permit under

JHD ✓
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Jasper Highlands 2015 (Marion)

ENGINEERING SERVICES, INC.

COMPLETE ENGINEERING & DESIGN SERVICES

651 East 4th Street, Suite 407 • Chattanooga, TN 37403 • phone: (423) 266-3501 • fax: (423) 266-3286

Project Transmittal Sheet

To: **TDEC**
Attn: Jason Dees
1301 Riverfront Parkway
Chattanooga, TN 37402

Phone No.:

Date: June 10, 2015

Project Name: Jasper Highlands Subdivision
Timber Ridge Access Road

ADES Job Number: 15147

From: John West

We are sending you via:

- ☐ You Pick up
- ☐ US Mail
- ☐ UPS
- ☐ Other _____
- ☒ Hand Delivery
- ☐ Courier
- ☐ Fed Ex

The following:

- ☐ Letter
- ☐ Invoice
- ☐ Specifications
- ☐ Request for Proposal
- ☐ Change Order
- ☐ Permit Application
- ☐ Drawings (originals)
- ☐ Drawings (copies)
- ☐ Contract
- ☐ Computer Disk
- ☐ Shop Dwg/Submittals
- ☐ Certificate of Payment
- ☐ Request for Proposal
- ☒ Other Report of Jurisdictional Waters

Which is:

- ☒ For Your Approval
- ☐ For Your Use
- ☐ As Requested
- ☐ For Your Information
- ☐ Sign and Return to ADES
- ☐ Revise and Resubmit
- ☐ Approved as Noted
- ☐ Marked Take No Action
- ☐ For Your Review and Comment

Description:

Date	No.	Title
6/10/15	1	Report of Jurisdictional Waters Determination for Jasper Mountain Subdivision Timber Ridge Access Road

Copy: Mr. John Thornton, Thunder Enterprises

RECEIVED
JUN 10 '15
ENVIRONMENT & CONSERVATION
CHATTANOOGA FIELD OFFICE

Report of Jurisdictional Waters Determination

For

Jasper Mountain Subdivision
Timber Ridge Access Road
Off Timber Ridge Road
Marion County, Tennessee

Prepared For:

Mr. John Thornton
Thunder Enterprises
210 Battle Creek Road
Kimball, TN 37380

Prepared By:

A.D. ENGINEERING SERVICES, INC.
COMPLETE ENGINEERING & DESIGN SERVICES

651 E. 4th Street, Suite 407
Chattanooga, TN 37403
Phone: (423) 266-3501; Fax: (426) 266-3286
ADES Project Number: 15147

June 9, 2015

Table of Contents

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project/Site Information

Project/Site Name: Jasper Mountain Subdivision – Timber Ridge Access Road

Project Street/Location: Off Timber Ridge Road

City: Jasper State: TN Zip Code: 37380

County or Similar Subdivision: Marion County

Latitude: 35° 2' 45.1674" N Longitude: 85° 41' 6.7194" W

Method for determining latitude/longitude:

☐ USGS topographic map (specify scale: _____) ☐ EPA Web site ☐ GPS

☒ Other (please specify): TDEC GIS

NPDES project or permit tracking number: TNR112089

1.2 Contact Information/Responsable Parties

Owner:
Mr. John Thornton
Thunder Enterprises
210 Battle Creek Road
Kimball, TN
(423) 265-0781

Project Manager/24-Hour Contact:
Clarence Howard
Thunder Enterprises
210 Battle Creek Road
Kimball, TN
(423) 421-9775

This Report of Jurisdictional Waters Was Prepared By:
A.D. Engineering Services, Inc.
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Chattanooga, TN 37403
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1.3 Project Overview

The project involves a proposed new road to bypass the lower section of the existing Timber Ridge Road and provide access the Jasper Mountain subdivision. The proposed road will cross several drainages which run down the side of the mountain. Two of these drainages exhibited some attributes commonly associated with streams, which would require ARAP coverage for minor road crossings, so a hydrologic determination was needed to look for jurisdictional streams. The locations of the evaluated channels are shown on Figures 1 and 2.

SECTION 2: JURISDICTIONAL STREAMS ASSESSMENT

The hydrologic determination was completed using the *Tennessee Department of Environment and Conservations Division of Water Polllution Control Guidance For Making Hydrologic Determinations* Version 1.4 and in accordance with Rule 1200-4-03-.05(9) in Public Chapter 464 of 2009. The guidance document outlines standard procedures based on bilogy, geology, geomorphology, meterology, and hydrology for making determinations between Wet Weather Conveyances (WWC) and Jurisdictional Streams.

