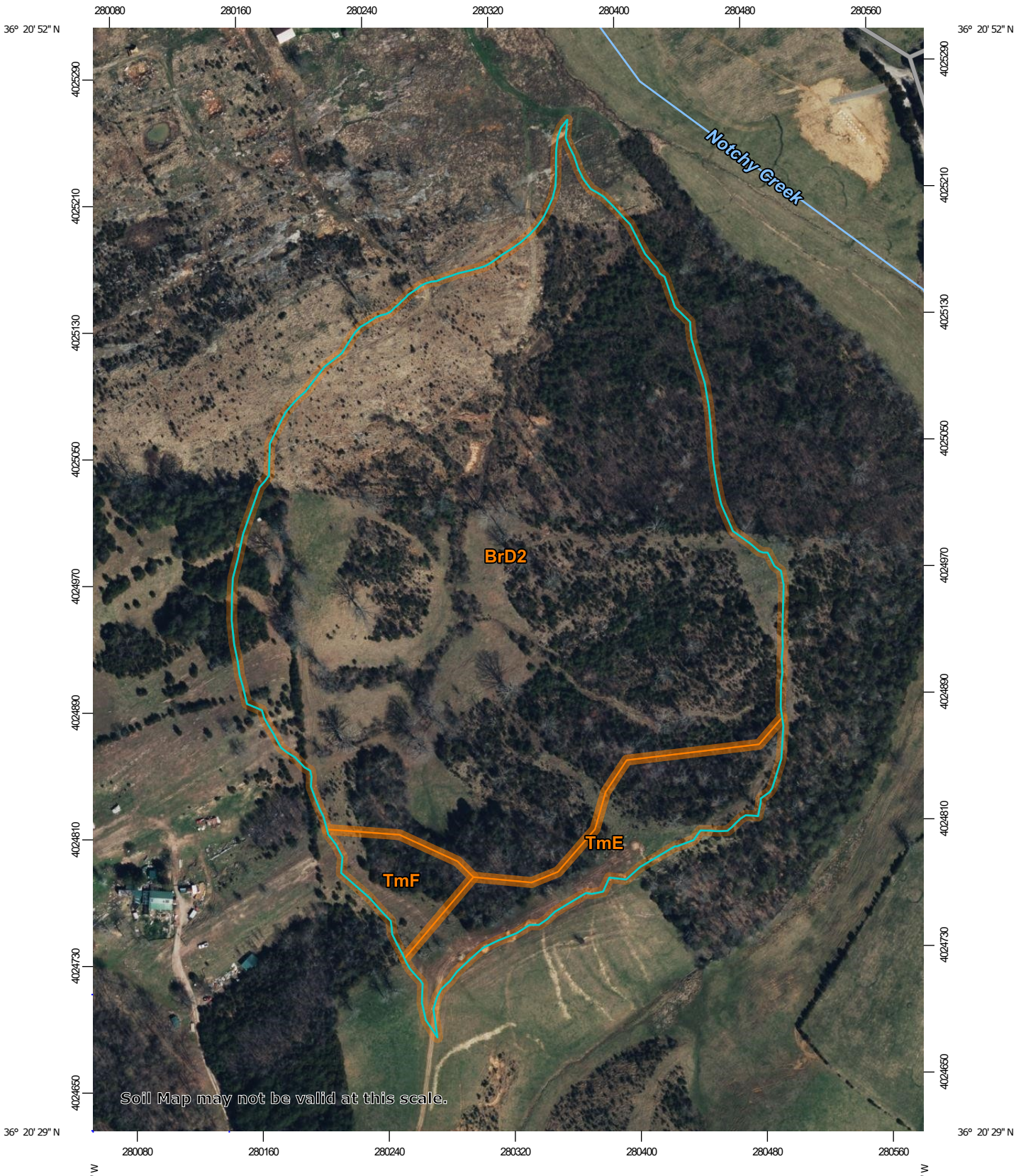
In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.
Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 13.0

Portions of the conveyance have been or are being pastured with the riparian vegetation removed.

