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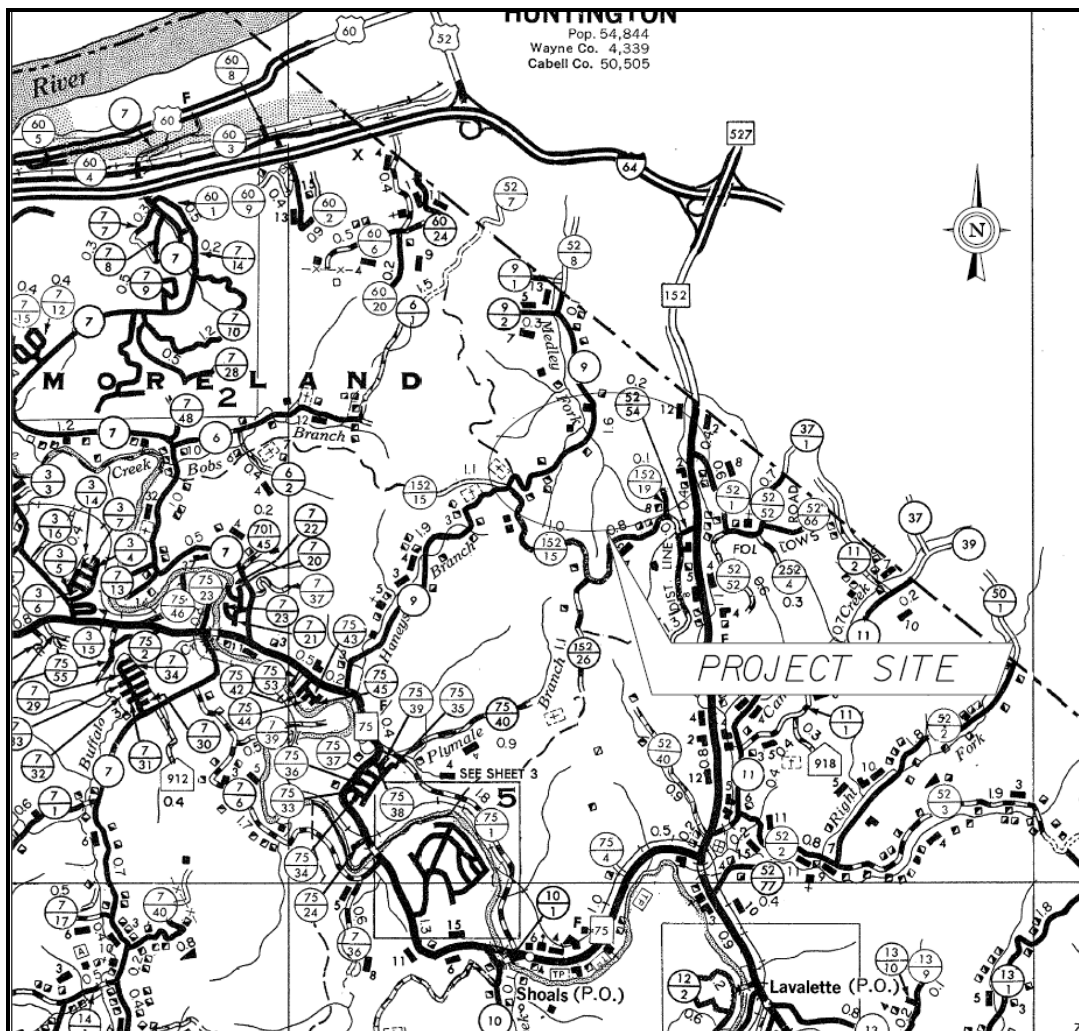
Heritage Farm Museum and
Village Access Road Study

HERITAGE FARM MUSEUM AND VILLAGE ACCESS ROAD STUDY

WAYNE COUNTY COMMISSION

WAYNE COUNTY, WV

DATE: September 1, 2017





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PURPOSE, SCOPE, AND LOCATION

The Thrasher Group has been selected to perform a design study report for a new Access Road that will serve Heritage Farm Museum and Village (Heritage Farm) situated on County Route 9 (CR 9) in Wayne County, WV and the local community. The purpose of the design study is to evaluate and determine the most suitable location for an Access Road from CR 9, to WV Route 152 (WV 152) and to realign the existing Switch Back situated on CR 9 near the CR 152/15 intersection. This study will look at three different Access Road alternatives, one Switch Back alignment and includes an option of no build.

WV 152 is functionally classified as an arterial due to the intersection with I-64 at the Exit 8 interchange in Cabell County, WV. The posted speed limit on WV 152 is 55 mph. The 2015 AADT for WV 152 after the Rebecca Lane intersection is 13,324 and 13,104 at the CR 52/54 intersection. CR 9 is classified as a local road with a posted speed limit of 25 mph. Traffic consists of a variety of all types of vehicles, including trucks, buses, emergency vehicles, mail carriers, and typical passenger vehicles. The 2013 AADT for this roadway is 470 near the WV 75 intersection and 180 between Heritage Farms Museum and Village and WV 152/15 and CR 9 intersection. It was determined that the new access road would be classified as a rural collector since it provided access to a local road from an arterial road.

Information for this study was generated from initial site visits and a detailed survey. Major factors taken into consideration were safety, local community impacts, cost comparison of the alternative alignments, potential for economic development, historic impacts, maintenance of traffic, right of way limits and impacts, and stream relocation and wetland impacts.

Funding acknowledgement: This report was funded and prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration, West Virginia Department of Transportation/Division of Highways, Wayne County Commission, local communities and KYOVA Interstate Planning Commission. With funding was provided via U.S. Department of Transportation Sub allocated Surface Transportation Block Grant Program (STBGP) funds. This report does not constitute a standard, specification or regulation.



BACKGROUND INFORMATION

Founded in 1996, the Heritage Farm Museum and Village's collection includes more than 25,000 square feet of historically significant Appalachian artifacts in seven award-winning museums. Heritage Farm is also home to more than 30 log structures and other reconstructed buildings, artisans, re-enactors and has been featured on The History Channel's "American Pickers" and served as a setting for the channel's documentary about the Hatfields and McCoys.

Around 30,000 people visited Heritage Farm over the past year. Over the past five (5) years the museum has seen an increase in visitation of over 40% and with the potential for future attractions, it is inevitable that the number of guests to the site will continue to grow. The proposed roadway will provide a more direct access and safer route to Heritage Farms and better serve the existing guests and prospective growth in visitors.

The journey to Heritage Farm begins at the intersection of I-64 Exit 8 and WV 152. Heritage Farm traffic must merge onto Johnstown Road, Cabell County Route 52/3 (CR 52/3) from the I-64 westbound entrance ramp. Traffic follows CR 52/3 to the intersection of Harvey Road, Cabell County Route 52/8 (CR 52/8) and crosses a narrow structure over Four Pole Creek. Traffic follows CR 52/8 for approximately 0.50 miles and CR 52/8 becomes Wayne County Route 9 (CR 9). Traffic then follows along CR 9 to Heritage Farm. This existing route travels through local communities along very narrow roads with sharp horizontal curvature and steep vertical grades.

Expansion of the Heritage Farm is planned beyond the current museum. New attractions include:

1. Animal Safari Park. Visitors will be able to interact with wildlife in a first-of-its-kind attraction in West Virginia.
2. Southern Mountain Institute. Through educational hiking trails, observation towers and a lakeside amphitheater, students will experience the wonders of nature like never before.
3. Frontier Adventure Park. Zip lines, rock climbing, man-made whitewater rafting and an aerial challenge course will excite thrill seekers while their families watch on from the relaxing Gristmill Café.
4. Dairy Barn Welcome Center. After entering through this refurbished dairy barn, visitors will journey through time on a covered wagon, riding past replica Native American tipis and early pioneer settlements.
5. Commercial Development. Ample parking will accommodate the surge of park visitors and this tourism will undoubtedly attract a number of commercial developments, such as hotels, shops and restaurants.



6. West Virginia Welcome Center. Servicing both Eastbound and Westbound lanes of I-64, the new West Virginia Welcome Center will give visitors a proper wild and wonderful welcome to the state.
7. Water Park Hotel. With its close proximity to Heritage Farm, this will serve as a prime location for a water park hotel that will draw and entertain tourists from all across the country with its frontier-themed attractions and rides.

EXISTING CONDITIONS

There is no existing route that directly connects WV 152 to CR 9, near Heritage Farm. The current routes to access Heritage Farm are CR 9 from the north via I64, CR 9 from the south via WV 75 and CR 9 from the south via CR 152/15 via CR 52/54.

From the North:

Heritage Farm traffic must merge onto Johnstown Road, CR 52/3 which has an ADT of 1,383 (2013) from the I-64 westbound entrance ramp situated on WV 152. Traffic follows CR 52/3 to the intersection of Harvey Road, Cabell County Route 52/8 (CR 52/8) and crosses a narrow structure over Four Pole Creek. Traffic follows CR 52/8 for approximately 0.50 mile and CR 52/8 becomes Wayne County Route 9 (CR 9) still along Harvey Road. Traffic then follows along CR 9 to Heritage Farm. This provides for a very confusing and unsure route for the driver.

This route consists of a two-lane road that is approximately 18' wide without shoulders and flows through residential neighborhoods with numerous driveways. School buses and emergency vehicles utilize this route and larger vehicles are not ideal for this route. The speed limit through this area is posted at 25 mph.

From the South: The approaches from the south are much more difficult to navigate.

Route 1:

Heritage Farm traffic follows WV 152 to German Ridge Road, CR 152/15. Traffic then follows along CR 152/15 for approximately 2.0 miles to the intersection of Harvey Road CR 9. Traffic then follows CR 9 through a Switch Back with radii less than 30' for approximately 1.0 mile to Heritage Farm.

