Mine Land Property Evaluation for Solar Farm Development

Horse Creek Coal Land Company Property

Julian, Boone County, WV

Prepared for:

WV Office Of Energy

A Division of the West Virginia Development Office

WEST VIRGINIA OFFICE OF ENERGY

Report financially assisted through a grant administered by the U.S. Department of Energy

Prepared by:

Marshall University

Center for Environmental, Geotechnical and Applied Sciences and

Marshall University's
WV Brownfields Assistance Center

MARSHALL

CEGAS

Center for Environmental, Geotechnical and Applied Sciences

ACKNOWLEDGMENT: The development of this report was financially assisted through a grant administrated by the U.S. Department of Energy. This report was prepared through a cooperative effort by the WEST VIRGINIA OFFICE OF ENERGY and Marshall University Research Corporation (MURC) and compiled by Marshall University's Center for Environmental, Geotechnical and Applied Sciences (CEGAS).

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Introduction / Report Background

Marshall University's Center for Environmental, Geotechnical and Applied Sciences (CEGAS) and its West Virginia Brownfields Assistance Center were retained by the West Virginia Office of Energy, a division of the West Virginia Development Office, to complete limited property evaluation studies on select mine land properties for potential large-scale solar farm use. This specific evaluation is for the Horse Creek Coal Land Company property, formerly part of the Hobet 21 surface mine, and includes information obtained from multiple sources regarding site-specific information and conditions, local area demographics, available electric utilities, and interaction with the property owner. The purpose of this evaluation is to provide sufficient information on the subject property for potential redevelopment and/or reuse considerations by interested parties for solar farm use. CEGAS believes, to the best of its knowledge, that the information contained in the report is accurate at the time of compilation; however, no guarantees are warranted. It is ultimately the responsibility of interested parties to perform their own due diligence in fully evaluating the subject property for potential new development.

Site Name and Location

Horse Creek Coal Land property is located in the central southern part of West Virginia (WV) in Boone and Lincoln County near the unincorporated town of Julian and the incorporated town of Danville. The property is located approximately 25 miles southwest of Charleston, WV. The property can be accessed directly from Charleston via U.S. Route 119 / Corridor G. Private roads formerly used for surface mine operations transect the property. A site location map is provided as an attachment.

The entire property is comprised of approximately 4,540 acres, and is listed on the West Virginia Property Viewer (mapwv.gov/parcel) on one tract:

District: 5 (Scott) Map: 0011 Parcel: 0018 Book: B2 Page: 286

Current Property Owner

The property is owned entirely by the Horse Creek Coal Land Company. The Horse Creek Coal Land Company contact for this property is:

Ellen McCurdy, COO
Horse Creek Coal Land Company
4020 Green Mount Crossing Dr, Ste 304
Shiloh, IL 62269
(314) 856-5828
HCCLCO@gmail.com

Site History and Current Status

The property has been utilized for underground and surface coal extraction for multiple decades, beginning in the early 1970s. The mining complex was historically part of Hobet 21 Mine, one of the largest surface mine operations in WV and throughout Appalachia. Operations included the use of a multi-mile surface beltline to transfer coal from the mine face to the preparation facility for washing and loading. Hobet 21 Mine was known for utilizing one of the largest drag-line operations in the world, reportedly producing up to 1.8 million tons of coal per year for many years. Hobet 21 Mine helped Boone County to be ranked as one of the highest producing coal counties in WV.

Currently, the property has no coal extraction operations occurring. Most of the site has been completely reclaimed. One section currently contains a coal refuse disposal area that will require reclamation prior to redevelopment and subsequent use. Four general locations are included in this evaluation, all located in Boone County. The locations are identified as: Area A, Area B, Area C and Area D. Area A includes ~110 acres; Area B includes ~25 acres; Area C includes ~97 acres; and Area D includes 214 acres. All four areas are located outside of any floodplains. Site maps and aerial photos of each location are included as attachments. (Note - property boundaries indicated on each site map are based on information obtained from the WV Map Viewer and may or may not be completely accurate. For more accurate data, a field survey based on actual property deeds should be conducted). Aerial videos of each location, collected in September of 2021, can be viewed using the following web links:

Horse Creek Property Video - https://youtu.be/2D1gJ6tjDCE

As seen on the aerial photos and videos, all areas have post-mine land growth, including small to large trees, bushes, fields and overgrown brushy areas throughout. No additional reclamation activities are anticipated within any areas, except for the coal refuse disposal location in Area A. Consultation with the WV Department of Environmental Protection will be required as part of site redevelopment efforts.

Active natural gas wells are located throughout property and are not owned by Horse Creek Coal Land Company. Future development on the property will need to include access to gas wells.

Local Area Summary

Boone County is located within the Charleston, WV Metropolitan Statistical Area, the largest metropolitan area entirely within West Virginia. This area has an estimated total population of 257,074. The local area associated with this property is within a primarily rural setting. Boone County has a population of only 21,457 in an area of 503 square miles (<43 people per square mile). The local Town of Danville has a population of 870 (population data from U.S. Census Bureau, 2019 estimates). No residences are located within the immediate vicinity of the property.

Boone County's history is deeply steeped in bituminous coal extraction. By the 1950s, Boone County was a top producing coal county in WV. From the 1980s through the early 2000s, Boone County was the top producing coal county in the eastern U.S. From ~2009 to 2015, coal production in Boone County declined by ~80% (ARC Study "Overview of Coal Economy in Appalachia", January 2018)).

Electric Utility Summary

Electric service is provided by Appalachian Power Company, a unit of American Electric Power Company, Inc. Three-phase power is available in the general vicinity of the property. The Beth Metering Station is located to the south of the property, within ~1.75 miles of Area A and ~2.5 mile of Area D. 765 KV electric transmission lines are located

approximately 0.75 miles to the west of Area D, and 115-138 KV electric lines are located approximately 1.75 miles to the east of Area A. A map depicting electric power lines in the vicinity of all of the areas is provided as an attachment. Additional power lines previously owned and used by the coal company are present near the property, used historically for coal removal and related operations.

Potential Solar Farm Use

Each area has been evaluated using best available topographic information, including elevation Light Detection and Ranging (LIDAR) data collected in 2010 by the West Virginia Division of Environmental Protection (WVDEP). Since 2010, minimal topographic changes have occurred in either area evaluated. The areas were evaluated using 10% and 15% maximum slope factors to determine available land potentially suitable for solar farm development. Using ESRI's ArcMap geographic information system software, slope analysis was calculated from LIDAR referenced data. Maps of the areas depicting slope characteristics are provided as attachments. A summary of each area is provided on the following table:

Location	Total Acreage	10% Slope or Less (acres)	15% Slope or Less (acres)
Area A	~110	~63	~72
Area B	~25	~16	~18
Area C	~97	~43	~54
Area D	~214	~84	~109

Property Availability

The Horse Creek Coal Land Company is interested in lease agreements for solar farm use on suitable property. Terms for lease rates are negotiable, dependent on multiple factors including amount of property utilized and length of lease.

