

REPORT ADDENDUM >

**ADDITIONAL CULTURAL RESOURCE INVESTIGATIONS
RELATED TO ADDITIONAL LIMITS OF DISTURBANCE
AND A MET TOWER LOCATION FOR THE
ROCKY FORGE WIND PROJECT**

LOCATION > Botetourt County

DATE > JUNE 2020



Detail of map of Botetourt, 1860s. Source: LOC

PREPARED BY >
Dutton + Associates, LLC

PROJECT REVIEW # >
2015-0666

Dutton + Associates

ADDENDUM 3:

**ADDITIONAL CULTURAL RESOURCE INVESTIGATIONS
RELATED TO ADDITIONAL LIMITS OF DISTURBANCE AND A
MET TOWER LOCATION FOR THE ROCKY FORGE WIND
PROJECT**

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INTRODUCTION

In May 2020, Dutton + Associates, LLC (D+A) conducted additional cultural resource investigations related to the Rocky Forge Wind Project (project) in Botetourt County, Virginia. The effort included investigation of several expansions to the proposed project limits of disturbance (LOD), including a proposed Meteorological Evaluation Tower (MET) Tower location site. Additionally, it provides updated viewshed analysis related to modified turbine configurations.

The D+A effort was conducted to identify and evaluate the potential National Register of Historic Places (NRHP) eligibility for any archaeological and architectural resources located within the additional LOD, as well as assess potential impacts to them brought about by the proposed project. This effort adheres to VDHR's *Guidelines for Conducting Historic Resources Surveys in Virginia* (2017) and to professional guidelines set forth in the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716, as amended and annotated).

To complete this study, D+A performed additional literature review, background search, and field investigation. The effort took into consideration and built upon the results from the initial Phase I effort and follow-up investigations. The following pages summarize the results of this effort.

Description of Additional Limits of Disturbance

Following the initial Phase I cultural survey and subsequent modifications that resulted in additional survey, a number of small shifts and expansions to the LOD were recently made as a result of engineering and/or other studies. These additional LOD were provided to D+A to investigate for cultural resource survey. The majority of the additional LOD consists of slight adjustments to existing road alignments leading up the mountain and along the ridge to connect turbine locations. A larger expansion includes the area of a proposed MET Tower site near the mountain ridge where a line of wind turbines will be located. The following graphic depicts the extent of the additional LOD investigated as part of this effort in relation to the project area as previously surveyed (Figure 1).