This route consists of a two-lane unmarked road that is approximately 12'-18' wide without shoulders and flows through residential neighborhoods with numerous driveways. Grades on this route are steep in sections and can approach 14%. School buses and emergency vehicles utilize this route and larger vehicles are not ideal for this route. The intersection with CR 152/15 and WV 152 has horizontal and vertical sight distance challenges from the south and horizontal sight distance challenges from the north.



Route 2:

Heritage Farm traffic can travel east on WV 75 from WV 152 or travel west on WV 75 from WV 152. Once traffic is on WV 75 it will turn north onto CR 9. Traffic then follows along CR 9 for approximately 2.0 miles to the intersection of Harvey Road CR 9 and CR 152/15. Traffic then follows CR 9 through a Switch Back with radii less than 30' for approximately 1.0 mile to Heritage Farm.

This route consists of a two-lane unmarked road that is approximately 12'-18' wide without shoulders and flows through residential neighborhoods with numerous driveways. Grades on this route are steep in sections and can approach 12%. Horizontal curvature has radii less than 30'. School buses and emergency vehicles utilize this route and larger vehicles are not ideal for this route.

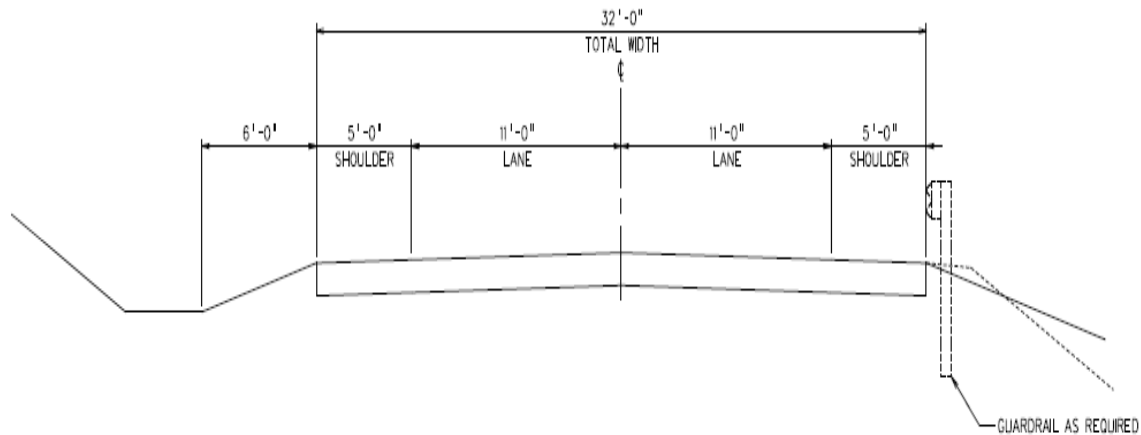
DESIGN CRITERIA

Heritage Farm Access Road will be classified as a Rural Collector roadway. Based on the West Virginia Design Directives, January 1, 2016 the following information can be obtained.

<i>Design Criteria Description</i>	<i>Design Criteria as per DD-610& 601</i>
Terrain Type	Mountainous
Roadway Classification	Rural Collector
Minimum Design Speed	25 mph
Maximum Grade	11% (Table 6-2)
Minimum Roadway Width	20 ft. (Table 6-5)
Minimum Shoulder Width	5 ft. (Table 6-5)
Minimum Stopping Sight Distance	155 ft. (Table 6-3)
Minimum Radii for Design Speed	134 ft. (Table 3-8 – Green Book)
Maximum Superelevation, e (max)	8%



TYPICAL SECTION



ACCESS ROAD TYPICAL SECTION

GEOTECHNICAL OVERVIEW

A Natural Resources Conservation Service report (See Appendix D) was generated for the project area. It was determined that the soils consist of mostly silty loam and silty clay materials. The average depth of soil to bedrock is listed at about 4 feet. The existing slopes range from 15% in the flatter areas to 70% in the steeper areas.

According to the online USGS geologic map of West Virginia, the job site sits in the Monongahela and Conemaugh groups. The Monongahela Group consists of sandstone as the primary rock type with siltstone as the secondary. Siltstone, limestone and coal are also types that can be found in the Monongahela Group. The Conemaugh Group consists of shale as the primary rock type with siltstone as the secondary. Sandstone, limestone and coal are also types that can be found in the Conemaugh Group. Exact location of bedrock will not be available for this report and will be determined at a later date when core borings are obtained.

A review of the WVGES Interactive Coal Maps showed no coal mining activity within any significant distance of the site.

Based on our preliminary geotechnical review, we recommend 2:1 (H:V) slopes in areas of high cuts due to the uncertain location of rock and 2:1 (H:V) fill slopes in all other areas.



ENVIRONMENTAL OVERVIEW

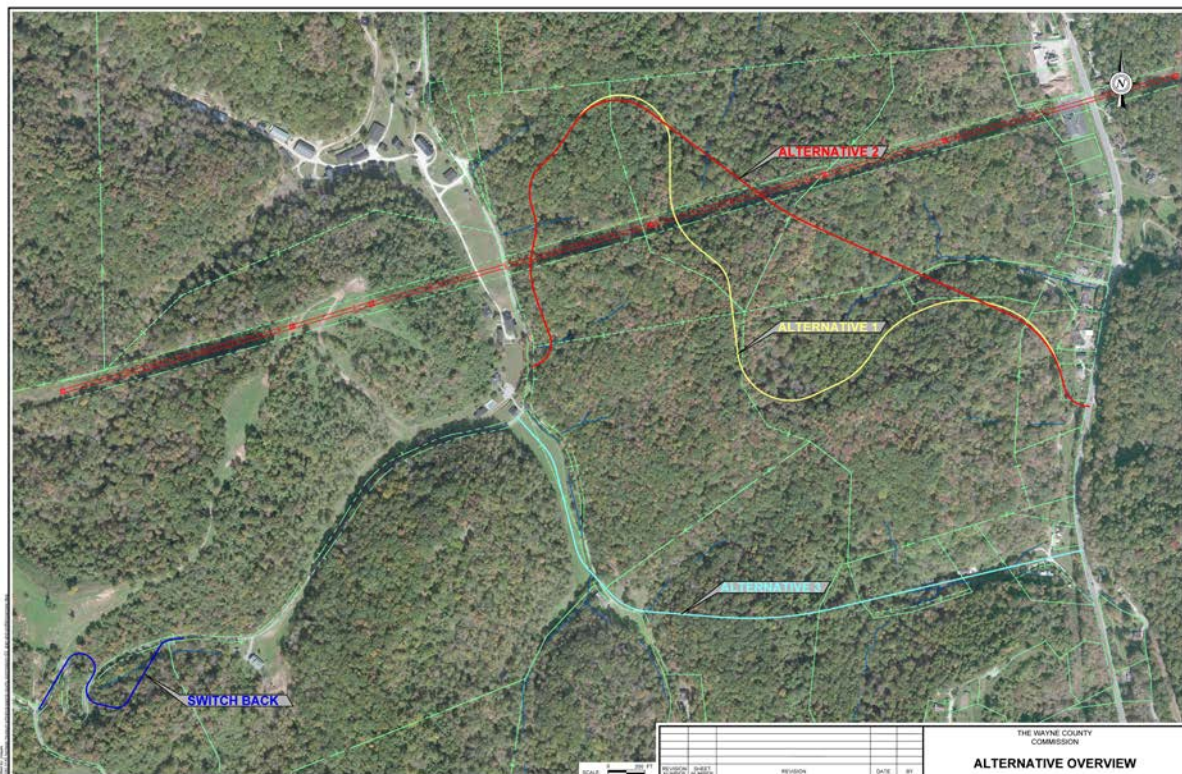
The property owner of Heritage Farm plans to construct an approximate 1.25 mile roadway between CR 9 and WV 152. The new roadway is designed to provide access to Heritage Farm and will consist of a two-lane road that will later be adopted by the West Virginia Department of Highways (WVDOH) and operated as a county route. The general project area is located in the Huntington USGS 7.5 minute quadrangle of Wayne County, West Virginia (WV). The property to be developed consists primarily of undeveloped woodlands, with an electrical powerline right-of-way traversing the property. The mixed hard wood habitat is located on rolling hills, ridgetops, valley bottoms, and side slopes approximately 600 – 1,000 feet above sea level.

During the environmental overview, the Huntington USGS 7.5 minute quadrangle map was reviewed to determine locations of possible aquatic resources. Overall, multiple Unnamed Tributaries (UNTs) of Medley Fork and Hissy Fork are present within the project area. The National Wetland Inventory (NWI) was examined to identify potential water resources along, near, or within the proposed project location. No wetlands are reported within or near the vicinity of the proposed project on the NWI mapper. The West Virginia State Historic Preservation (WVSHPO) interactive map was viewed to identify any architecture points or areas within or near the project area. The Chesapeake and Ohio 1308 Steam Locomotive NPS reference number 02001571 was identified as the nearest point, approximately 2.0 miles north of the property; this point is identified within the National Registry of Historic Places. Additionally, the NRCS web soil survey was examined to determine soil characteristics and additional areas of potential aquatic resources. The soils within or near the proposed project area include the Gilpin-Upshur, Sensabaugh-Vandalia-Urban, Beech-Urban, and Latham-Gilpin, Lobdell complexes. None of these soil complex listed, have a hydric soil rating.

The U.S. Fish & Wildlife Service lists nine (9) species as endangered or threatened candidates within the range of Wayne County: The red knot (*Calidris canufus rufa*), Pink Mucket (*Lampsilis abrupta*), Fanshell (*Cyprogenia stegaria*), Snuffbox mussel (*Plethobasus cyphus*), Sheepnose Mussel (*Plethobasus cyphus*) Big Sandy crayfish (*Cambarus callainus*), Indiana bat (*Myotis sodalis*), Gray Bat (*Myotis grisescens*) and northern long-eared bat (*Myotis septentrionalis*). Of the species listed, five (5) are aquatic mussel or crayfish species which would not habitat in 1st or 2nd order streams located within the project area. The nearest known federally listed mussel waterway is the Ohio River, approximately 2.75 miles north. The nearest terrestrial habitat buffer is located approximate eight (8) miles to the northeast of the project area; therefore, any potential mitigation measures of terrestrial species would be dependent upon project specifics (i.e. tree clearing amounts, cave or mine portals present, or construction timing). Upon project design quantitative impact amounts should be submitted to the USFWS for either technical guidance or to complete a federal nexus consultation, if the project requires a federal permit or federal funding is anticipated.