The Nature Conservancy's (TNC) Resilient Land Mapping Tool Report

As requested by the West Virginia Office of Energy, CEGAS utilized The Nature Conservancy's Resilient Land Mapping Tool for each of the subject areas for site resiliency evaluations. Results indicate each Area generally includes neutral to below average scores for resilience, local connectedness and landscape diversity. A summary of each Area is included in the attachments.

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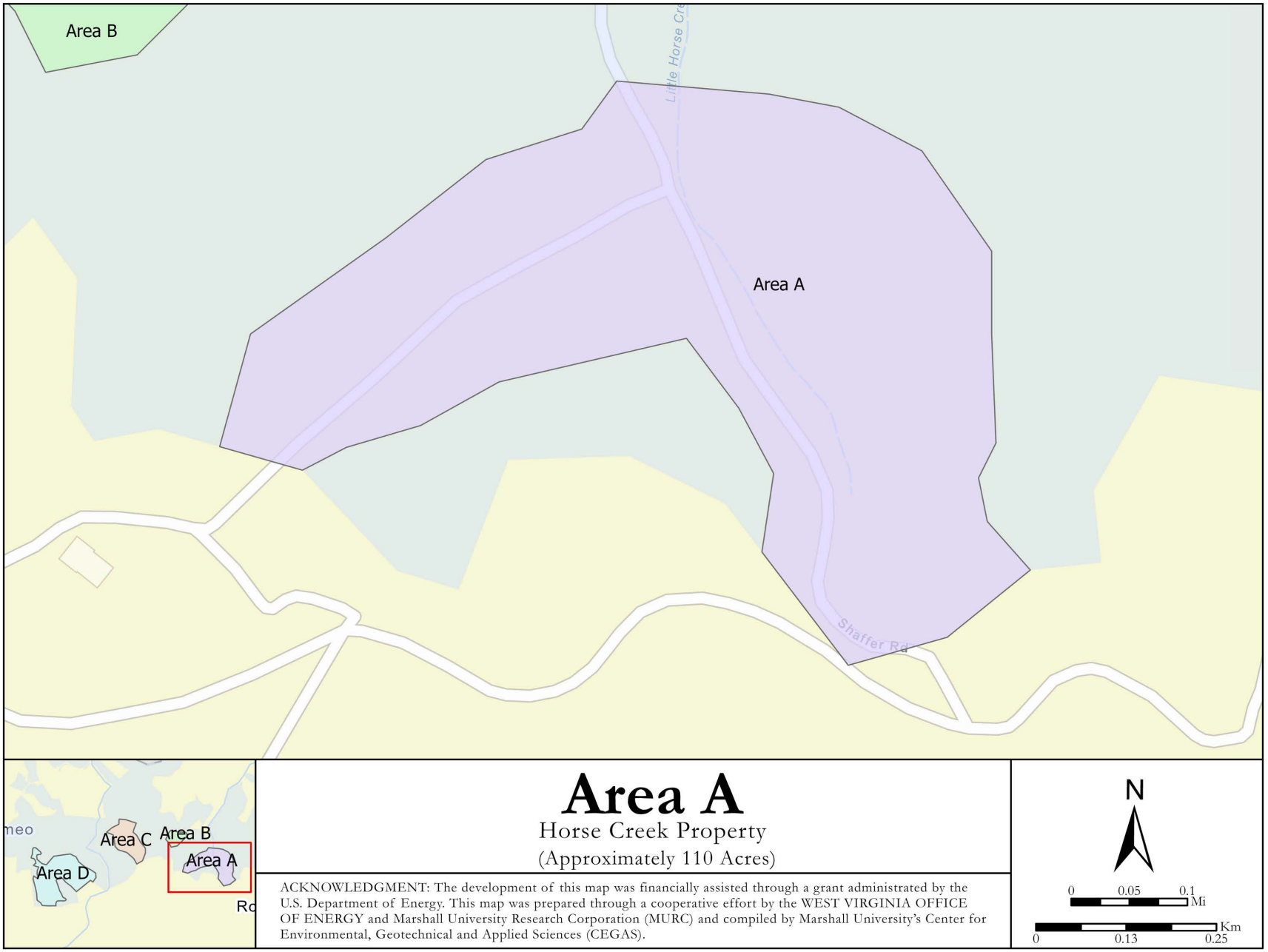
Attachments


Wolfden Holw
Peters Cave
Snake Holw
Bulger Rd
Lincoln County
Boone County
Breece
Middle Horse Creek Rd
119
Lower He
3
Dodson
Junction
Dodson Fork Rd
Cameo Rd
Layville
Cameo
Legend
Horse Creek Property
Shaffer Rd
Rock Creek
Robert C
Pennsylvania
Ohio
Was
Virginia
Horse Creek Property
ACKNOWLEDGMENT: The development of this map was financially assisted through a grant administrated by the U.S. Department of Energy. This map was prepared through a cooperative effort by the WEST VIRGINIA OFFICE OF ENERGY and Marshall University Research Corporation (MURC).
Date: 9/1/2021
N
0 0.4 0.8 Mi
0 0.75 1.5 Km



Area A

Horse Creek Property

(Approximately 110 Acres)