2.1 Preliminary Investigation

Prior to conducting field observations, ADES reviewed the following available resources to aid in evaluating the water features in question:

Precipitation Data Sources

The Community Collaborative Rain, Hail & Snow Network (CoCoRaHS) was used to check the daily precipitation in Marion County, TN. Up to 6 locations in the county reported precipitation data for each of the seven days prior to the field observations. The southwest-most station was deemed to be the closest to the project site. According to this data, roughly half an inch of rain fell near the site in the preceding 7 days on both 5/30/15 and on 6/1/15.

The precipitation resource provided by NOAA and the National Weather Services was used to evaluate the recent precipitation trends. Based on this data, the departure from normal precipitation for each of the preceding three months was roughly within 1 inch. Based on this information, it was concluded that the evaluations would take place under normal weather conditions.

USGS Topographic Map

The South Pittsburg quadrangle of the USGS topographic map was reviewed. The map shows that both evaluated drainages flow down from King Point on the Cumberland Plateau and eventually reach Battle Creek. The evaluated Channel B is shown as a blue line on the topo map, and Channel A is not. The topo map shows both drainages crossing an existing road upstream of the newly proposed crossing points.

NRCS Web Soil Survey Map

The soil survey shows that the surrounding soil consists of Bouldery colluvium, allen soil material (bouldin). This data source does not show any above ground water features.

2.2 Field Observations

ADES conducted field observations on June 5, 2015. The ADES evaluator is certified as a Qualified Hydrologic Professional In Training. The Hydrologic Determination Field Data Sheet was used to evaluate both drainages along with the guidance document. Photos of both evaluated drainages can be found in the attached Photo Log.

Channel A

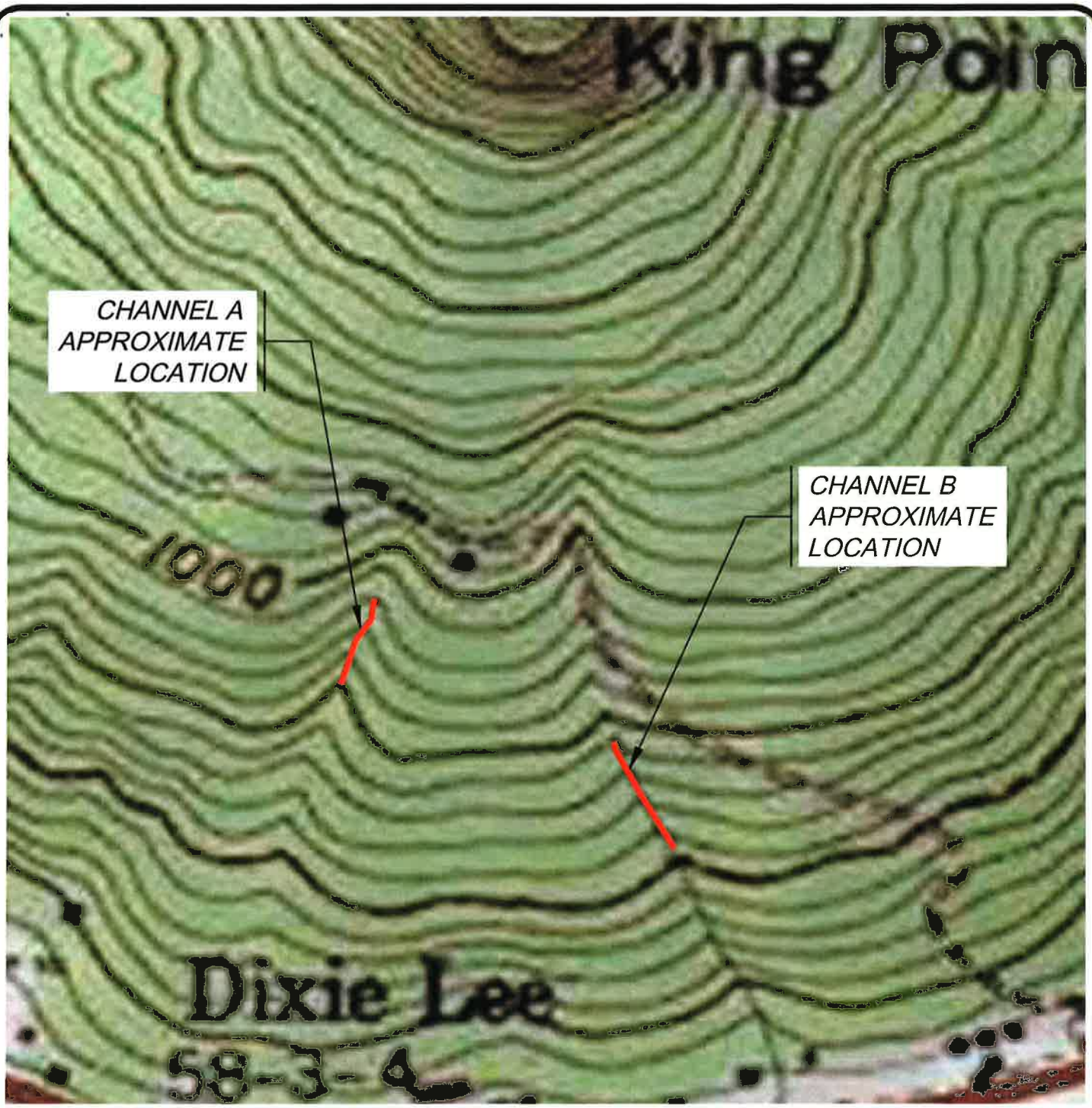
Beginning at the upper terminus of the proposed bypass road and traveling downhill, the proposed road will first cross Channel A. See Figures 1 and 2 for the location of the evaluated reach in Channel A. An existing dirt road crosses the channel at the downstream end of the evaluated reach. From this point, the channel extends uphill into a forested hillside dotted with small boulders. No water was present in the channel at the time of the observation. The channel cross section varied throughout the reach, but in general was approximately 2 feet wide and 2 – 4 inches deep. The steep gradient of the channel (greater than 20%) resulted in a step pool sequence. The absence of any primary indicators led to the use of secondary indicators to make a determination. With a total score of 12.25, it was determined that the evaluated reach of Channel A is a WWC.