The alternatives presented are comparing different routes. The maintenance of traffic for each alternative will be similar, each requiring shoulder closure to permit connection of the access road to CR 9 and WV 152. All three Access Road alternatives and Switch Back are based off of 25 mph design speeds.





Alternative #1

This alternative would begin by intersecting CR 9 approximately 0.2 miles south of Heritage Farm. Following existing contours with minimum horizontal radii of 134' and a maximum vertical grade of 10%. This alignment would proceed east for approximately 6,000 linear feet intersecting WV 152 approximately 1.5 miles south of the I-64 Exit 8 interchange.

Intersection site distance is met with this alternative, although some upgrades to the WV 152 intersection may be needed, such as vegetation clearing. A traffic analysis would need to be conducted to determine if a traffic light is warranted at the CR 9 and WV 152 intersections.

This alignment provides access to the top of the ridge between CR 9 and WV 152 and would provide access for development opportunities.

13.2 Acres of property will need to be acquired for construction and Right of Way. One residence will be a total take.

500 linear feet of stream would be impacted with this alternative. This does not include any stream impact incurred from excavation waste sites.

Utilities along CR 9 and WV 152 would need to be relocated in the area of the new intersections. The electric transmission line running east to west would not be impacted. The exact location of the 10" Gas transmission line, owned by Cabot Oil and Gas, is not known. Its approximated location runs parallel to Access Road alternative 1 between station 20+00 and station 35+00.

The estimated cost of Access Road alternative 1 construction is \$8,307,000.00

Alternative #2

This alternative would begin by intersecting CR 9 approximately 0.2 miles south of Heritage Farm. This alignment would proceed east for approximately 4,911 linear feet intersecting WV 152 approximately 1.5 miles south of the I-64 Exit 8 interchange.

Following existing contours at the beginning and end with minimum horizontal radii of 134' and utilizing flatter horizontal curves and longer tangents in the middle portion provides a smoother alignment. Maximum vertical grade of 10% and two large fills are utilized to minimize earthwork volumes waste.



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Intersection site distance is met with this alternative, although some upgrades to the WV 152 intersection may be needed, such as vegetation clearing. A traffic analysis would need to be conducted to determine if a traffic light is warranted at the CR 9 and WV 152 intersections.

This alignment does not provide access to the top of the ridge between CR 9 and WV 152. Additional design and construction would be required for access to development opportunities.

16 Acres of property will need to be acquired for construction and Right of Way. One residence will be a total take.

1,355 linear feet of stream would be impacted with this alternative. Earthwork volume is very balanced on this alternative. No additional stream impact is anticipated.

Utilities along CR 9 and WV 152 would need to be relocated in the area of the new intersections. The electric transmission line running east to west would not be impacted. The exact location of the 10" Gas transmission line, owned by Cabot Oil and Gas, is not known. Its approximated location runs perpendicular to Access Road alternative 2 at station 23+00.

The estimated cost of Access Road alternative 2 construction is \$8,530,000.00

Alternative #3

This alternative would begin by intersecting CR 9 approximately 0.3 miles south of Heritage Farm. This alignment would proceed east for approximately 3,857 linear feet intersecting WV 152 approximately 1.9 miles south of the I-64 Exit 8 interchange.

This alignment has minimum horizontal radii of 300' with a maximum vertical grade of 10%.

Intersection site distance is not met with this alternative. Sight distance looking north on WV 152 from the Access Road alternative 3 does not meet the required calculation. A traffic light is warranted at the WV 152 intersection.

This alignment does not provide access to the top of the ridge between CR 9 and WV 152. Additional design and construction would be required for access to development opportunities.

23 Acres of property will need to be acquired for construction and Right of Way. Four residences will be total take.

1,045 linear feet of stream would be impacted with this alternative. This does not include any stream impact incurred from excavation waste sites.

Utilities along CR 9 and WV 152 would need to be relocated in the area of the new intersections. The electric transmission line running east to west would not be impacted. The exact location of



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the 10" Gas transmission line, owned by Cabot Oil and Gas, is not known. Its approximated impact to Access Road alternative 3 is not known at this time. The estimated costs of Access Road alternative 3 construction is \$9,066,000.00

Switch Back

The Switch Back would begin around the intersection of CR 9 and CR 6 approximately 1.1 miles south of Heritage Farm. This alignment would proceed northeast for approximately 1,411 linear feet to its end.

This alignment has minimum horizontal radii of 75' with a maximum vertical grade of 9.16%.

5 Acres of property will need to be acquired for construction and Right of Way. Zero residences will be affected.

350 linear feet of stream would be impacted with this alternative.

Utilities along CR 9 would need to be relocated in the area of construction. The electric transmission line running east to west would not be impacted. The exact location of the 10" Gas transmission line, owned by Cabot Oil and Gas, is not known. Its approximated impact to the Switch Back is not known at this time.

The estimated costs of the Switch Back construction is \$1,369,800.00

Upgrade Existing Conditions

This option was not considered for this report. To upgrade the existing routes to meet AASHTO and WVDOT design criteria large right of way purchases would need to be made. Most of this right of way would be acquired in the form of total take. Existing utilities along this route run within the WVDOT existing right of way. Any horizontal or vertical alignment change, with additional roadway widening would result in the impact of both above and below ground utilities. This option is just not a feasible option therefore no consideration was given in this study.

No Build

The No Build Alternative would maintain the existing North and South routes to Heritage Farms. These routes consist of a two-lane unmarked road that is approximately 12'-18' wide without shoulders and flows through residential neighborhoods with numerous driveways. Grades on these routes are steep in sections and can approach 14%. Although traffic may continue to travel to Heritage Farms with current routes, larger vehicles, school buses and emergency vehicles will continue to have difficulty safely navigating the roads. Regardless, the No Build Alternative



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would not satisfy one of the original parameters of this study which was to provide a suitable location for an Access Road from CR 9 to WV 152.

ALTERNATIVES SUMMARY

DESCRIPTION	ALTERNATIVE # 1	ALTERNATIVE # 2	ALTERNATIVE # 3	SWITCH BACK	NO BUILD
Construction Costs	\$8,307,000.00	\$8,530,000.00	\$9,066,000.00	\$1,369,800.00	N/A
Roadway Length	6,000 LF	4,911 LF	3,857 LF	1,411 LF	N/A
Economic Development Potential	YES	NO	NO	NO	N/A
Historic Impacts	NO	NO	NO	NO	N/A
Maintenance of Traffic	YES	YES	YES	YES	N/A
Right of Way Impacts	13.2 Acres	16 Acres	23 Acres	5 Acres	N/A
Community Impacts	YES	YES	YES	NO	N/A
Stream Relocation and Wetland Impacts	YES	YES	YES	YES	N/A
Constructability	2	2	1	1	N/A
Construction Time	2	2	1	1	N/A
Business Interruption	1	1	1	1	N/A
Traffic Flow	1	1	1	1	N/A
Property Disturbance	2	3	4	1	N/A
Cost	2	3	4	1	N/A

(Rank from 1 to 3 with 1 being the most favorable and 3 the least)

RECOMMENDATION

Based on information available at the time of this report, the Thrasher Group recommends Alternative # 1. The alternative provides the most economical path while reducing property disturbance and minimizing right of way impacts. The recommended alignment provides a direct access route from WV 152 to CR 9 and still allows for potential economic development off the roadway.

The next step in making the roadway a reality would be to start a more detailed design. The design process would first start by performing a detailed environmental delineation of the proposed alignment. Along with the environmental assessment, soil core borings would be performed along the alignment to determine the characteristics of the soils. The core borings will aid in the



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design of the cut and fill slopes and help finalize the final earthwork values and costs. Once the construction limits are generated, right of limits will be defined and final construction plans will be generated. During the design process, all necessary permits will be completed and submitted

for approval. The overall goal of the design is to produce a set of construction plans to enable funds to be granted, the project to be built, and for the roadway to be acceptable by WVDOT and for them to eventually own and maintain.