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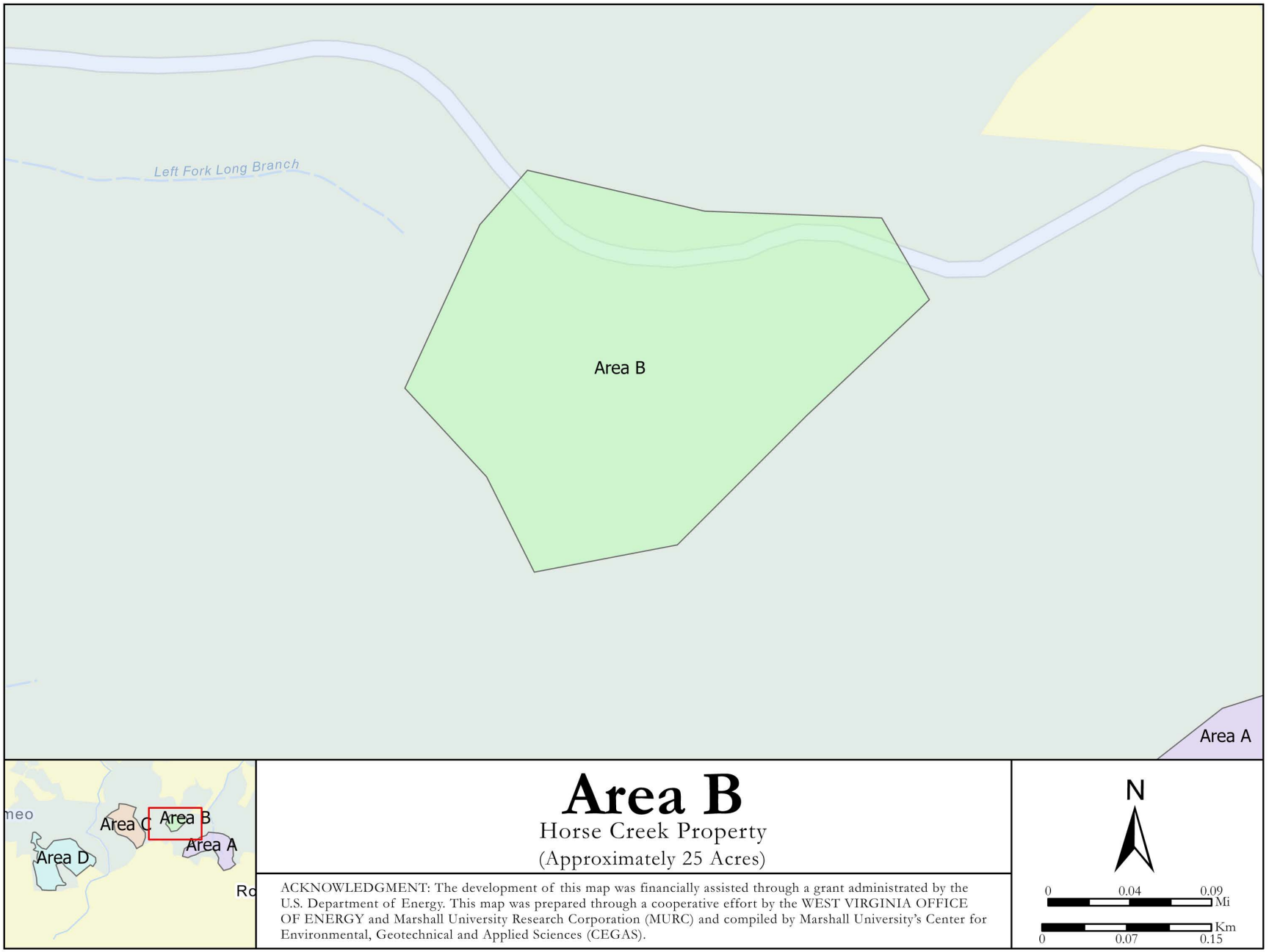

Area B

Horse Creek Property

(Approximately 25 Acres)

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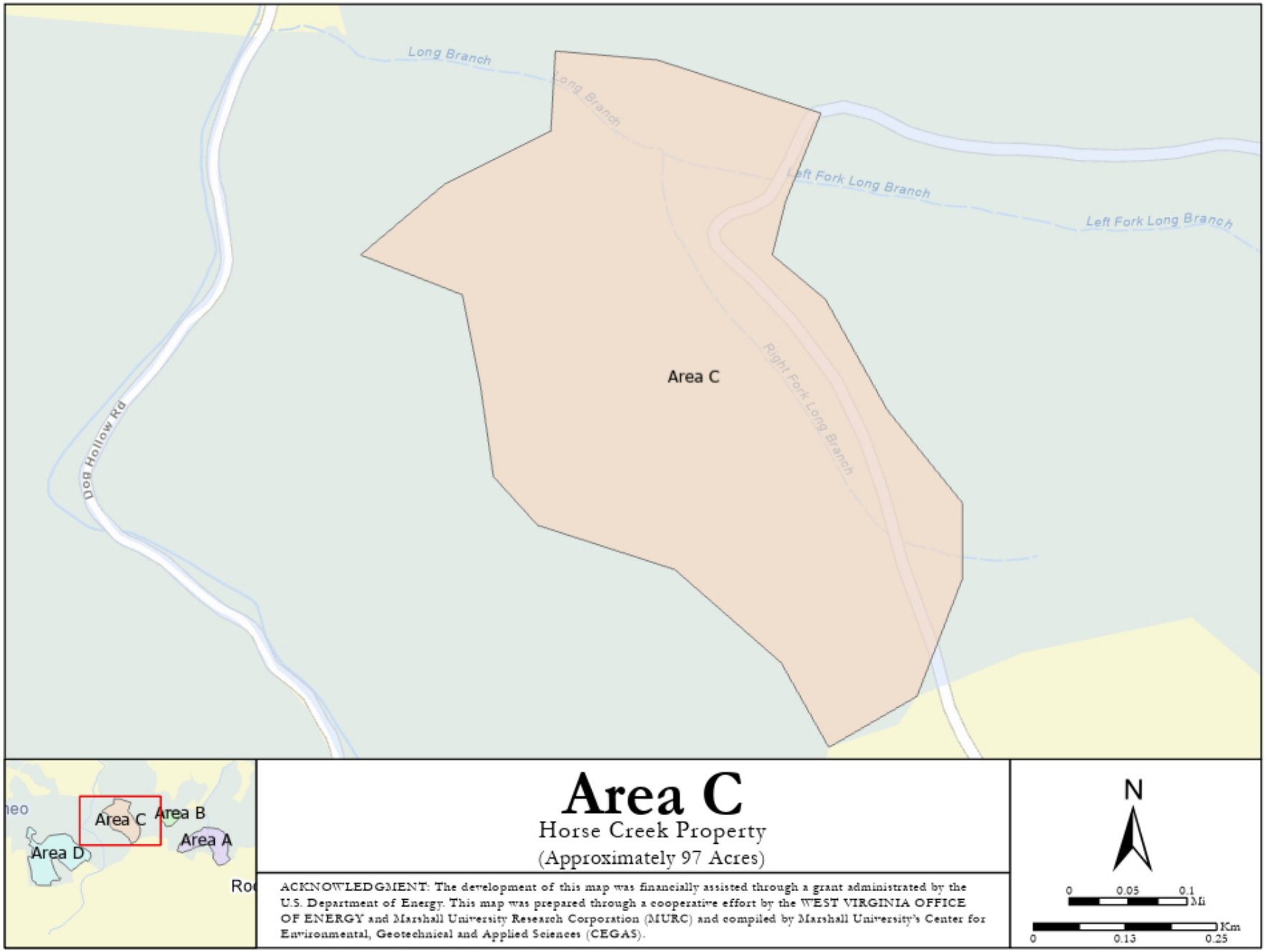
N