Soil Map—Grainger County, Tennessee
(Thorn Hill Quarry Hydrologic Determination Watershed)



Map Scale: 1:3,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grainger County, Tennessee
Survey Area Data: Version 15, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 21, 2021—Sep 24, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BrD2	Bradyville-Rock outcrop-Talbott complex, 5 to 20 percent slopes, eroded	25.6	87.7%
TmE	Townley-Montevallo complex, 20 to 35 percent slopes	2.7	9.2%
TmF	Townley-Montevallo complex, 35 to 60 percent slopes	0.9	3.1%
Totals for Area of Interest		**29.2**	**100.0%**

Normal Weather Conditons Calculations Table

Project: Clear Development, LLC, Thorn Hill Quarry, 911 TN-131, Thorn Hill, TN 37881.

			Long term records							
	Month	**Standard Deviation**	**Minus One Std. Dev. (Dry)**	**Normal (Mean Inches)**	**Plus One Std. Dev. (Wet)**	**Actual Rainfall**	**Condition (elevated, low, average)**	**Condition Value**	**Month weight value**	**Product of two previous columns**
1st prior month	April 2022	1.93	1.87	3.80	5.73	2.64	Low	1	3	3
2nd prior month	Mar. 2022	2.24	1.98	4.22	6.46	2.31	Low	1	2	2
3rd prior month	Feb. 2022	1.98	1.88	3.86	5.84	8.15	Elevated	3	1	3
									Sum =	8

Notes: 1. Long term records from Rogersville, Tennessee NOAA weather station.

2. Actual rainfall monthly totals from weather station Gaultney Farm KTNBEANS4 station.

If sum is:	
6-9	Then prior period has been abnormally dry
10-14	Then prior period has been normal (average)
15-18	Then prior period has been abnormally wet

Condition value:	
Low =	1
Average =	2
Elevated =	3

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 6.0)	Absent	Weak	Moderate	Strong	Score
1. Continuous bed and bank	0	1	2	3	1.0
2. Sinuous channel	0	**1**	**2**	3	1.0
3. In-channel structure: riffle-pool sequences	0	1	2	3	1.0
4. Sorting of soil textures or other substrate	0	1	2	3	1.0
5. Active/relic floodplain	0	0.5	1	1.5	0.0
6. Depositional bars or benches	0	1	2	3	0.0
7. Braided channel	0	1	2	3	0.0
8. Recent alluvial deposits	0	0.5	1	1.5	0.5
9. Natural levees	0	1	2	3	0.0
10. Headcuts	0	1	2	3	0.0
11. Grade controls	0	0.5	1	1.5	0.5
12. Natural valley or drainageway	0	0.5	1	1.5	1.0
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3		0

B. Hydrology (Subtotal = 3.0)	Absent	Weak	Moderate	Strong	Score
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	1
16. Leaf litter in channel (January – September)	1.5	1	0.5	0	1.5
17. Sediment on plants or on debris	0	0.5	1	1.5	0.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0.0
19. Hydric soils in stream bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 4.0)	Absent	Weak	Moderate	Strong	Score
20. Fibrous roots in channel bed [1]	3	2	1	0	2
21. Rooted plants in the thalweg [1]	3	2	1	0	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	1
24. Amphibians	0	0.5	1	1.5	0.5
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28.Wetland plants in channel bed [2]	0	0.5	1	1.5	0.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