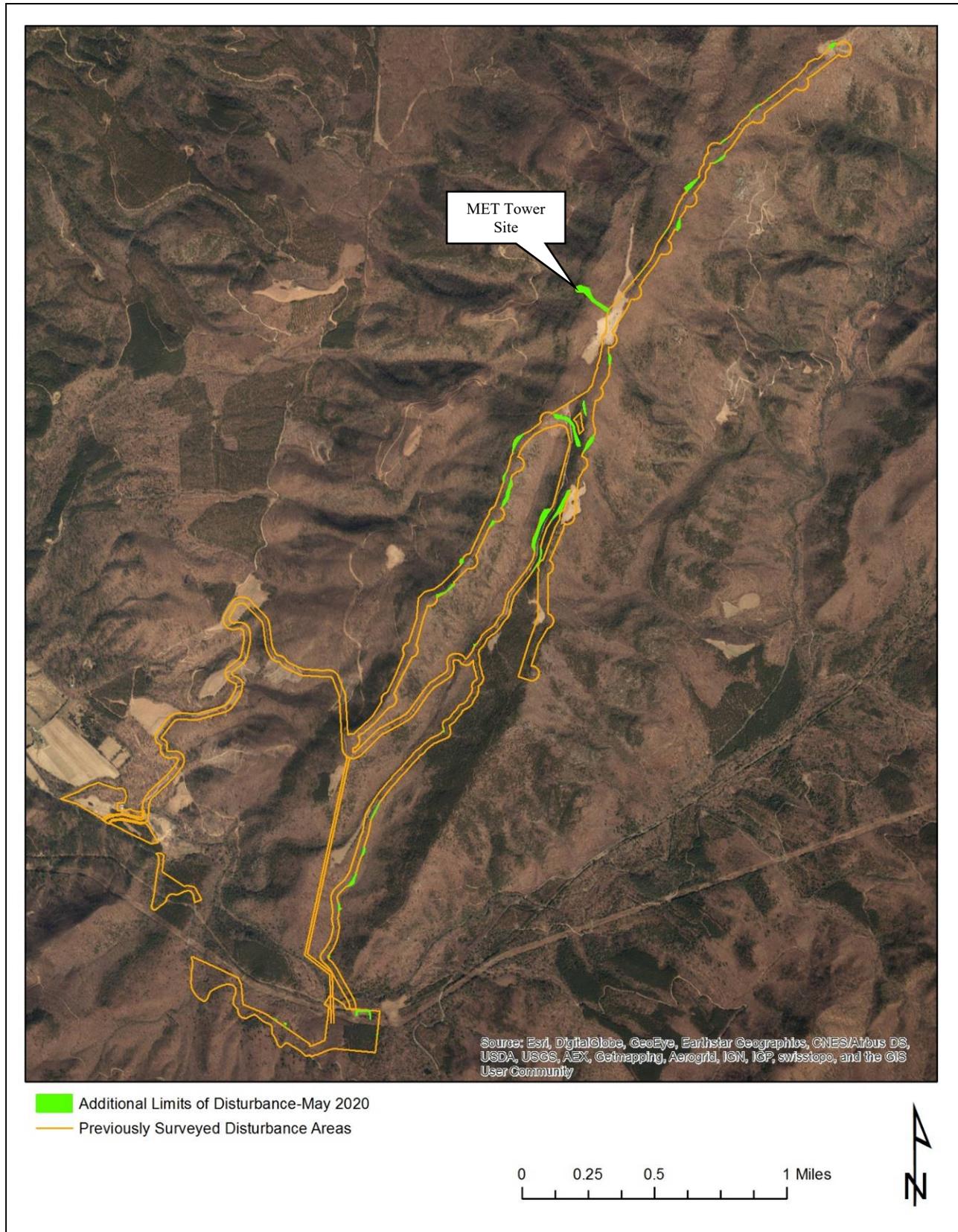


Figure 1: Additional LOD (green) in relation to project components previously surveyed (orange).

Description of Turbine Configuration Modifications

Since the original study, several modifications have been made to the proposed turbine configurations. As a result of advances in turbine design since the project was originally proposed, there is a reduction in the number of turbines proposed for this project from 25 to 22. However, the height of the turbines will need to be increased from 550 feet (base to blade tip) as originally proposed to 680 feet. The increased height was used to update the computer-generated viewshed model and assess visibility against the previous model.

Archival Research

As part of this investigation, a literature review and background search were performed to identify known architectural or archaeological resources in the vicinity of the expanded LOD, and to determine whether any new or additional resources have been identified since the previous D+A survey efforts.

This search revealed a total of three (3) architectural resources and two (2) archaeological sites located within one mile of portions of the additional LOD. All five of these resources were investigated and/or documented as part of the previous survey efforts for this project. None are located adjacent to or within any portion of the additional LOD. These resources are summarized in Tables 1 and 2 and illustrated in Figure 2.

Table 1: Previously recorded archaeological resources within one mile of the additional LOD.
Source: VCRIS

VDHR ID #	Type	Cultural Designation	Temporal Association	NRHP Status
44BO0191	Iron furnace	Indeterminate	19th Century (1800 - 1899)	Not Evaluated
44BO0617	Dwelling, single	Indeterminate	Early National Period (1790 - 1829), Antebellum Period (1830 - 1860), Civil War (1861 - 1865), Reconstruction and Growth (1866 - 1916), World War I to World War II (1917 - 1945)	Not Evaluated

Table 2: Previously recorded architectural resources within one mile of the additional LOD.
Source: VCRIS

VDHR ID #	Resource Name/ Address	NRHP Status
011-0215	Iron Master's House, Daggers Springs Road (Function/Location), Rebecca House (Current), Tredegar House (Historic/Current)	DHR Staff: Potentially Eligible
011-0216	Rebecca Furnace (Historic)	DHR Staff: Potentially Eligible
011-5645	Rebecca Furnace Historic District (Current Name)	DHR Evaluation Committee: Eligible