0 0.04 0.09 Mi

0 0.07 0.15 Km


Long Branch
Long Branch
Left Fork Long Branch
Left Fork Long Branch
Area C
Right Fork Long Branch
Dog Hollow Rd
Area C
Area B
Area A
Area D
Area C
Horse Creek Property
(Approximately 97 Acres)
ACKNOWLEDGMENT: The development of this map was financially assisted through a grant administrated by the U.S. Department of Energy. This map was prepared through a cooperative effort by the WEST VIRGINIA OFFICE OF ENERGY and Marshall University Research Corporation (MURC) and compiled by Marshall University's Center for Environmental, Geotechnical and Applied Sciences (CEGAS).
N
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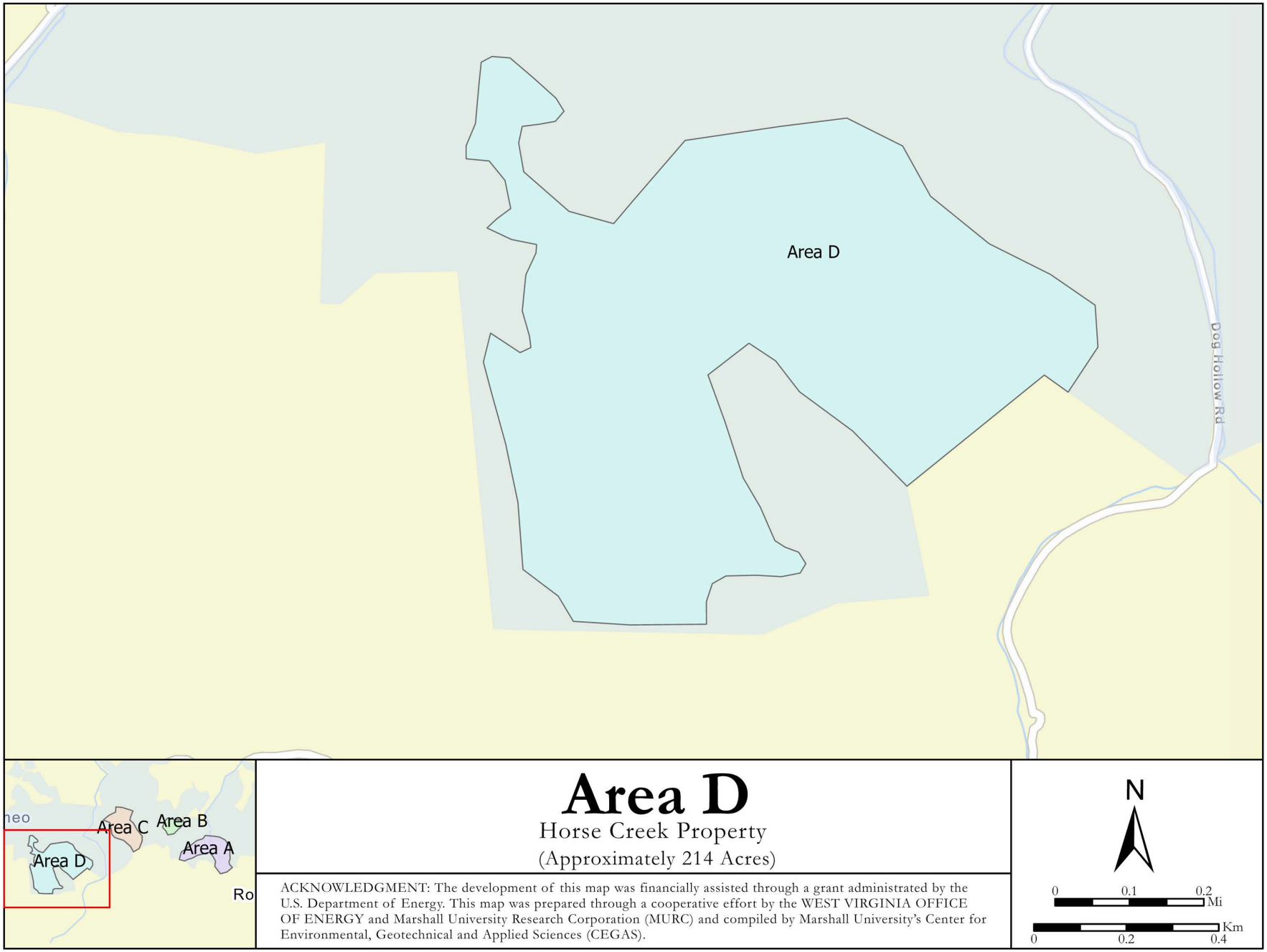
0 0.13 0.25 Km



Area D

Horse Creek Property

(Approximately 214 Acres)

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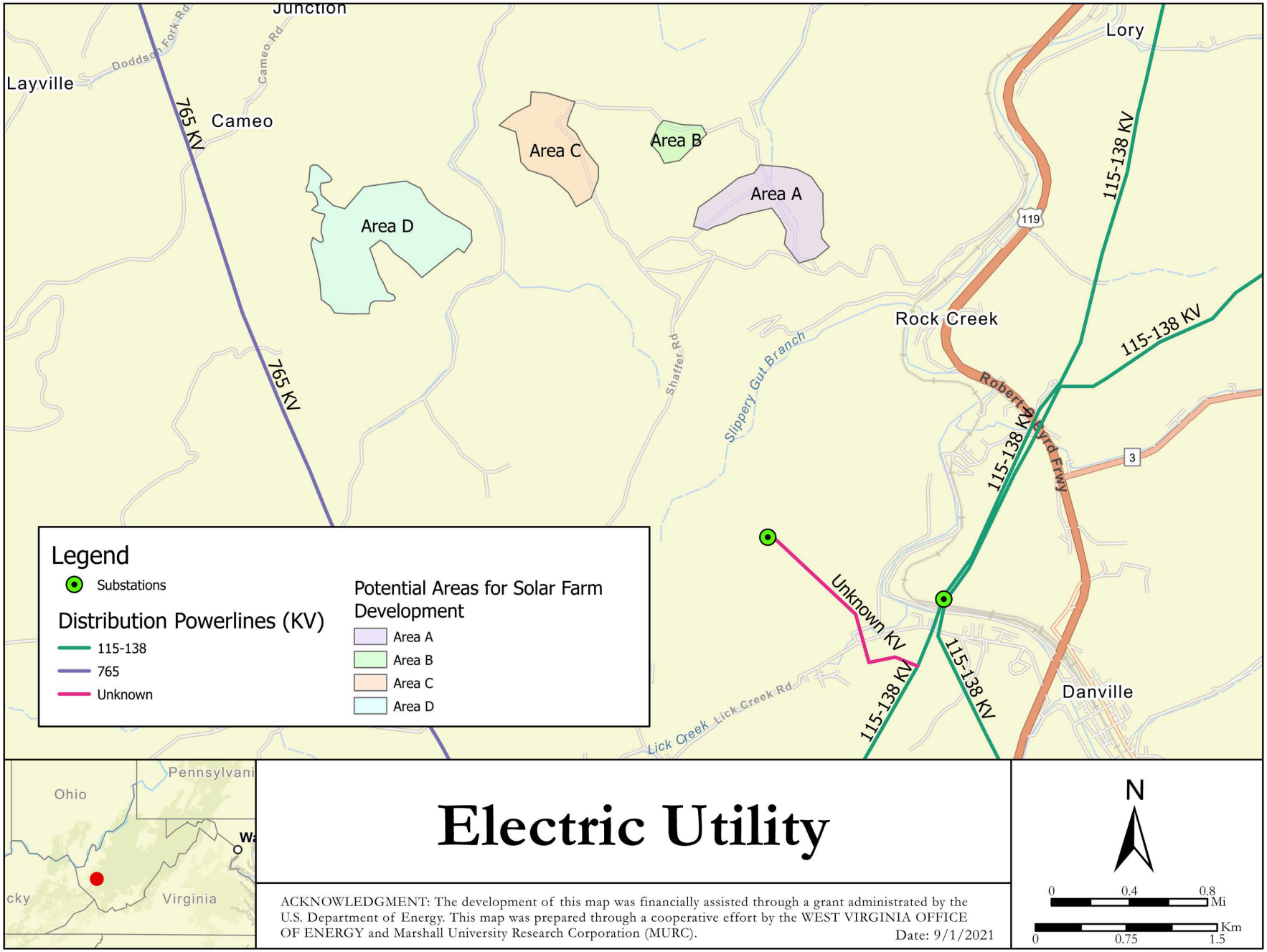