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Appendix A



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Road Construction (Alternative 1): 6,000 LF Road Grading, Stone, and Asphalt					
DESCRIPTION	QUANTITY		UNIT PRICE		TOTAL PRICE
Clearing and Grubbing	24.00	AC @	3,800.00	/AC	\$91,200.00
Mobilization	1	LS @	35,000.00	/LS	\$35,000.00
Unclassified Excavation	947,759	CY @	4.00	/CY	\$3,791,036.00
Construction Layout Stake	1	LS @	20,000.00	/LS	\$20,000.00
Erosion & Sediment Control	1	LS @	100,000.00	/LS	\$100,000.00
Dump Rock Gutter	3,000	CY @	65.00	/CY	\$195,000.00
Seeding and Mulching	1	LS @	24,000.00	/LS	\$24,000.00
Erosion Matting, Type "A"	5,000	SY @	4.50	/SY	\$22,500.00
1.5" Marshall HMA Skid Pvt, Stone or Gravel Type 1	1,320	TN @	110.00	/TN	\$145,200.00
6.5" Marshall HMA Base Crse, Stone or Gravel Type 1	6,060	TN @	100.00	/TN	\$606,000.00
6" Aggregate Base Course Type 1	3,910	CY @	65.00	/CY	\$254,150.00
Fabric for Separation	24,120	SY @	1.75	/SY	\$42,210.00
6" Subgrade	4,140	CY @	65.00	/CY	\$269,100.00
8" Min. Aggrgate Base Course Class 10 (Shoulder)	980	CY @	70.00	/CY	\$68,600.00
Type 1 Guardrail, Class 1	6,000	LF @	22.00	/LF	\$132,000.00
Pavement Striping	24,000	LF @	0.30	/LF	\$7,200.00
Traffic Signs	10	EA @	350.00	/EA	\$3,500.00
48" Corrugated Polyethylene Pipe	310	LF @	250.00	/LF	\$77,500.00
24" Metallic Coated Corrugated Steel Pipe	1,650	LF @	100.00	/LF	\$165,000.00
Type G Inlet	30	EA @	3200	/EA	\$96,000.00
Right of Way	13.2	AC @	5,000.00	AC	\$66,000.00
Property Acquisition	1	LS @	250,000.00	/LS	\$250,000.00
Subtotal					\$6,461,196.00
Construction Contingency @ 10%					\$646,119.60
Road Construction Total					\$7,107,315.60
			SAY		\$7,107,000.00
Additional Project Costs					
Administration					\$30,000.00
Engineering / Inspection / Special Services					\$755,000.00
Legal					\$15,000.00
Environmental Mitigation					\$400,000.00
Additional Project Costs Total					\$1,200,000.00
TOTAL PROJECT COST					\$8,307,000.00



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Road Construction (Alternative 2): 4,911 LF Road Grading, Stone, and Asphalt				
DESCRIPTION	QUANTITY	UNIT PRICE		TOTAL PRICE
Clearing and Grubbing	21.00 AC@	3,800.00 /AC		\$79,800.00
Mobilization	1 LS@	35,000.00 /LS		\$35,000.00
Unclassified Excavation	906,910 CY@	4.00 /CY		\$3,627,640.00
Construction Layout Stake	1 LS@	20,000.00 /LS		\$20,000.00
Erosion & Sediment Control	1 LS@	25,000.00 /LS		\$25,000.00
Dump Rock Gutter	3,000 CY@	22.00 /CY		\$66,000.00
Seeding and Mulching	1 LS@	24,000.00 /LS		\$24,000.00
Erosion Matting, Type "A"	5,000 SY@	4.50 /SY		\$22,500.00
1.5" Marshall HMA Skid Pvt, Stone or Gravel Type 1	1,080 TN @	110.00 /TN		\$118,800.00
6.5" Marshall HMA Base Crse, Stone or Gravel Type 1	4,960 TN @	100.00 /TN		\$496,000.00
6" Aggregate Base Course Type 1	3,120 CY @	65.00 /CY		\$202,800.00
Fabric for Separation	19,750 SY @	1.75 /SY		\$34,562.50
6" Subgrade	3,385 CY @	65.00 /CY		\$220,025.00
8" Min. Aggrgate Base Course Class 10 (Shoulder)	800 CY @	70.00 /CY		\$56,000.00
Type 1 Guardrail, Class 1	6,265 LF @	22.00 /LF		\$137,830.00
Pavement Striping	19,644 LF@	0.30 /LF		\$5,893.20
Traffic Signs	10 EA@	350.00 /EA		\$3,500.00
48" Corrugated Polyethylene Pipe	1,180 LF @	250.00 /LF		\$295,000.00
24" Metallic Coated Corrugated Steel Pipe	1,375 LF @	100.00 /LF		\$137,500.00
Type G Inlet	25 EA@	3200 /EA		\$80,000.00
Right of Way	16 AC@	5,000.00 AC		\$80,000.00
Property Acquisition	1 LS@	250,000.00 /LS		\$250,000.00
Subtotal				\$6,017,850.70
Construction Contingency @ 10%				\$601,785.07
Road Construction Total				\$6,619,635.77
		SAY		\$6,620,000.00
Additional Project Costs				
Administration				\$30,000.00
Engineering / Inspection / Special Services				\$775,000.00
Legal				\$15,000.00
Environmental Mitigation				\$1,090,000.00
Additional Project Costs Total				\$1,910,000.00
TOTAL PROJECT COST				\$8,530,000.00



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Road Construction (Alternative 3): 3,857 LF Road Grading, Stone, and Asphalt					
DESCRIPTION	QUANTITY		UNIT PRICE		TOTAL PRICE
Clearing and Grubbing	16.00	AC @	3,800.00	/AC	\$60,800.00
Mobilization	1	LS @	35,000.00	/LS	\$35,000.00
Unclassified Excavation	1,004,058	CY @	4.00	/CY	\$4,016,232.00
Construction Layout Stake	1	LS @	20,000.00	/LS	\$20,000.00
Erosion & Sediment Control	1	LS @	25,000.00	/LS	\$25,000.00
Dump Rock Gutter	3,000	CY @	22.00	/CY	\$66,000.00
Seeding and Mulching	1	LS @	24,000.00	/LS	\$24,000.00
Erosion Matting, Type "A"	5,000	SY @	4.50	/SY	\$22,500.00
1.5" Marshall HMA Skid Pvt, Stone or Gravel Type 1	830	TN @	110.00	/TN	\$91,300.00
6.5" Marshall HMA Base Crse, Stone or Gravel Type 1	3,800	TN @	100.00	/TN	\$380,000.00
6" Aggregate Base Course Type 1	2,450	CY @	65.00	/CY	\$159,250.00
Fabric for Separation	15,105	SY @	1.75	/SY	\$26,433.75
6" Subgrade	2,600	CY @	65.00	/CY	\$169,000.00
8" Min. Aggrgate Base Course Class 10 (Shoulder)	615	CY @	70.00	/CY	\$43,050.00
Type 1 Guardrail, Class 1	3,760	LF @	22.00	/LF	\$82,720.00
Pavement Striping	15,028	LF @	0.30	/LF	\$4,508.40
Traffic Signs	10	EA @	350.00	/EA	\$3,500.00
48" Corrugated Polyethylene Pipe	320	LF @	250.00	/LF	\$80,000.00
24" Metallic Coated Corrugated Steel Pipe	523	LF @	100.00	/LF	\$52,250.00
Type G Inlet	10	EA @	3200	/EA	\$30,400.00
Right of Way	23	AC @	5,000.00	AC	\$113,500.00
Property Acquisition	1	LS @	1,000,000.00	/LS	\$1,000,000.00
Subtotal					\$6,505,444.15
Construction Contingency @ 10%					\$650,544.42
Road Construction Total					\$7,155,988.57
			SAY		\$7,156,000.00
Additional Project Costs					
Administration					\$30,000.00
Engineering / Inspection / Special Services					\$775,000.00
Legal					\$15,000.00
Environmental Mitigation					\$1,090,000.00
Additional Project Costs Total					\$1,910,000.00
TOTAL PROJECT COST					\$9,066,000.00



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Heritage Farm Museum and
Village Access Road Study

Road Construction (SWITCH BACK): 1,411 LF Road Grading, Stone, and Asphalt					
DESCRIPTION	QUANTITY		UNIT PRICE		TOTAL PRICE
Clearing and Grubbing	6.50	AC @	3,800.00	/AC	\$24,700.00
Mobilization	1	LS @	35,000.00	/LS	\$35,000.00
Unclassified Excavation	76,427	CY@	4.00	/CY	\$305,708.00
Construction Layout Stake	1	LS @	20,000.00	/LS	\$20,000.00
Erosion & Sediment Control	1	LS @	10.00	/LS	\$10.00
Dump Rock Gutter	500	CY@	22.00	/CY	\$11,000.00
Seeding and Mulching	1	LS @	24,000.00	/LS	\$24,000.00
Erosion Matting, Type "A"	1,000	SY@	4.50	/SY	\$4,500.00
1.5" Marshall HMA Skid Pvt, Stone or Gravel Type 1	310	TN @	110.00	/TN	\$34,100.00
6.5" Marshall HMA Base Crse, Stone or Gravel Type 1	1,425	TN @	100.00	/TN	\$142,500.00
6" Aggregate Base Course Type 1	920	CY @	65.00	/CY	\$59,800.00
Fabric for Separation	5,675	SY @	1.75	/SY	\$9,931.25
6" Subgrade	975	CY @	65.00	/CY	\$63,375.00
8" Min. Aggrgate Base Course Class 10 (Shoulder)	230	CY @	90.00	/CY	\$20,700.00
Type 1 Guardrail, Class 1	750	LF @	22.00	/LF	\$16,500.00
Pavement Striping	5,644	LF@	0.30	/LF	\$1,693.20
Traffic Signs	4	EA@	350.00	/EA	\$1,400.00
36" Corrugated Polyethylene Pipe	250	LF @	225.00	/LF	\$56,250.00
24" Metallic Coated Corrugated Steel Pipe	90	LF @	160.00	/LF	\$14,400.00
Type G Inlet	3	EA@	3200	/EA	\$9,600.00
Right of Way	5	AC@	5,000.00	AC	\$25,250.00
Subtotal					\$880,417.45
Construction Contingency @ 10%					\$88,041.75
Road Construction Total					\$968,459.20
			SAY		\$968,000.00
Additional Project Costs					
Administration					\$15,000.00
Engineering / Inspection / Special Services					\$96,800.00
Legal					\$15,000.00
Environmental Mitigation					\$275,000.00
Additional Project Costs Total					\$401,800.00
TOTAL PROJECT COST					\$1,369,800.00



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Heritage Farm Museum and
Village Access Road Study

Appendix B

ALTERNATIVE 1 - OWNERSHIP INDEX

[illegible]

ALTERNATIVE 2 - OWNERSHIP INDEX

[illegible]

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 2 - OWNERSHIP INDEX

ALTERNATIVE 3 - OWNERSHIP INDEX

[illegible]

SWITCH BACK - OWNERSHIP INDEX

[illegible]