Channel B

Beginning at the upper terminus of the proposed bypass road and traveling downhill, the second drainage crossed by the proposed road is Channel B. See Figures 1 and 2 for the location of the evaluated reach in Channel B. An existing dirt road crosses the channel downstream of the evaluated reach, and an existing asphalt road crosses the channel upstream of the evaluated reach. A large cave opening was observed in the channel downstream of the upper road crossing and upstream of the evaluated reach. No water was present in the channel at the time of the observation, but it appeared that a significant amount of water would flow into the cave when the channel does convey water. The cave dropped vertically and the bottom could not be seen from the surface. The upper end of the evaluated reach begins slightly downhill from the cave opening. The channel runs down a forested hillside dotted with small boulders. The channel cross section varied throughout the reach, but in general was approximately 2 feet wide and 2 inches deep, and at times the channel structure was not well defined. The steep gradient of the channel (greater than 20%) resulted in a step pool sequence. The absence of any primary indicators led to the use of secondary indicators to make a determination. With a total score of 7, it was determined that the evaluated reach of Channel B is a WWC.

SECTION 3: CONCLUSIONS

ADES evaluated two channel segments at proposed crossing points for the presence of jurisdictional streams using the TDEC Hydrologic Determinations Field Data Sheet along with the guidance document. Based on secondary indicators, both evaluated reaches were considered to be WWCs. We recommend obtaining verification of the determinations from TDEC. Any proposed work in and around WWCs should comply with TDEC's General NPDES Permit for Discharges Associated with Construction Activities and with TDEC's guidelines for the Alteration of Wet Weather Conveyances.



NORTH

GRAPHIC SCALE

400 0 200 400 800

1 inch = 400 ft.