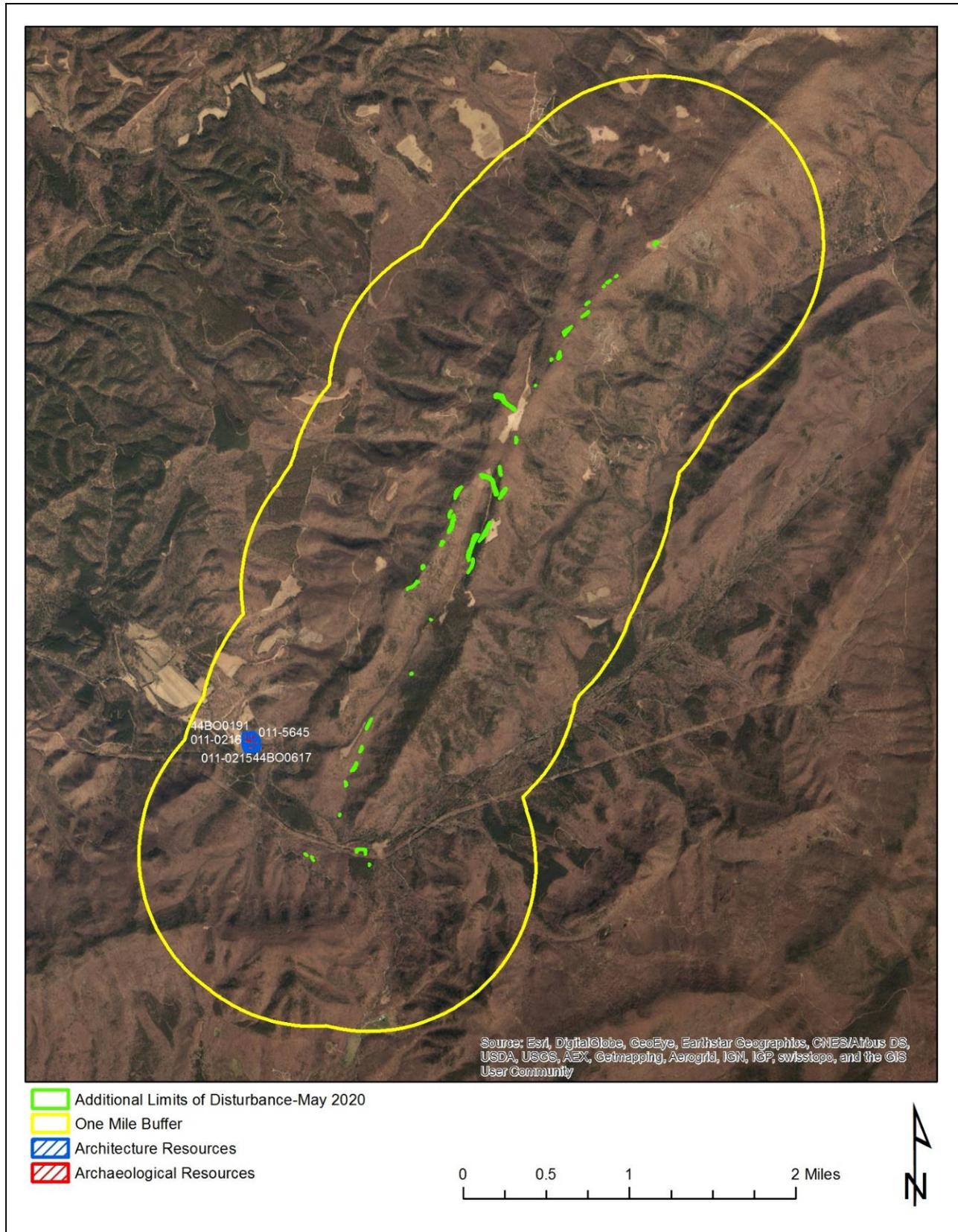


Figure 2: Previously recorded architectural and archaeological resources within one mile of the additional LOD. Source: VCRIS

Context Development

The historic context prepared as part of the initial effort was also reviewed and utilized to place the additional LOD, and any identified historic resources within their appropriate context for evaluations of potential historical significance.

Field Survey

Field investigations for this effort took into consideration the location of the additional LOD in relation to areas previously subjected to cultural resources survey. A detailed assessment of the additional LOD found that the majority of the areas consist of narrow strips of land immediately adjacent to areas included within the original project site plan. As such, these narrow additions to the LOD were sufficiently subjected to cultural resource survey as part of the original survey and subsequent expanded surveys. However, one portion of the additional LOD, the site of a proposed MET Tower, extends several hundred feet beyond previous survey areas, and therefore was subject to field survey as part of this effort.

Survey of the proposed MET Tower site entailed pedestrian reconnaissance to determine the potential for the presence or absence of cultural resources, including both architectural and archaeological properties, as well as systematic subsurface testing. Because of the nature and history of the project area, special attention was paid to identification of prehistoric rock shelters, as well as surface evidence of historic mining activity.