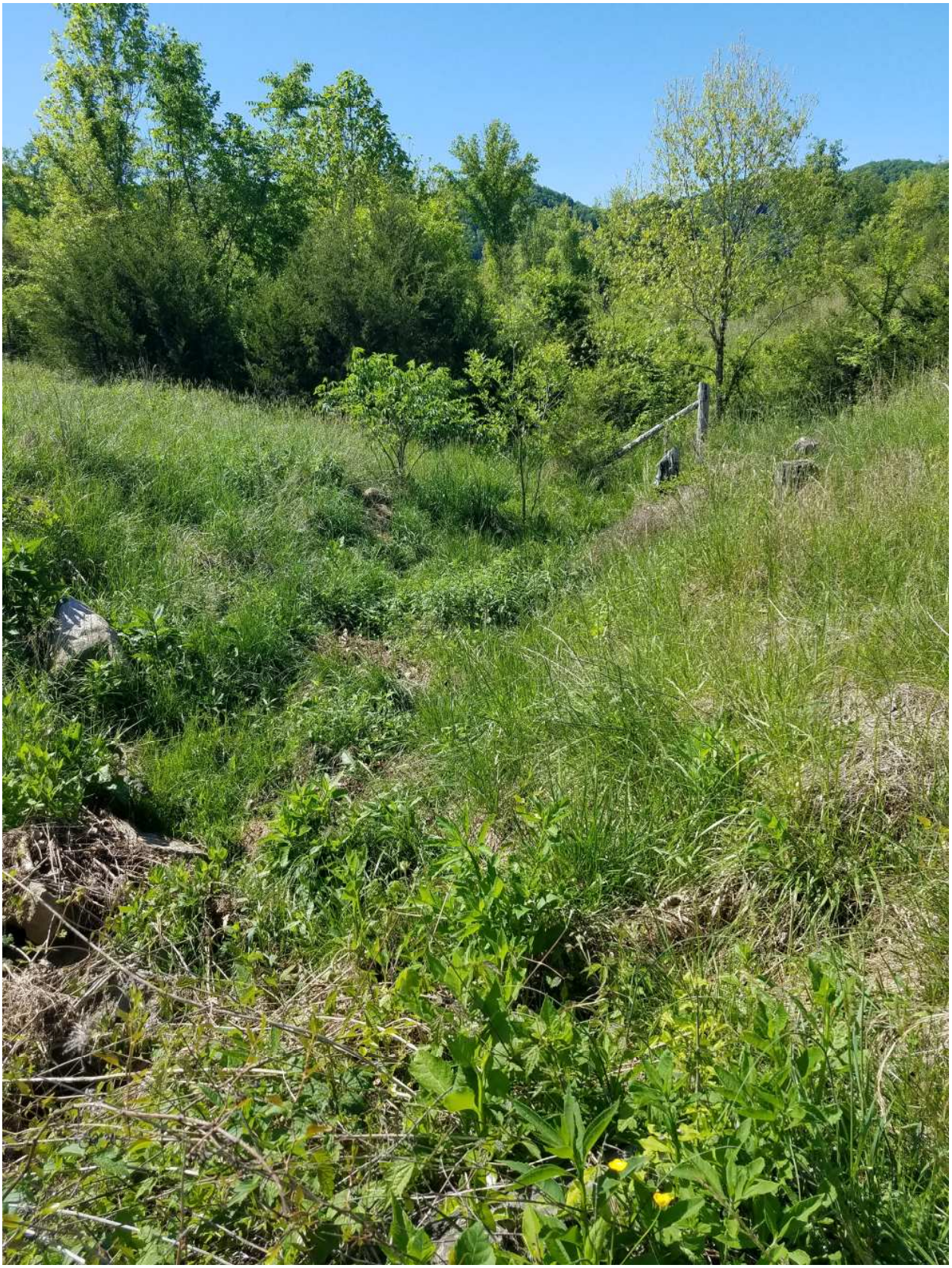
Total Points = 13.0

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

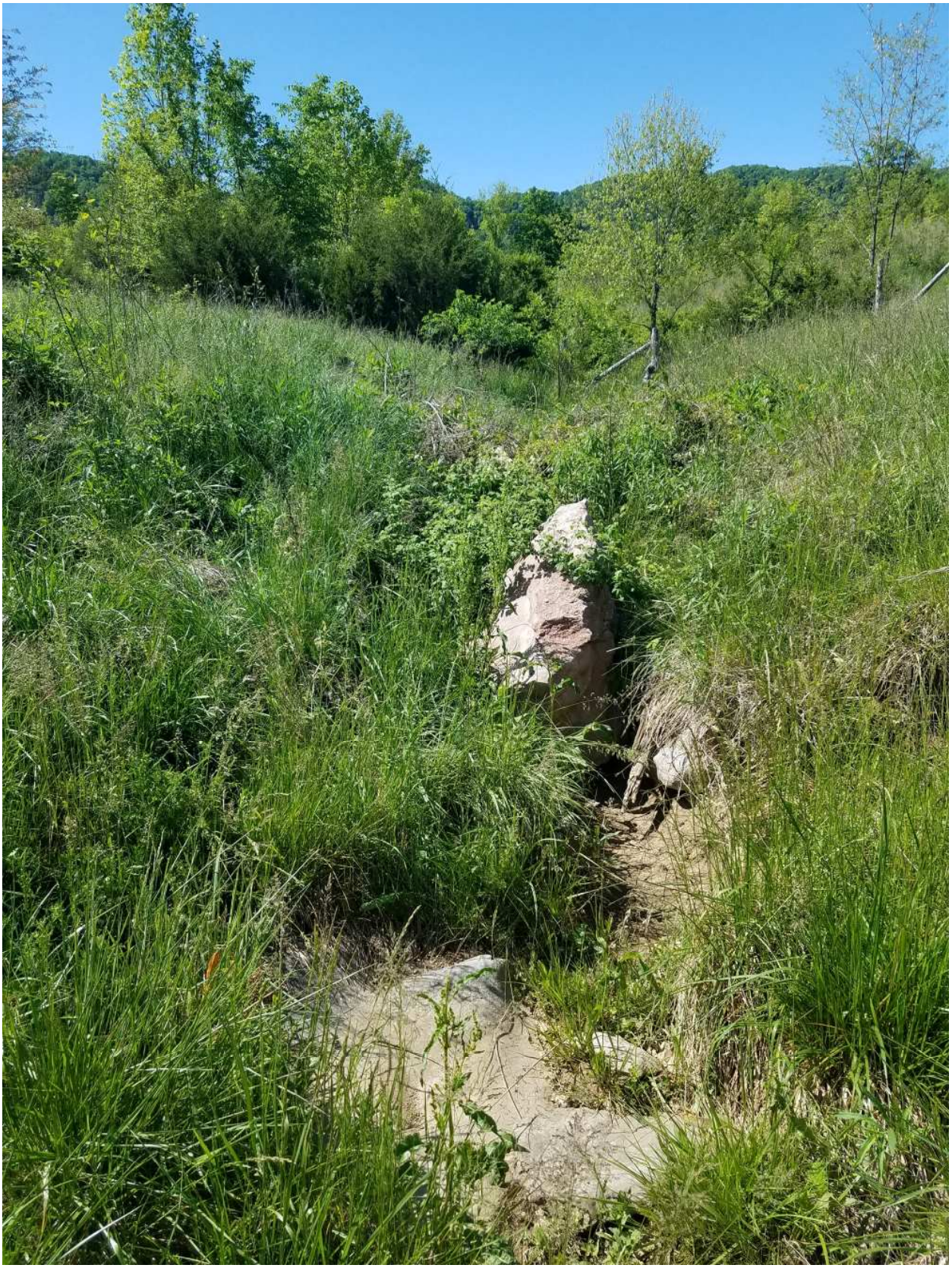
Notes: **(12.) The valley loses definition as it nears Notchy Creek.**

(15.) Small puddles of water were found behind and on top of rock outcrops.