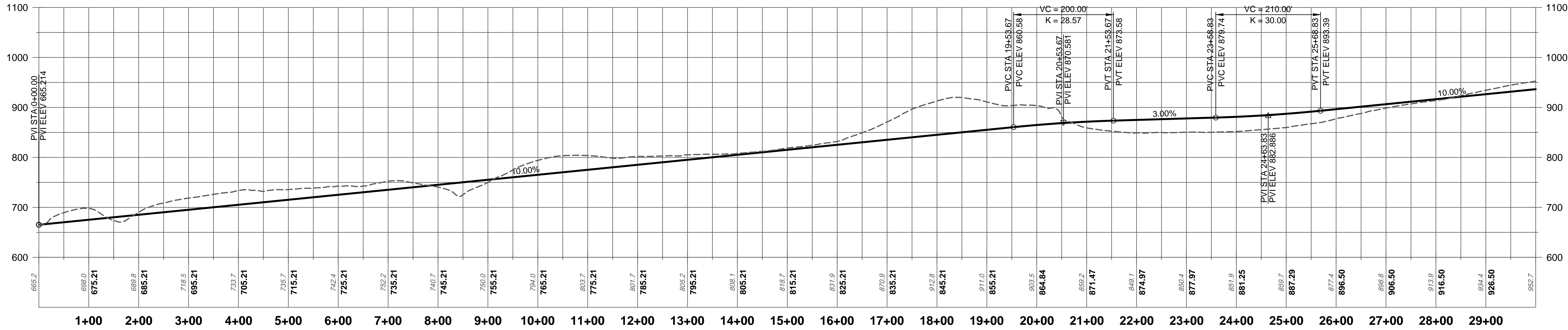
THRASHER

Heritage Farm Museum and
Village Access Road Study

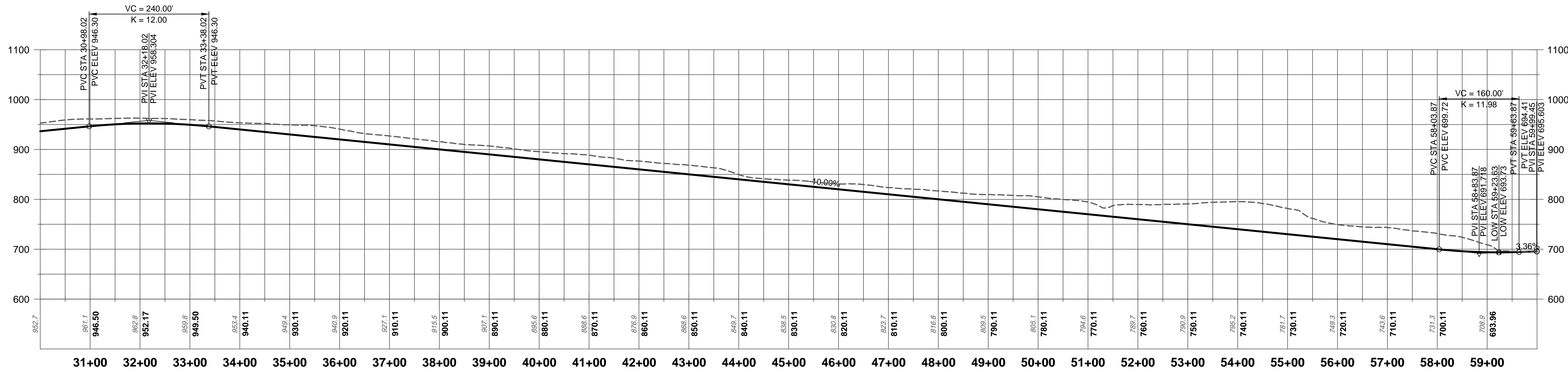
Appendix C

ALTERNATIVE #1

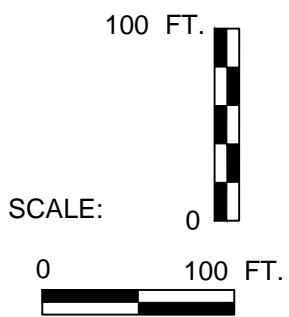
Plotted by jmayes
03/25/2024 Wayne County Commission 03 - plan and profile option 1.dwg



ALTERNATIVE 1 - PROFILE STA 0+00 TO STA 30+00



ALTERNATIVE 1 - PROFILE STA 30+00 TO END



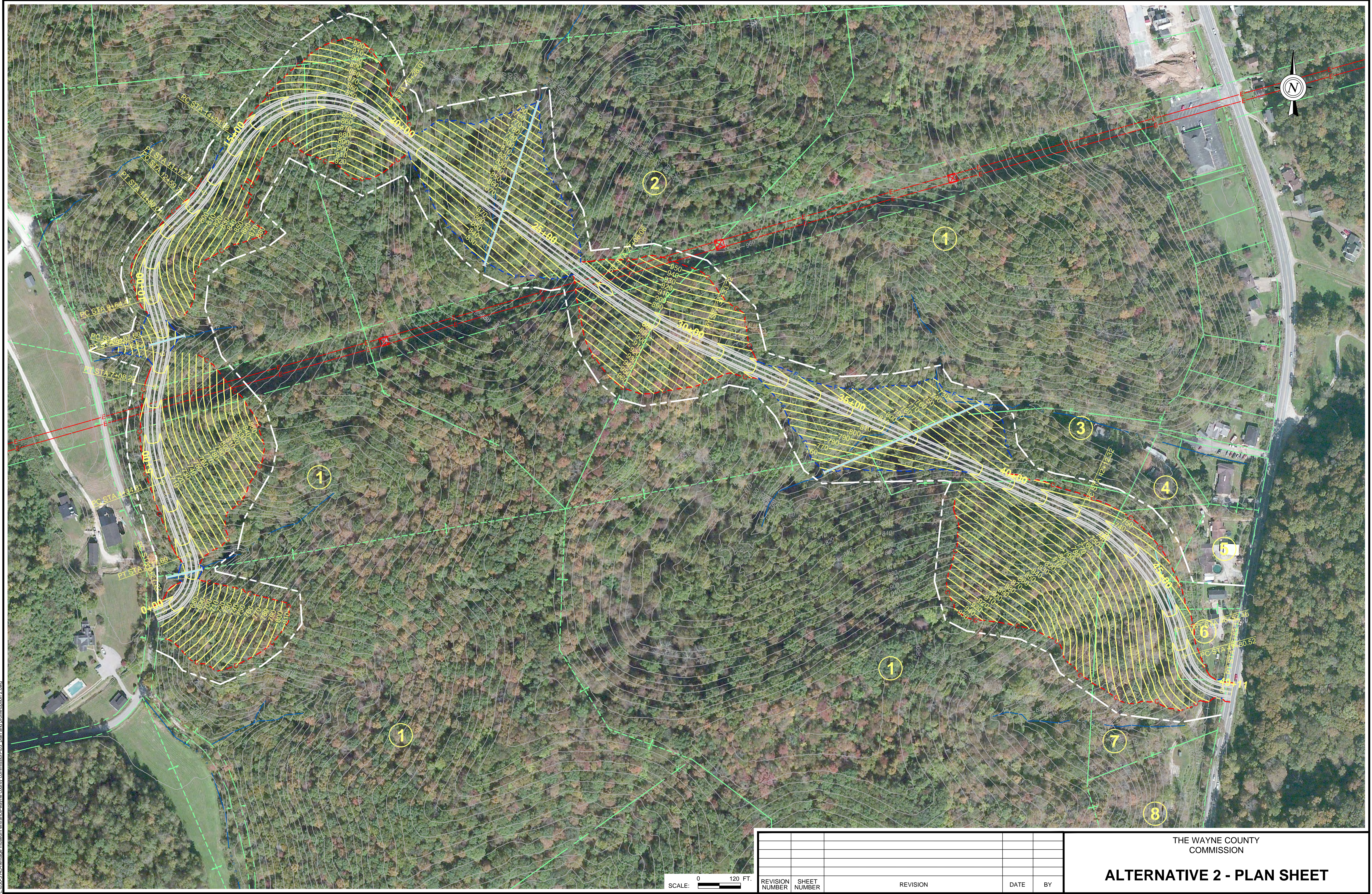
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 1 - PROFILE SHEET

ALTERNATIVE #2

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03/25/2024
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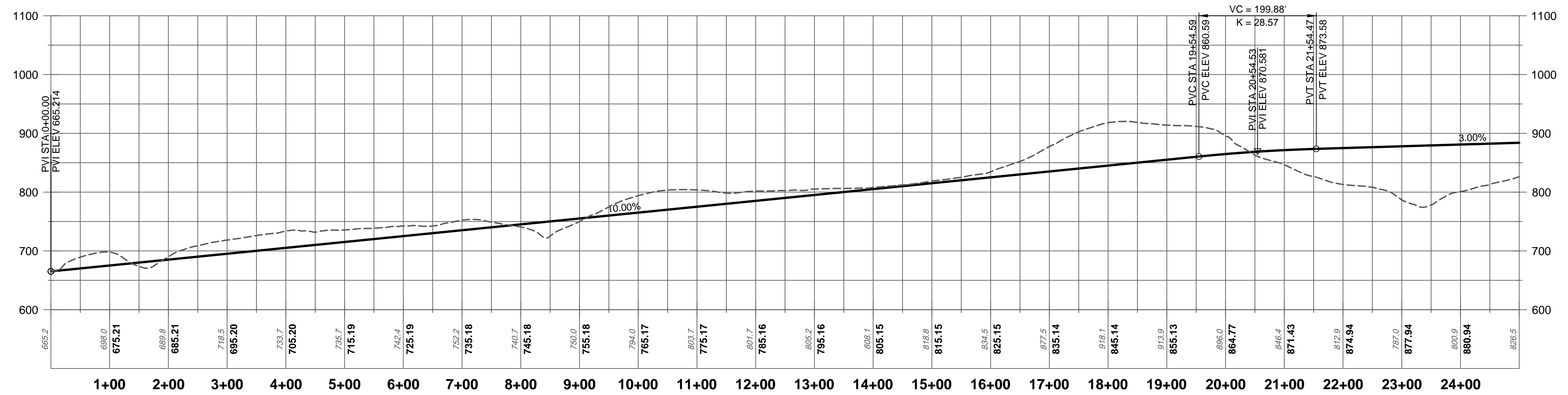