For any cultural resources identified during the survey, photographs were taken of the general vicinity and any visible features. A field map was prepared showing location and boundaries, permanent landmarks, topographic and vegetational variation, sources of disturbance, and existing conditions. GPS coordinates were taken to permit easy relocation of the site. Representative digital photographs were taken to document each property's existing conditions, setting, and secondary resources.

Assessment of Potential Impacts

Potential impacts from the project were assessed for any resources identified within the additional LOD recommended eligible for listing in the NRHP. Potential impacts are based upon the resource's proximity to project improvements, as well as current integrity and the potential for the project to alter or diminish those qualities or characteristics which may qualify the property for listing in the NRHP.

Report and Record Preparation

Information from field observations was used in conjunction with background research and context development to assess identified cultural resources for potential NRHP-eligibility. For any identified resources, a narrative was prepared that summarizes the field findings, assessment of significance and NRHP-eligibility, assessment of potential impacts, and recommendations for further study. The results of the effort are accompanied by maps and photographs as appropriate and are summarized in this report addendum. All material and documentation generated by this effort are on file at D+A's office in Midlothian, Virginia.

HISTORIC CONTEXT

This context shows that the vicinity of the overall project area has been occupied since early in prehistory. One of the earliest Native American sites in Virginia, dating to the Paleoindian period, has been identified in Botetourt County; however, not in close proximity to the project area. Closer to the project area are two substantial Archaic sites, including a village and burial mound along the banks of the James River. While these permanent settlement sites are located in the lower elevation areas nearby, it raises the possibility of rock shelters, which were also utilized by Archaic peoples, to be present on the nearby slopes and ridges, such as those within the vicinity of the additional LOD.

The favorability of the area to these early peoples would have likely continued into the Woodland period as well; however, the transition to agriculture and larger settlements reduces the likelihood of contemporary sites being located within the mountainous terrain where the additional LOD are located.

This mountainous terrain attracted early Euro-American settlers by the eighteenth century as the iron industry expanded into Botetourt County. Mining and the processing of iron began to increase, particularly in the northern, more mountainous portion of the county by the turn of the nineteenth century. One such facility, Rebecca Furnace, was established between 1816 and 1819 in the vicinity of the overall project area. A second furnace, called Jane Furnace, was also in operation in the vicinity by 1834 (Figure 3). Iron furnaces such as these employed scores of residents, as well as many slaves. According to the Gazetteer of 1835, The Rebecca and Jane Furnaces together employed 150 operatives, 87 of which were slaves. Both furnaces centered on massive operations, manufacturing an average of 800 to 850 tons of pig metal per annum.