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for
Jasper Mountain Subdivision
Timber Ridge Access Road
Marion County, TN

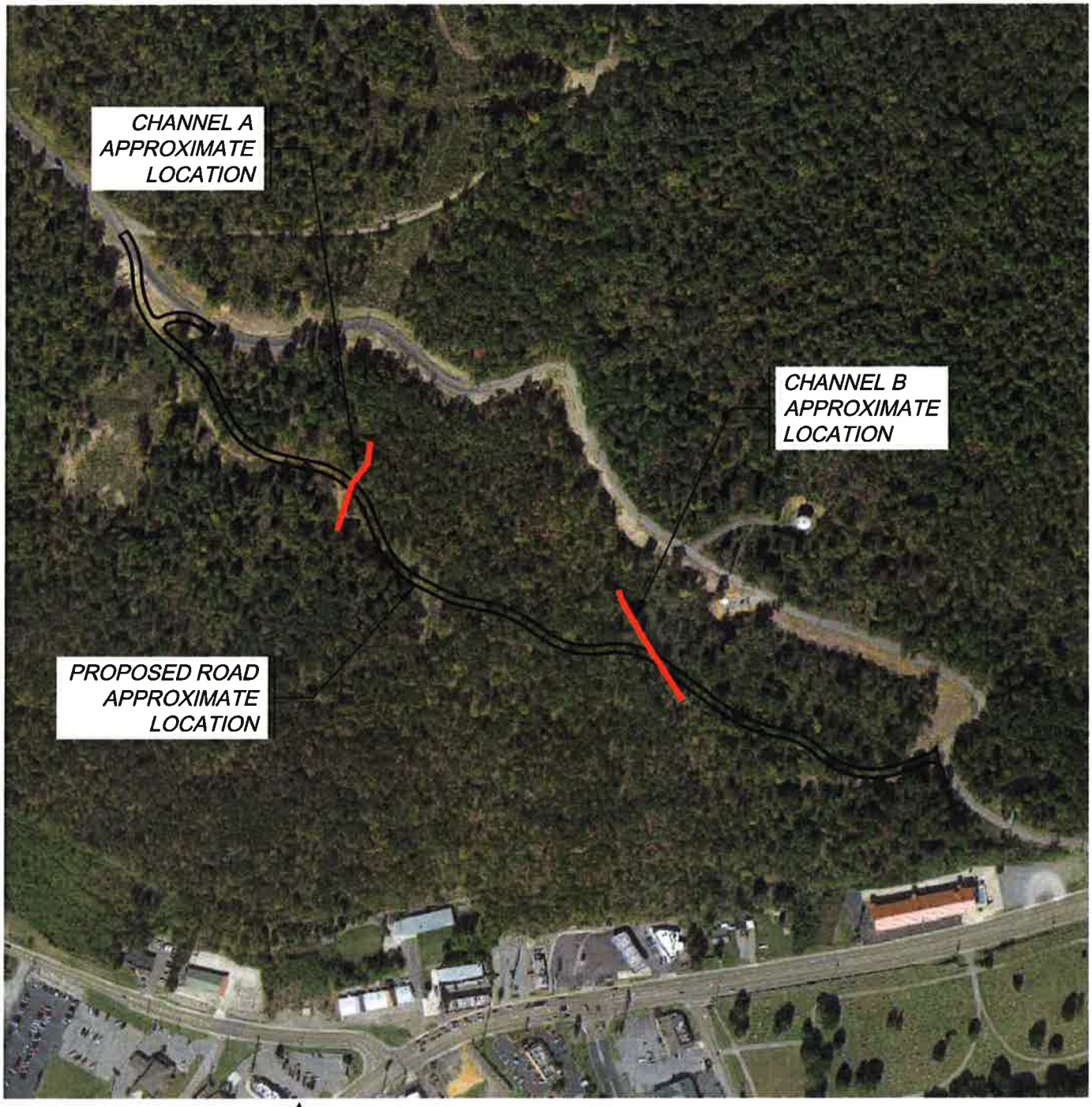
15147

DATE: 6/9/2015

SCALE: 1" = 400'

USGS TOPOGRAPHIC MAP

DRAWING NUMBER
Figure 1



NORTH

GRAPHIC SCALE

400 0 200 400 800

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DATE: 6/9/2015

SCALE: 1" = 400'