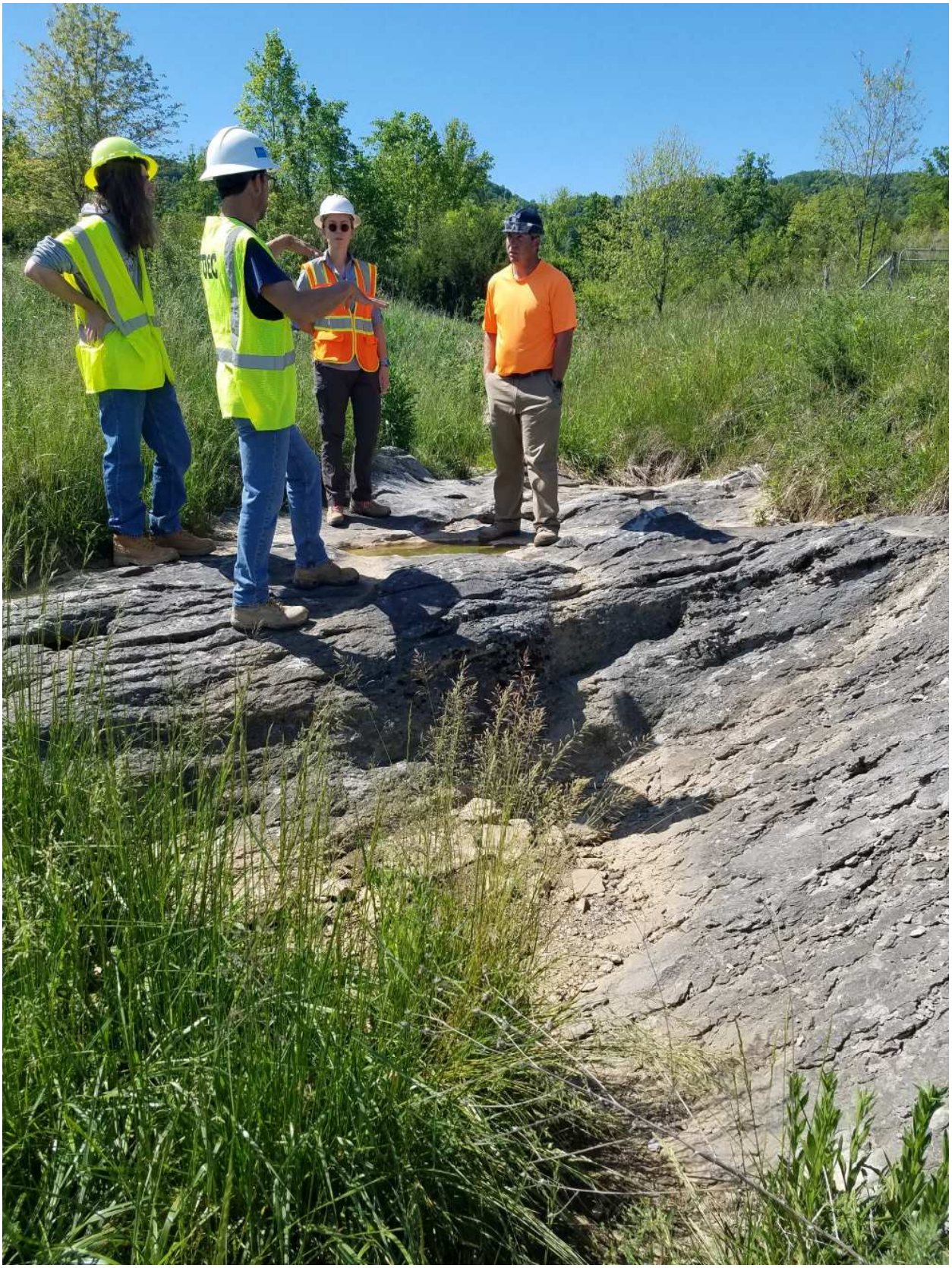
(24.) Tadpoles were found in the small puddles mentioned above.