Electric Utility

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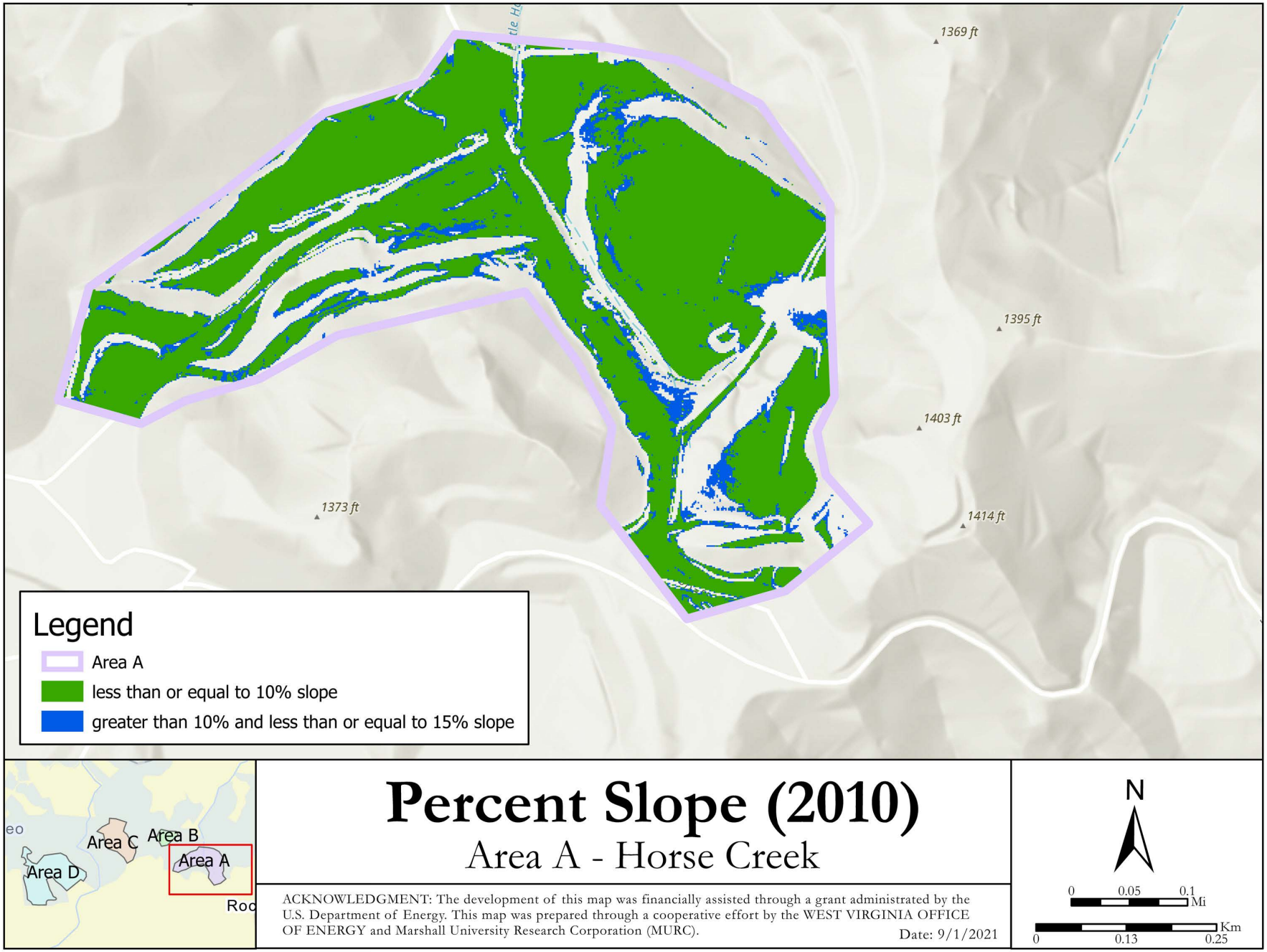
Date: 9/1/2021



Percent Slope (2010)