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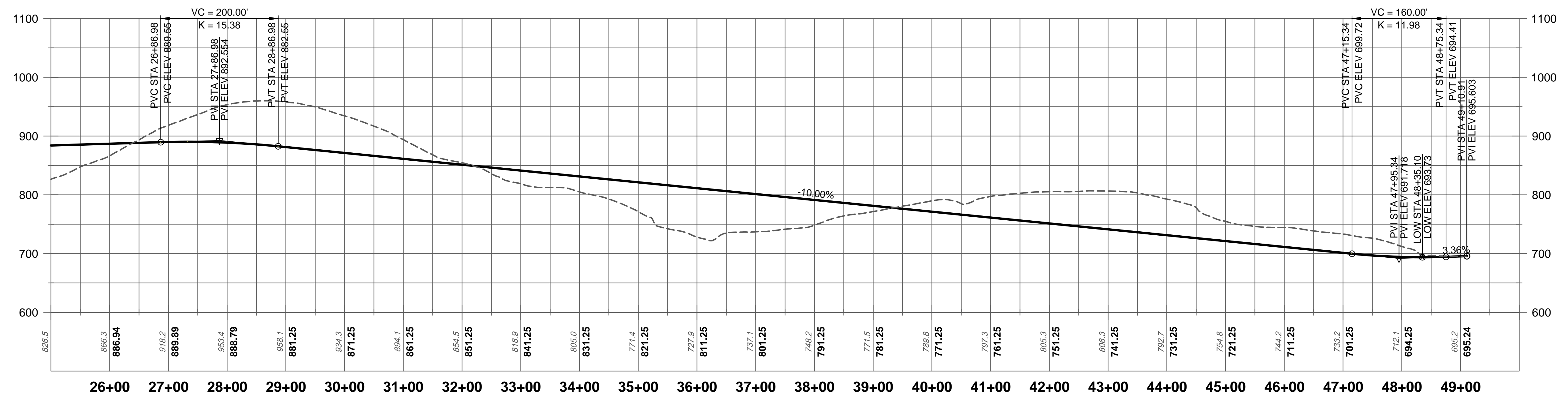
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 2 - PLAN SHEET

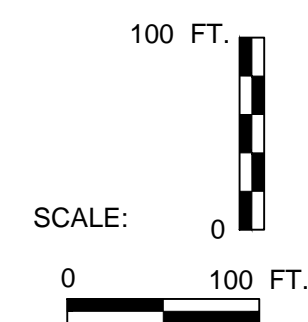


ALTERNATIVE 2 - PROFILE STA 0+00 TO STA 25+00



ALTERNATIVE 2 - PROFILE STA 25+00 TO END

Plotted by jmayes
08/25/2014
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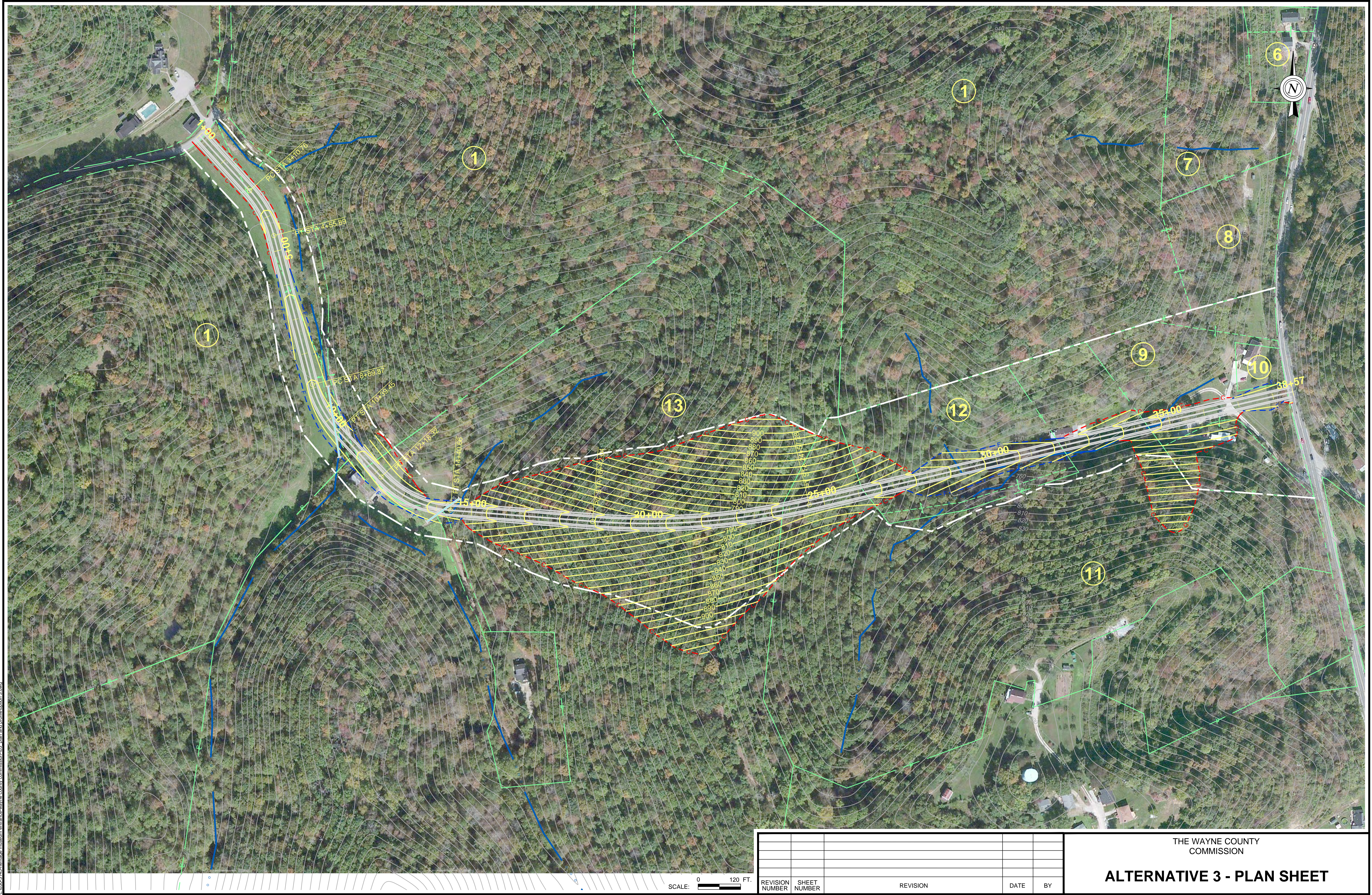
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THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 2 - PROFILE SHEET

ALTERNATIVE #3

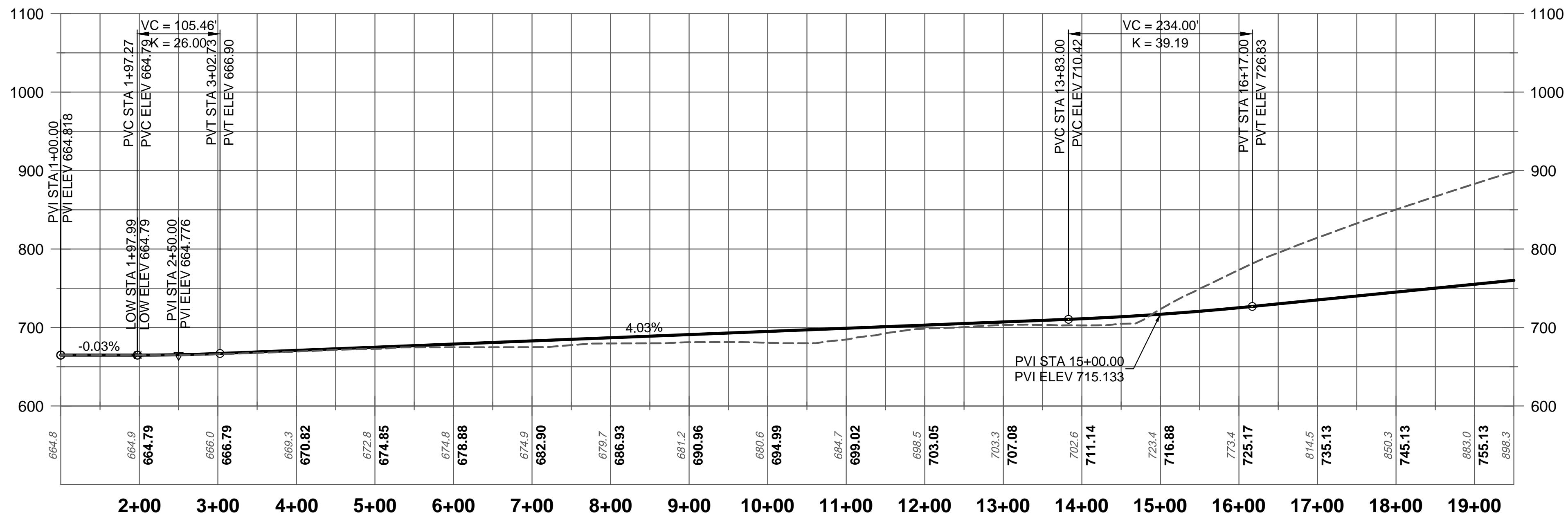
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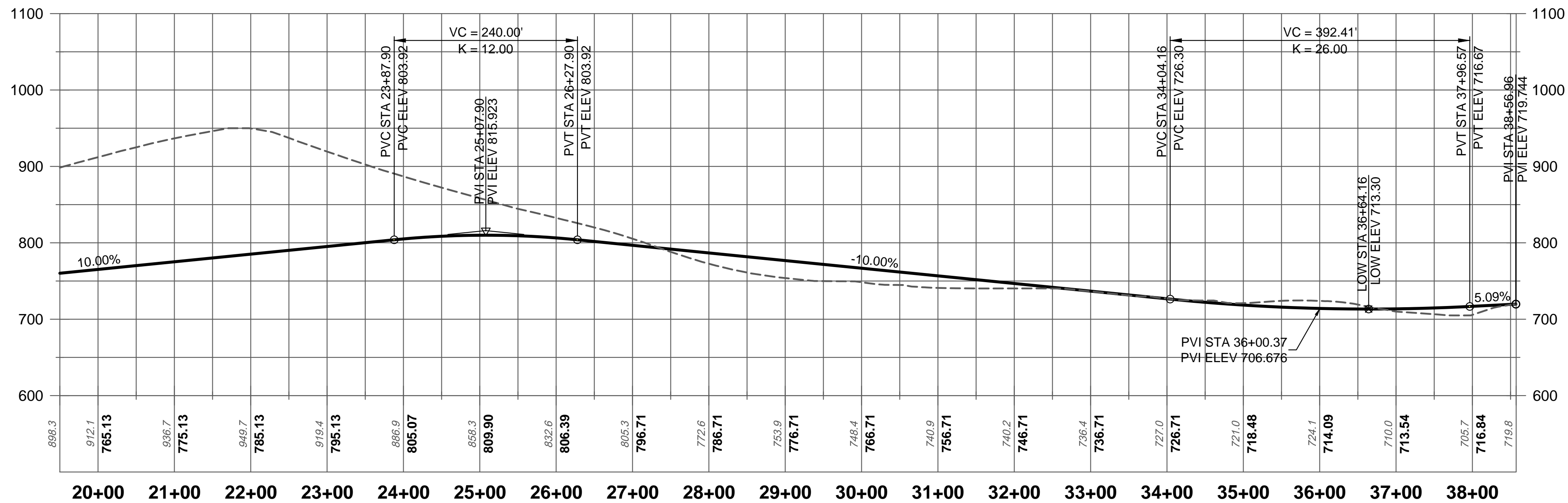
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 3 - PLAN SHEET