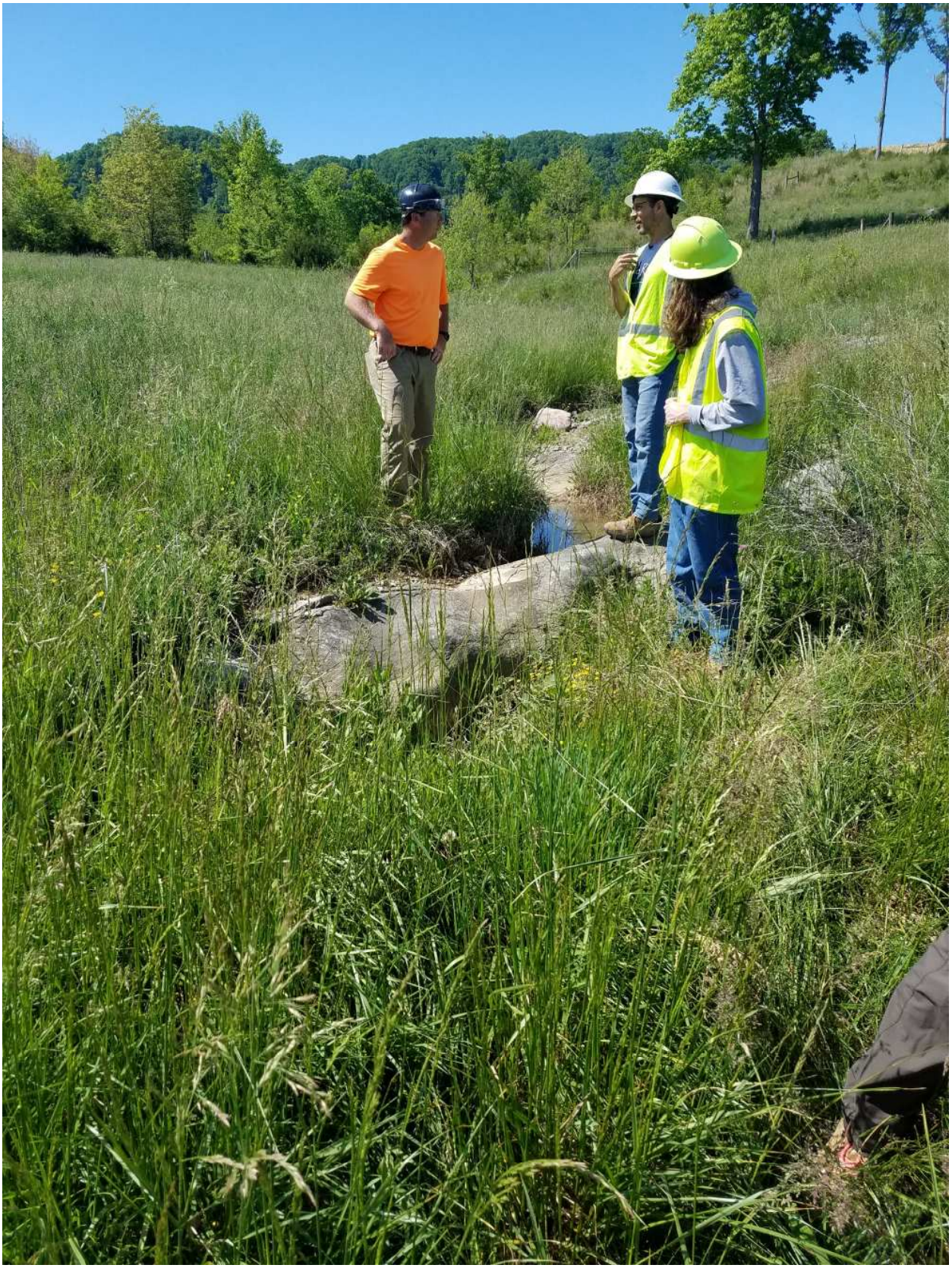
Photograph of upper portion of feature/channel being evaluated showing vegetation established in channel. Photograph taken by Phil Boggs on May 12, 2022, viewing southwest.