Area A - Horse Creek

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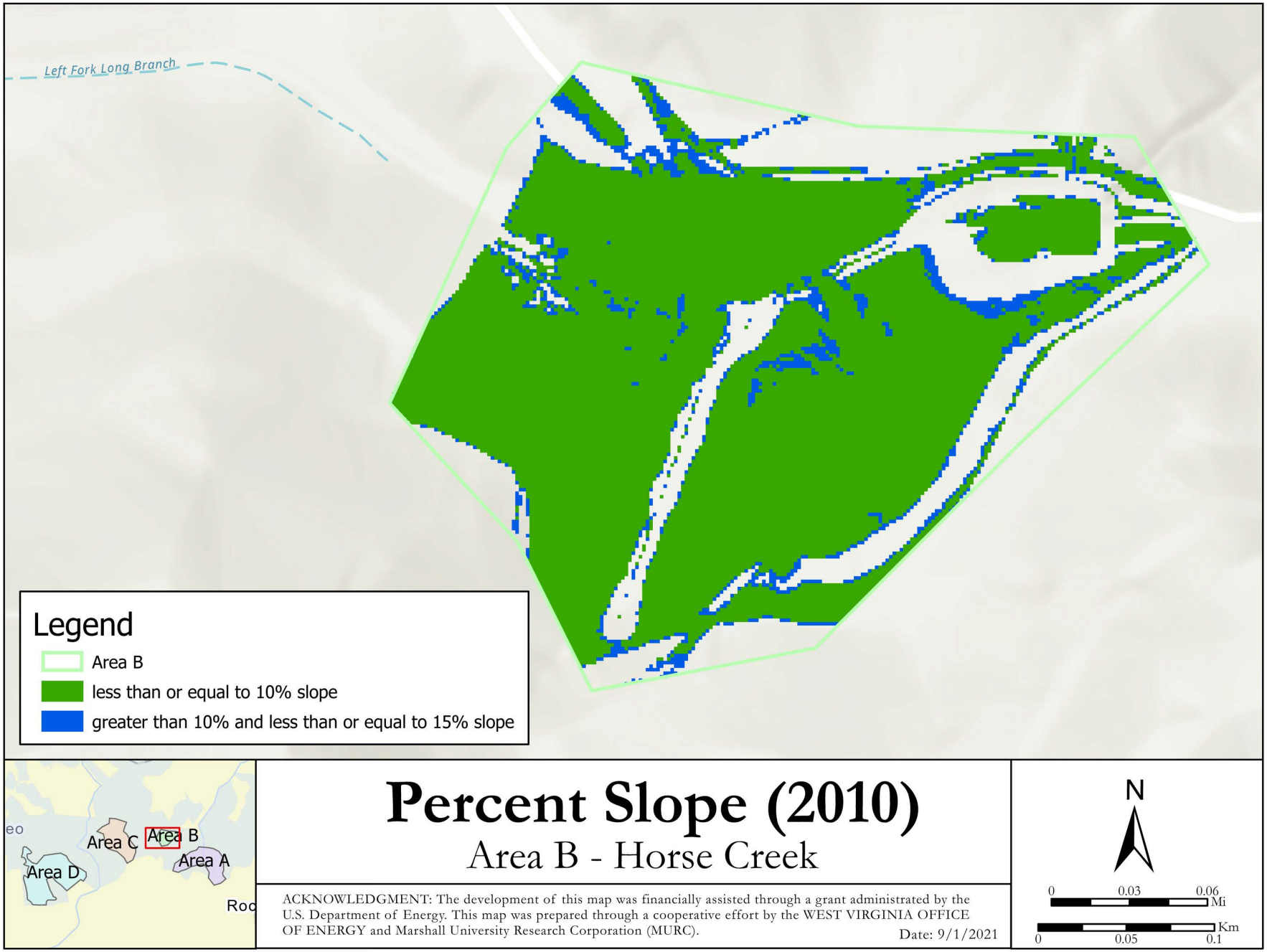
Date: 9/1/2021



Percent Slope (2010)

Area B - Horse Creek

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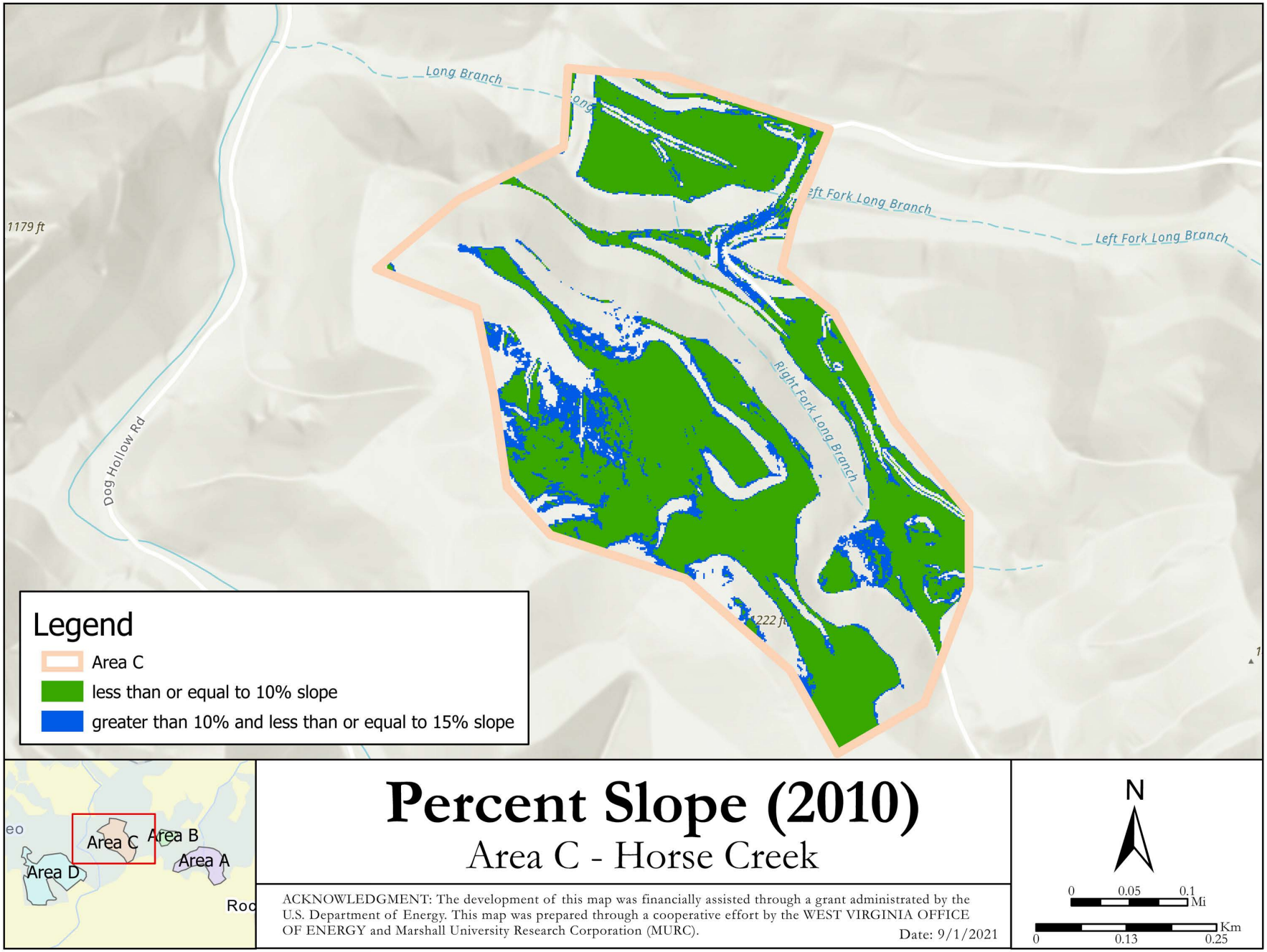
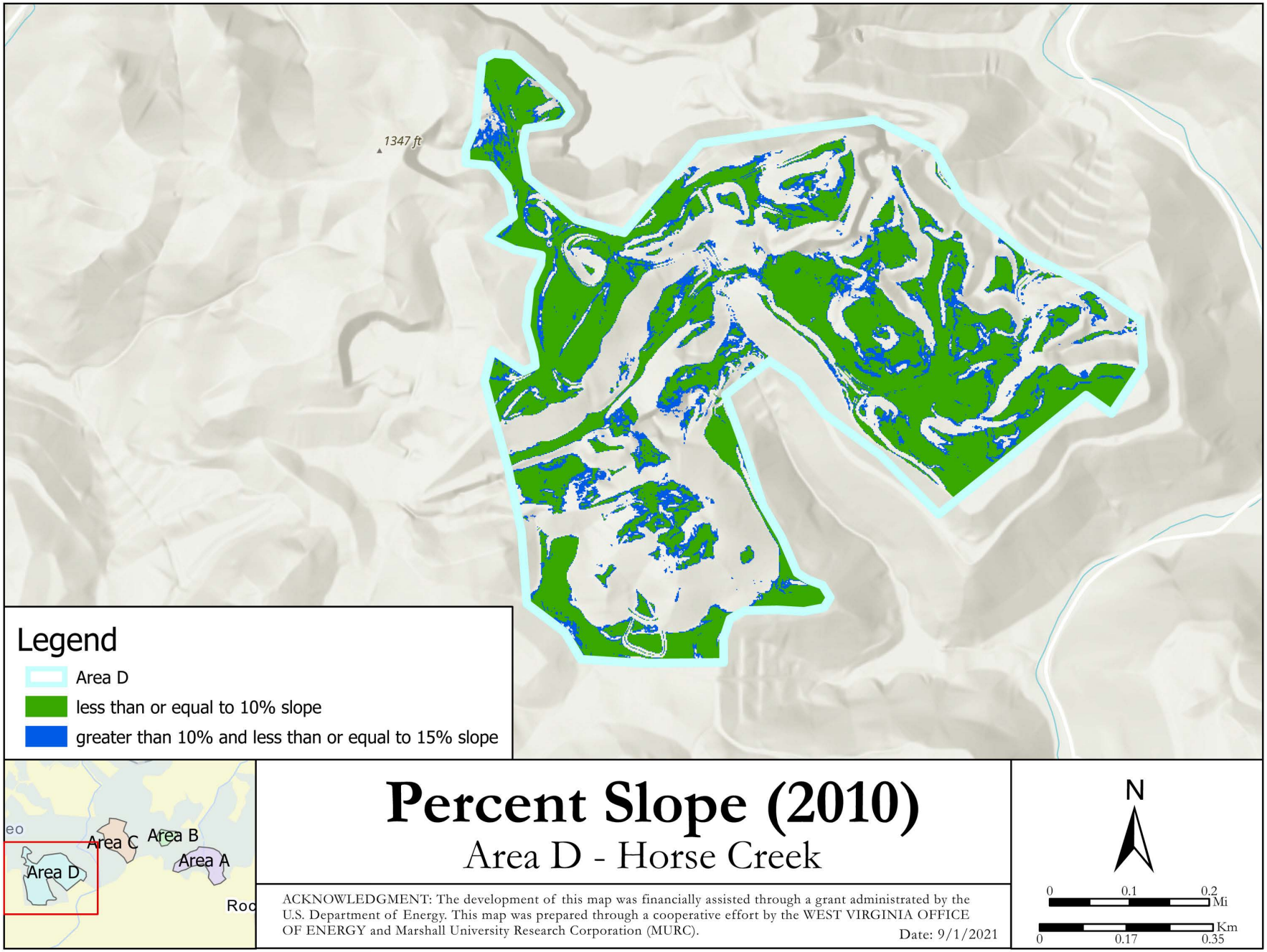
Date: 9/1/2021