AERIAL OVERVIEW OF SITE

DRAWING NUMBER
Figure 2

Hydrologic Soil Group—Marion County, Tennessee

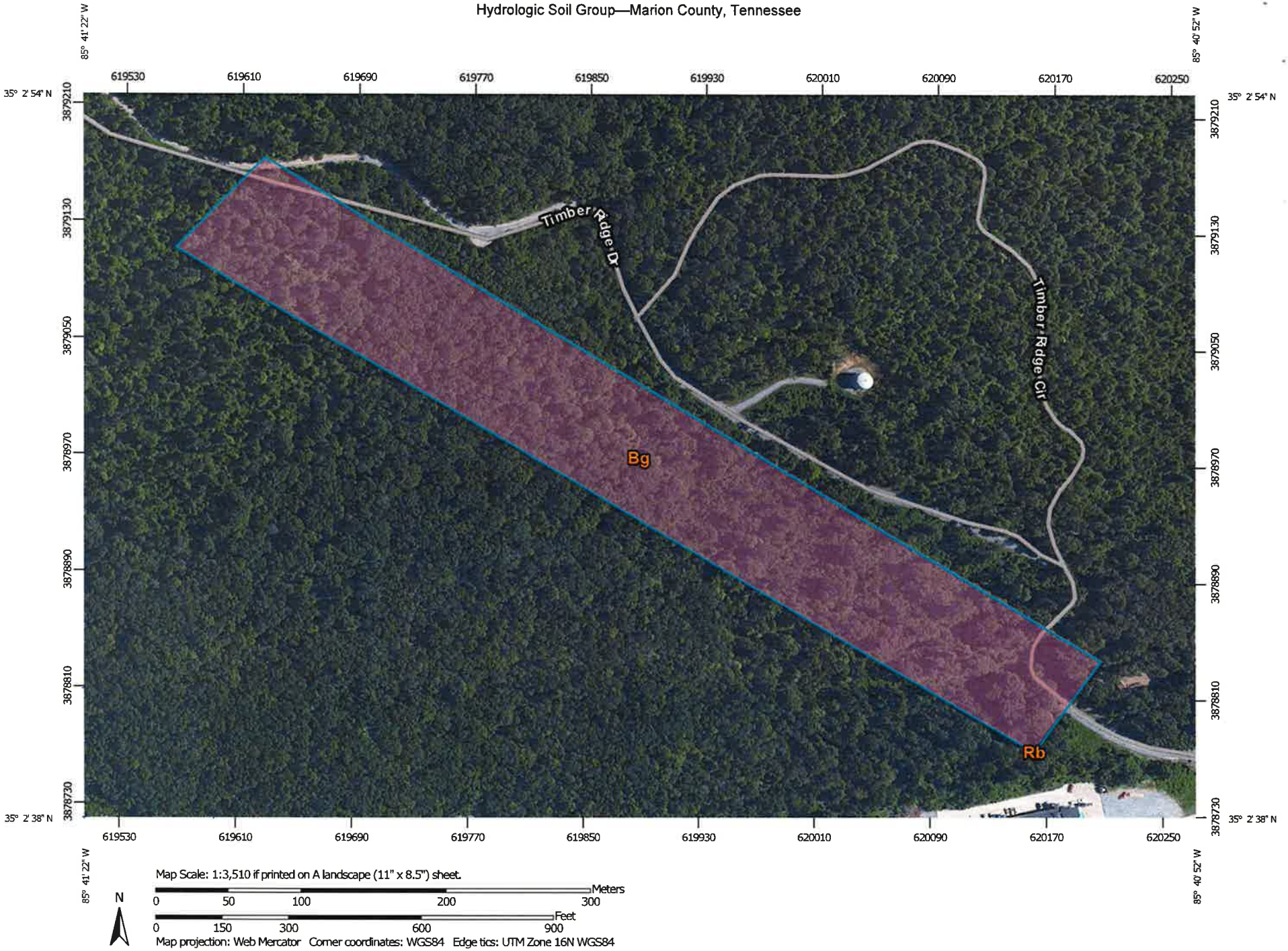

Photo 1:

Channel A
Upstream Portion of Segment

Photo Taken 6/5/2015

Photo 2:

Channel A
Downstream Portion of Segment

Photo Taken 6/5/2015

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Date: 6/9/2015

JASPER HIGHLANDS SUBDIVISION
TIMBER RIDGE ACCESS ROAD
MARION COUNTY, TN

Photo Log

Photo 3:

Channel B Downstream Portion of Segment

Photo Taken 6/5/2015

Photo 4:

Opening of Cave in Channel B Upstream of Evaluated Segment

Photo Taken 6/5/2015

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Date: 6/9/2015

JASPER HIGHLANDS SUBDIVISION
TIMBER RIDGE ACCESS ROAD
MARION COUNTY, TN

Photo Log

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Marion	Named Waterbody:	Date/Time: 6/5/2015
Assessors/Affiliation: John West, A.D. Engineering Services		Project ID : Channel A
Site Name/Description: Jasper Highlands - Timber Ridge Access Rd		
Site Location: Jasper Mountain, Jasper, TN		
USGS quad: South Pittsburg	HUC (12 digit): 060300010104	Lat/Long: 35.04721 -85.68795
Previous Rainfall (7-days) : ~ 1.07"		
Precipitation this Season vs. Normal : very wet wet (average) dry drought unknown Source of recent & seasonal precip data : Recent from CoCoRaHS, seasonal from NWS		
Watershed Size :	Photos: (Y) or N (circle) Number : 1 and 2	
Soil Type(s) / Geology : Bouldery colluvium, allen soil material (bouldin)		Source: NRCS
Surrounding Land Use : Forested with asphalt road upstream of segment		
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, dominated by upland vegetation / grass	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	X	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 precipitation in local watershed N/A		Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

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 1.4*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 12.25

Justification / Notes :

The only alteration to the natural channel morphology in the evaluated reach is at the downstream end where a dirt road crosses the channel. No water was observed in the channel.

Secondary Field Indicator Evaluation

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

B. **Hydrology** (Subtotal = 2.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	(0)	1	2	3
15. Water in channel and >48 hours since sig. rain	(0)	1	2	3
16. Leaf litter in channel (January – September)	1.5	(1)	0.5	0
17. Sediment on plants or on debris	0	(0.5)	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	(1.5)
19. Hydric soils in stream bed or sides of channel	No = (0)		Yes = 1.5	

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

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

Total Points = 12.25

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

Notes :

#3 - The high gradient channel had a step-pool sequence with few pools
#4 - Some coarser material and larger rocks were present, but the bottom is mostly the same organic soil as the surrounding riparian zone
#7 - Gradient is too high
#10 - Drops are part of high gradient step-pool sequence, not actively eroding headcuts
#11 - Boulder clusters and logs are present in channel, but are considered part of step-pool sequence rather than grade controls handling active headcuts

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Marion	Named Waterbody:	Date/Time: 6/5/2015
Assessors/Affiliation: John West, A.D. Engineering Services		Project ID : Channel B
Site Name/Description: Jasper Highlands - Timber Ridge Access Rd		
Site Location: Jasper Mountain, Jasper, TN		
USGS quad: South Pittsburg	HUC (12 digit): 060300010104	Lat/Long: 35.04588 -85.68520
Previous Rainfall (7-days) : ~ 1.07"		
Precipitation this Season vs. Normal : very wet wet (average) dry drought unknown Source of recent & seasonal precip data : Recent from CoCoRaHS, seasonal from NWS		
Watershed Size :	Photos: (Y) or N (circle) Number : 3 and 4	
Soil Type(s) / Geology : Bouldery colluvium, allen soil material (bouldin)		Source: NRCS
Surrounding Land Use : Forested with asphalt road upstream of segment		
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, dominated by upland vegetation / grass	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	X	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 precipitation in local watershed N/A		Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

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 1.4*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 7

Justification / Notes :

No modifications have been made to the evaluated reach. Slightly upstream of the evaluated reach, a large opening in the channel leads to a cave which drops a significant distance vertically. No water was present during the evaluation, but it appeared that a significant amount of flow would enter into the cave rather than continuing downstream in the channel toward the evaluated reach.

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 5.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	(1)	2	3
2. Sinuous channel	0	(1)	2	3
3. In-channel structure: riffle-pool sequences	0	(1)	2	3
4. Sorting of soil textures or other substrate	0	(1)	2	3
5. Active/relic floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Braided channel	(0)	1	2	3
8. Recent alluvial deposits	0	(0.5)	1	1.5
9. Natural levees	(0)	1	2	3
10. Headcuts	(0)	1	2	3
11. Grade controls	0	0.5	(1)	1.5
12. Natural valley or drainageway	0	0.5	1	(1.5)
13. At least second order channel on existing USGS or NRCS map	No = (0)		Yes = 3	

B. **Hydrology** (Subtotal = 0.75)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	(0)	1	2	3
15. Water in channel and >48 hours since sig. rain	(0)	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	(0)
17. Sediment on plants or on debris	0	(0.5)	1	1.5
18. Organic debris lines or piles (wrack lines)	0	(0.5)	1	1.5
19. Hydric soils in stream bed or sides of channel	No = (0)		Yes = 1.5	

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

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

Total Points = 7

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

Notes :

#3 - The high gradient channel had a step-pool sequence with few pools
#7 - Gradient is too high
#10 - Drops are part of high gradient step-pool sequence, not actively eroding headcuts