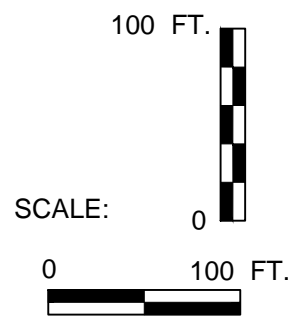


ALTERNATIVE 3 - PROFILE STA 1+00 TO STA 19+50



ALTERNATIVE 3 - PROFILE STA 19+50 TO END

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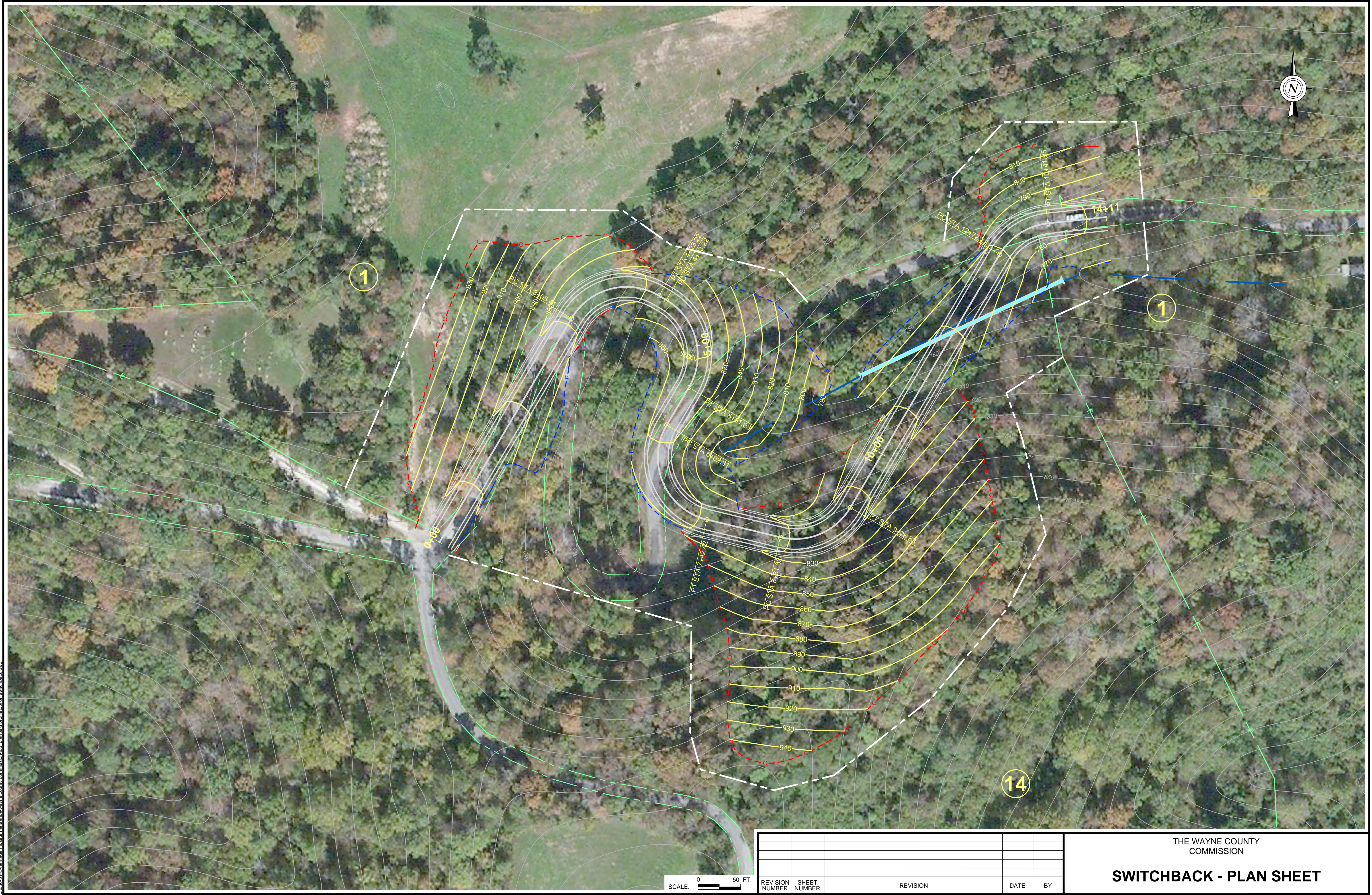
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

THE WAYNE COUNTY
COMMISSION

ALTERNATIVE 3 - PROFILE SHEET

SWITCH BACK

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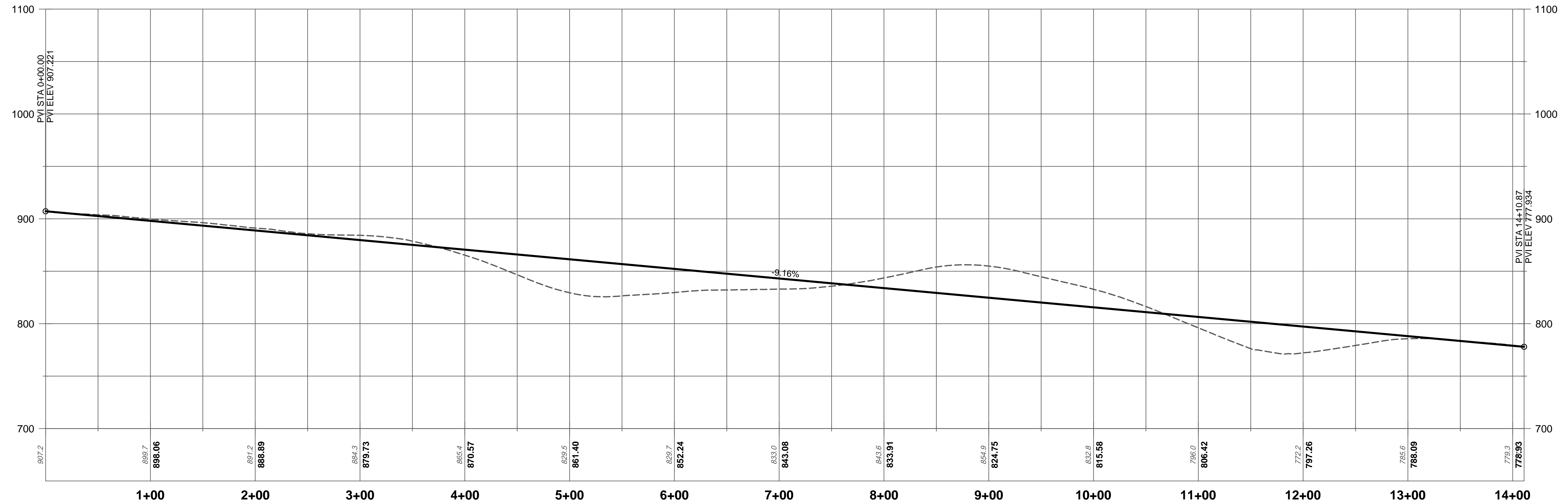
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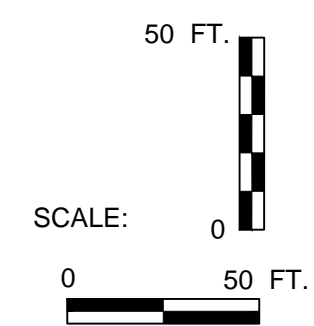
THE WAYNE COUNTY
COMMISSION