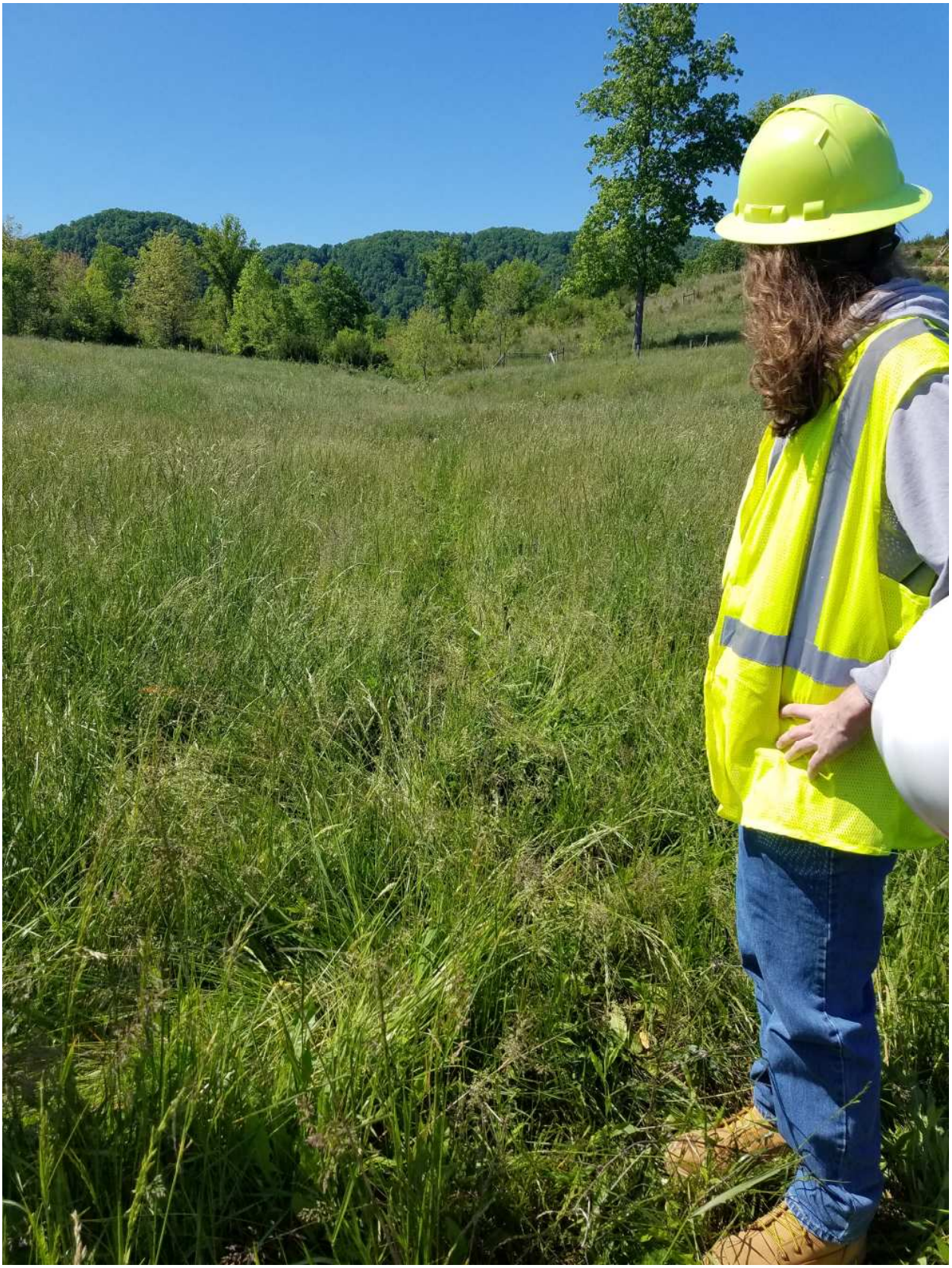
Photograph of upper portion of feature/channel being evaluated showing rock outcropping in channel. Photograph taken by Phil Boggs on May 12, 2022, viewing southwest.



Photograph of rock outcrop within feature/channel being evaluated showing puddle of water on top of rock. Photograph taken by Phil Boggs on May 12, 2022, viewing southwest.



Photograph of rock outcrop within feature/channel being evaluated showing puddle of water above outcrop. Photograph taken by Phil Boggs on May 12, 2022, viewing southwest.



Photograph of lower portion of feature/channel being evaluated showing lack of defined bed and bank, as well as vegetation established in channel. Photograph taken by Phil Boggs on May 12, 2022, viewing southwest.