Long Branch
Left Fork Long Branch
Left Fork Long Branch
Right Fork Long Branch
Dog Hollow Rd
1179 ft
Legend
Area C
less than or equal to 10% slope
greater than 10% and less than or equal to 15% slope
Area C
Area B
Area A
Area D
Percent Slope (2010)
Area C - Horse Creek
ACKNOWLEDGMENT: The development of this map was financially assisted through a grant administrated by the U.S. Department of Energy. This map was prepared through a cooperative effort by the WEST VIRGINIA OFFICE OF ENERGY and Marshall University Research Corporation (MURC).
Date: 9/1/2021
N
0 0.05 0.1 Mi
0 0.13 0.25 Km



Percent Slope (2010)

Area D - Horse Creek

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Date: 9/1/2021

Area A Photos

Area A Facing Southwest

Area A Facing Southeast

Area A Facing East

Area A Facing North

Area B Photo

Area B Facing East

Area C 3D Rendering

Area D Photos

Area D Facing Northeast

Area D Facing East

Area A - TNC Resilient Land Mapping Tool Summary

Resilient Land Summary

Total land area: 110.1 acres in the Southeast study area(s) in the Cumberlands And Southern Ridge And Valley ecoregion(s).

Resilient and Connected Network Results

Note: These results are based on the **nationally-consistent** ecoregional data. They are derived from the detailed representations of the Resilient and Connected Networks which can be visualized under the Resilient & Connected Network Components section at right.

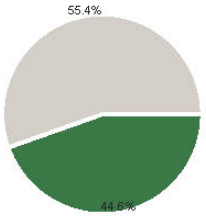
Resilience, Flow and Recognized Biodiversity: 0

Resilience and Flow: 0 ac.

Resilience and Recognized Biodiversity: 49.1 ac.

Resilient, Recognized Biodiversity: 49.1 ac.

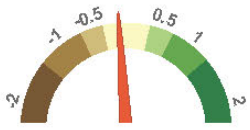
Outside Prioritized Network: 61 ac.



Average Terrestrial Resilience with Polygon

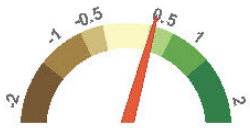
(all scores relative to ecoregion)

Resilience
Average (-0.1 SD)



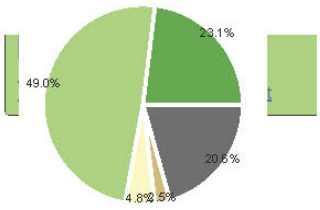
Local Connectedness
Slightly Below Average (-0.6 SD)

Landscape Diversity
Average (0.4 SD)

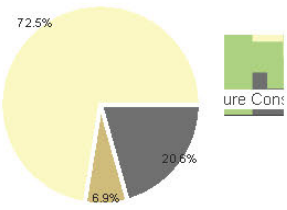


Terrestrial Resilience Categories

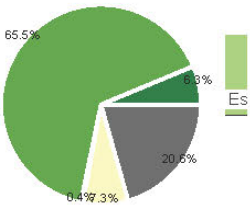
Resilience



Local Connectedness



Landscape Diversity



Geophysical Setting Results

The mean elevation in the polygon is 354.24 m (1162.21 ft) and the three most common geophysical settings are:

Low Elevation Acidic Sedimentary : 107 acres

Low Elevation Loam : 4 acres

Area B - TNC Resilient Land Mapping Tool Summary

Resilient Land Summary

Total land area: 25.9 acres in the Northeast study area(s) in the Western Allegheny Plateau ecoregion(s).

Resilient and Connected Network Results

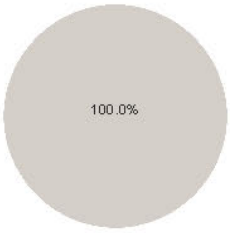
Note: These results are based on the **nationally-consistent** ecoregional data. They are derived from the detailed representations of the Resilient and Connected Networks which can be visualized under the Resilient & Connected Network Components section at right.