SWITCHBACK - PLAN SHEET

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SWITCH BACK - PROFILE



REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WAYNE COUNTY
COMMISSION

SWITCHBACK - PROFILE SHEET



THRASHER

Heritage Farm Museum and
Village Access Road Study

Appendix D



United States
Department of
Agriculture

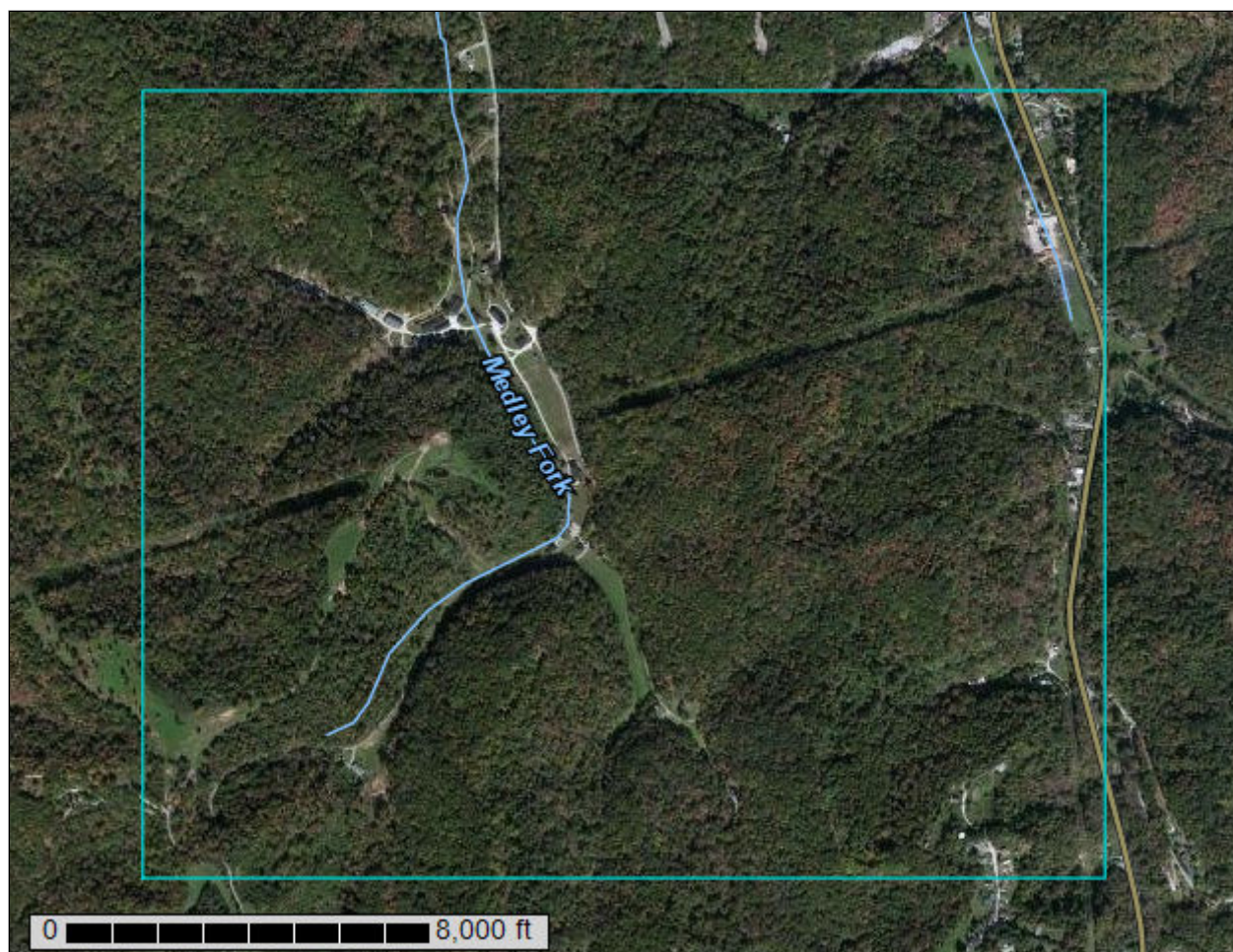
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Cabell County, West Virginia, and Wayne County, West Virginia

**Heritage Farm Museum and
Village Access Road**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made	5
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Soil Map.....	9
Legend.....	10
Map Unit Legend.....	12
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

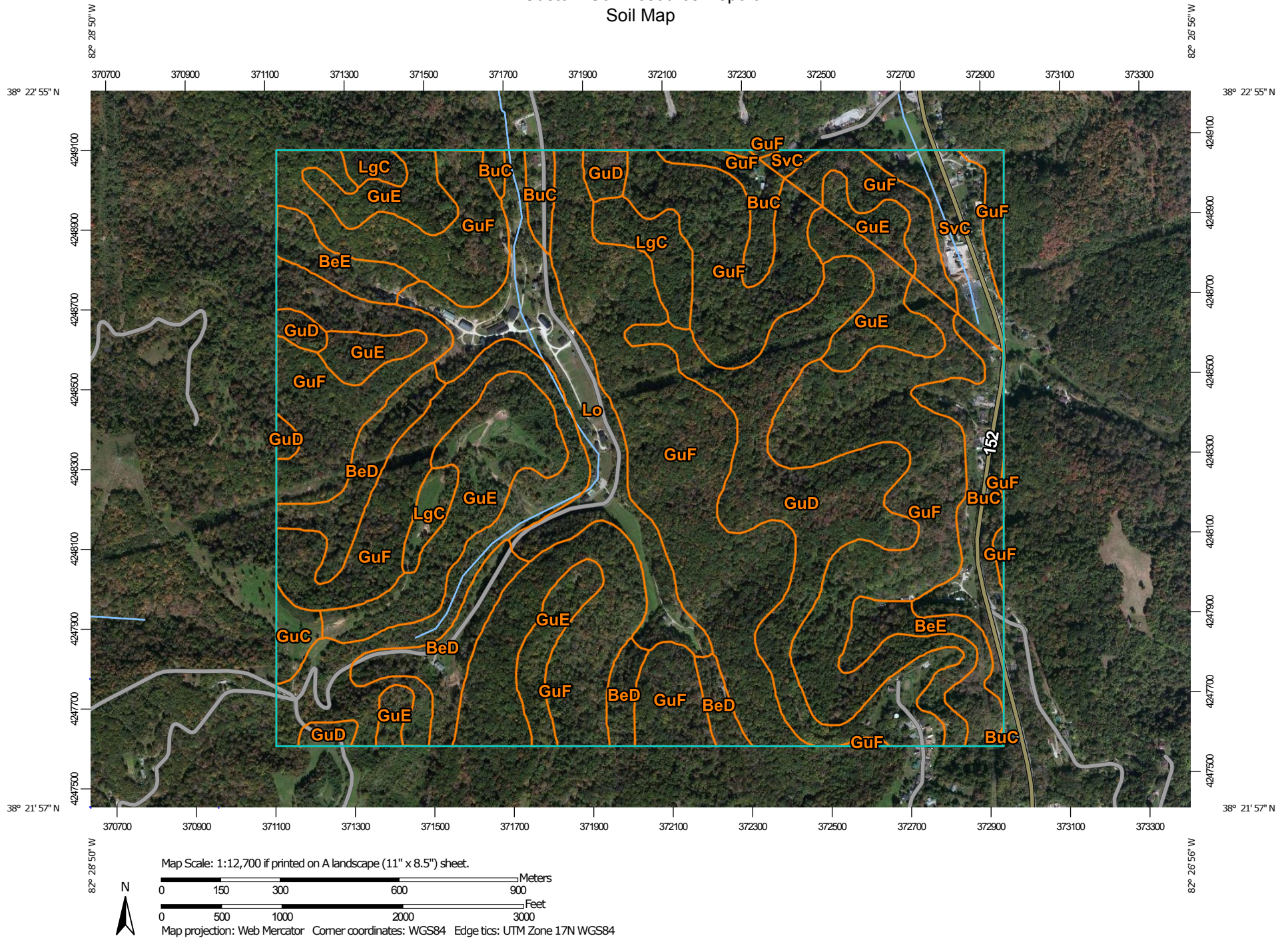
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


Custom Soil Resource Report Soil Map



Custom Soil Resource Report


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 scales ranging from 1:20,000 to 1:24,000.

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: Cabell County, West Virginia

Survey Area Data: Version 11, Sep 24, 2015

Soil Survey Area: Wayne County, West Virginia

Survey Area Data: Version 9, Sep 24, 2015

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Aug 17, 2011—Oct 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cabell County, West Virginia (WV011)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GuE	Gilpin-Upshur complex, 25 to 35 percent slopes	5.7	0.8%
GuF	Gilpin-Upshur complex, 35 to 70 percent slopes	15.8	2.3%
SvC	Sensabaugh-Vandalia-Urban land complex, 3 to 15 percent slopes	17.9	2.6%
Subtotals for Soil Survey Area		39.4	5.8%
Totals for Area of Interest		678.2	100.0%

Wayne County, West Virginia (WV099)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeD	Beech loam, 15 to 25 percent slopes	36.1	5.3%
BeE	Beech loam, 25 to 35 percent slopes	21.0	3.1%
BuC	Beech-Urban land complex, 3 to 15 percent slopes	36.5	5.4%
GuC	Gilpin-Upshur silt loams, 8 to 15 percent slopes	4.3	0.6%
GuD	Gilpin-Upshur silt loams, 15 to 25 percent slopes	73.1	10.8%
GuE	Gilpin-Upshur silt loams, 25 to 35 percent slopes	71.1	10.5%
GuF	Gilpin-Upshur silt loams, 35 to 70 percent slopes	335.2	49.4%
LgC	Latham-Gilpin complex, 8 to 15 percent slopes	17.2	2.5%
Lo	Lobdell loam, 0 to 3 percent slopes, occasionally flooded	44.3	6.5%
Subtotals for Soil Survey Area		638.8	94.2%
Totals for Area of Interest		678.2	100.0%

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Custom Soil Resource Report

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