Resilience, Flow and Recognized Biodiversity: 0

Resilience and Flow: 0 ac.

Resilience and Recognized Biodiversity: 0 ac.

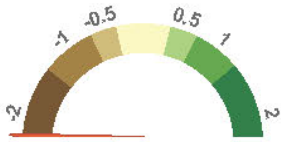
Outside Prioritized Network: 25,900,000,000,000,002 ac.



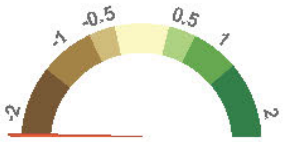
Average Terrestrial Resilience with Polygon

(all scores relative to ecoregion)

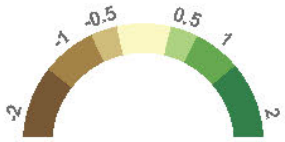
Resilience
Far Below Average (-3.3 SD)



Local Connectedness
Far Below Average (-3.3 SD)

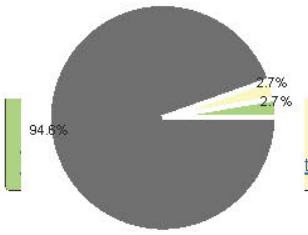


Landscape Diversity
Far Below Average (-3.3 SD)

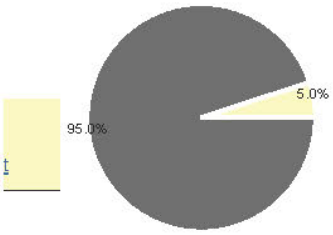


Terrestrial Resilience Categories

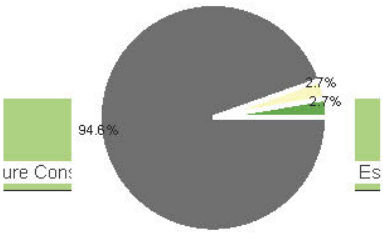
Resilience



Local Connectedness



Landscape Diversity



Geophysical Setting Results

The mean elevation in the polygon is 342.28 m (1122.98 ft) and the three most common geophysical settings are:

Low Elevation Acidic Sedimentary : 25 acres

Low Elevation Loam : 1 acres

Area C - TNC Resilient Land Mapping Tool Summary

Resilient Land Summary

Total land area: 96.5 acres in the Northeast study area(s) in the Western Allegheny Plateau ecoregion(s).

Resilient and Connected Network Results

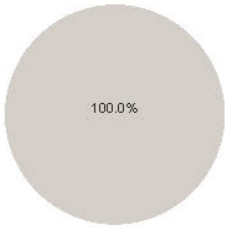
Note: These results are based on the **nationally-consistent** ecoregional data. They are derived from the detailed representations of the Resilient and Connected Networks which can be visualized under the Resilient & Connected Network Components section at right.

Resilience, Flow and Recognized Biodiversity: 0

Resilience and Flow: 0 ac.

Resilience and Recognized Biodiversity: 0 ac.

Outside Prioritized Network: 96.5 ac.



Average Terrestrial Resilience with Polygon

(all scores relative to ecoregion)

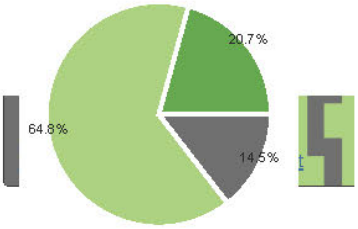
Resilience
Average (0.3 SD)

Local Connectedness
Average (-0.3 SD)

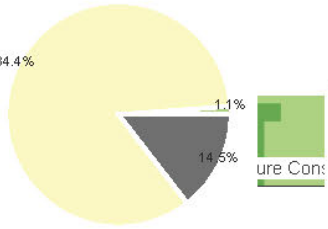
Landscape Diversity
Slightly Above Average (0.8 SD)

Terrestrial Resilience Categories

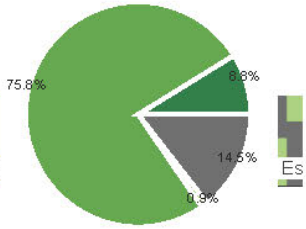
Resilience



Local Connectedness



Landscape Diversity



Geophysical Setting Results

The mean elevation in the polygon is 338.04 m (1109.05 ft) and the three most common geophysical settings are:

Low Elevation Acidic Sedimentary : 95 acres

Low Elevation Loam : 2 acres

Area D - TNC Resilient Land Mapping Tool Summary

Resilient Land Summary

Total land area: 214.3 acres in the Northeast study area(s) in the Western Allegheny Plateau ecoregion(s).

Resilient and Connected Network Results

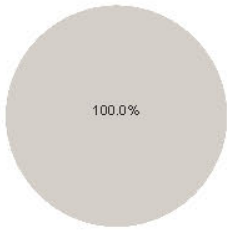
Note: These results are based on the **nationally-consistent** ecoregional data. They are derived from the detailed representations of the Resilient and Connected Networks which can be visualized under the Resilient & Connected Network Components section at right.

Resilience, Flow and Recognized Biodiversity: 0

Resilience and Flow: 0 ac.

Resilience and Recognized Biodiversity: 0 ac.

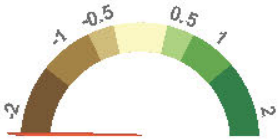
Outside Prioritized Network: 214.4 ac.



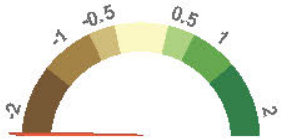
Average Terrestrial Resilience with Polygon

(all scores relative to ecoregion)

Resilience
Far Below Average (-2.3 SD)



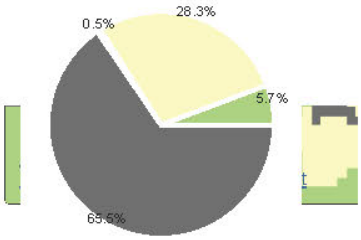
Local Connectedness
Far Below Average (-2.5 SD)



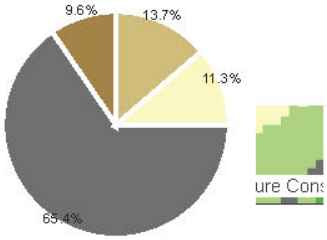
Landscape Diversity
Below Average (-2 SD)

Terrestrial Resilience Categories

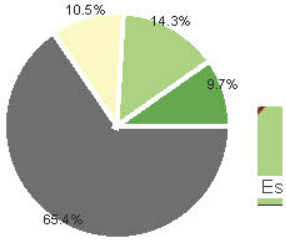
Resilience



Local Connectedness



Landscape Diversity



Geophysical Setting Results

The mean elevation in the polygon is 352.45 m (1156.32 ft) and the three most common geophysical settings are:

Low Elevation Acidic Sedimentary : 214 acres