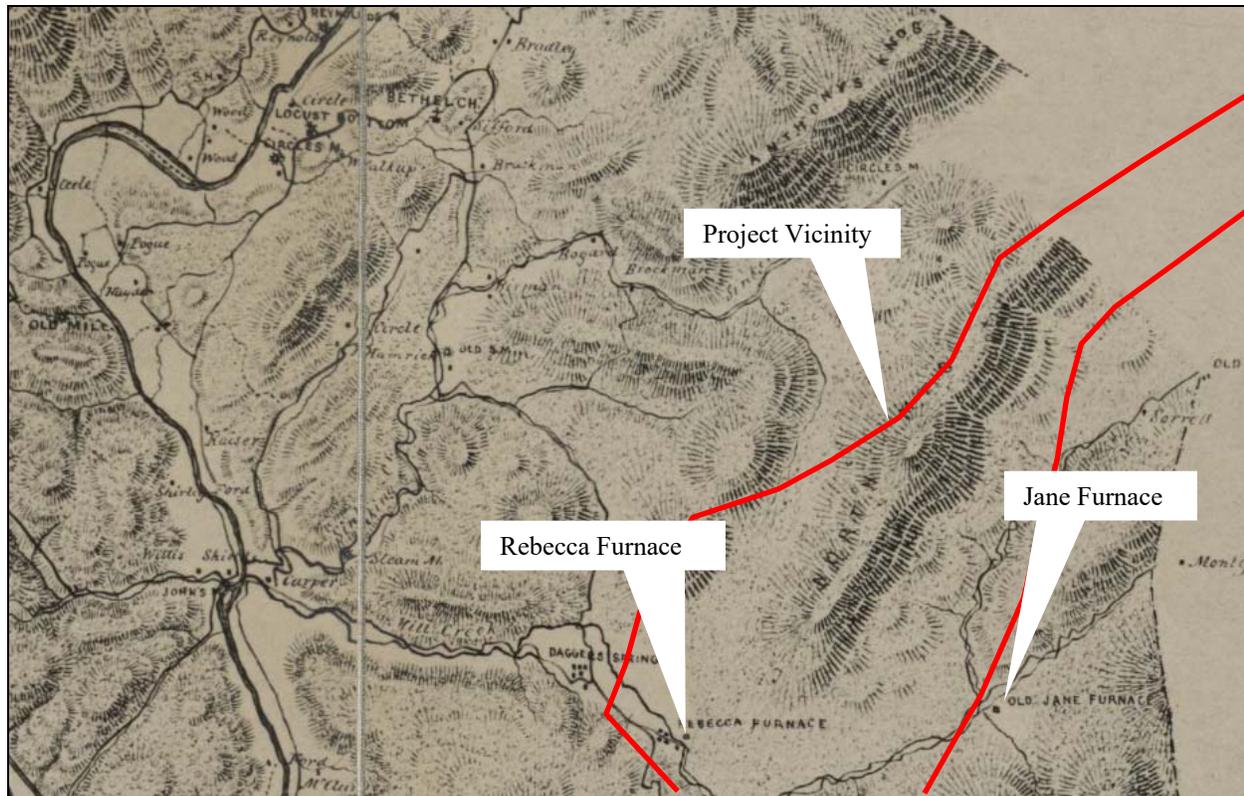


Figure 3: Detail of *Map of Botetourt, 186-*. Source: Library of Congress

Both Rebecca and Jane Furnaces went out of blast due to transportation problems, dependence on charcoal, and dramatically increased competition by the 1850s; however, both were reactivated during the Civil War, after being acquired by the Tredegar Iron Works of Richmond. Together, Rebecca and Jane with a number of other Botetourt County iron furnaces supplied roughly 50 tons of pig iron per week to the Tredegar Iron Works during the war. Following the war, both furnaces were once again deactivated, never to be fired again.

Research and previous survey revealed that the primary infrastructure associated with both furnaces was located along Mill Creek at the base of the mountains. Meanwhile, the higher elevation mountain slopes would have been stripped of timber for charcoal and mined for ore. Since that time, the terrain on which the furnaces operated and the ore extracted was used primarily for timbering. The mountain slopes which had likely been all but cleared of vegetation during the mining years were allowed to regrow and have been selectively harvested on a number of occasions since then. The property is also now used as a hunting preserve with many of the former fire roads and logging trails, several of which were likely first created as mining roads, used by visitors to the property.

FIELD RESULTS

Field investigations for the cultural resources survey of the additional LOD took place in May 2020. As most portions of the additional LOD had been surveyed previously, the field investigations for this effort were limited to the proposed MET Tower site that extends beyond the limits of previous survey. Field work included visual inspection of the landscape within the boundaries of the MET Tower site as well as systematic subsurface testing where allowed by

terrain and surface conditions. The LOD for the proposed MET Tower site is located atop the ridge of North Mountain, west of the centerline for proposed wind turbines. The site consists of a generally narrow, linear strip of land leading from a proposed access road beneath the turbines, to a wide pad site slightly uphill at the crest of a bluff. The MET Tower site area is approximately 800-feet long, and 50-feet wide at the narrow end and 150-feet wide at the pad area. It comprises a total of approximately 1.2 acres.

Inspection of the MET Tower site revealed the landscape is generally flat to gently sloped, and mostly wooded. The topography slopes gently up from the existing clearing where the proposed turbines and access road are to be located. This area is mostly grassy with a worn dirt and gravel wood extending along the edge of the treeline. Just in from the clearing, at the base of the survey area, is a small wood frame storage shed. This shed is modern and does not meet the 50-year threshold for NRHP consideration. Behind the shed, the landscape becomes wooded and slopes gently upward. Roughly 400-feet into the area is a short, moderately steep rise that slopes up to another relatively flat terrace where the pad site portion of the survey area widens out. At the western edge of the area, the landform drops off steeply to the side slope of the mountain ridge. In general, the ground surface of the survey area is open with pockets of low scrub and ground cover. There are occasional rock outcroppings, mostly limited to the upper terrace and the edge of the steep drop-off where several large rocks and boulders are exposed. The area overall is wooded with a mix of low mountain laurel and larger deciduous trees.

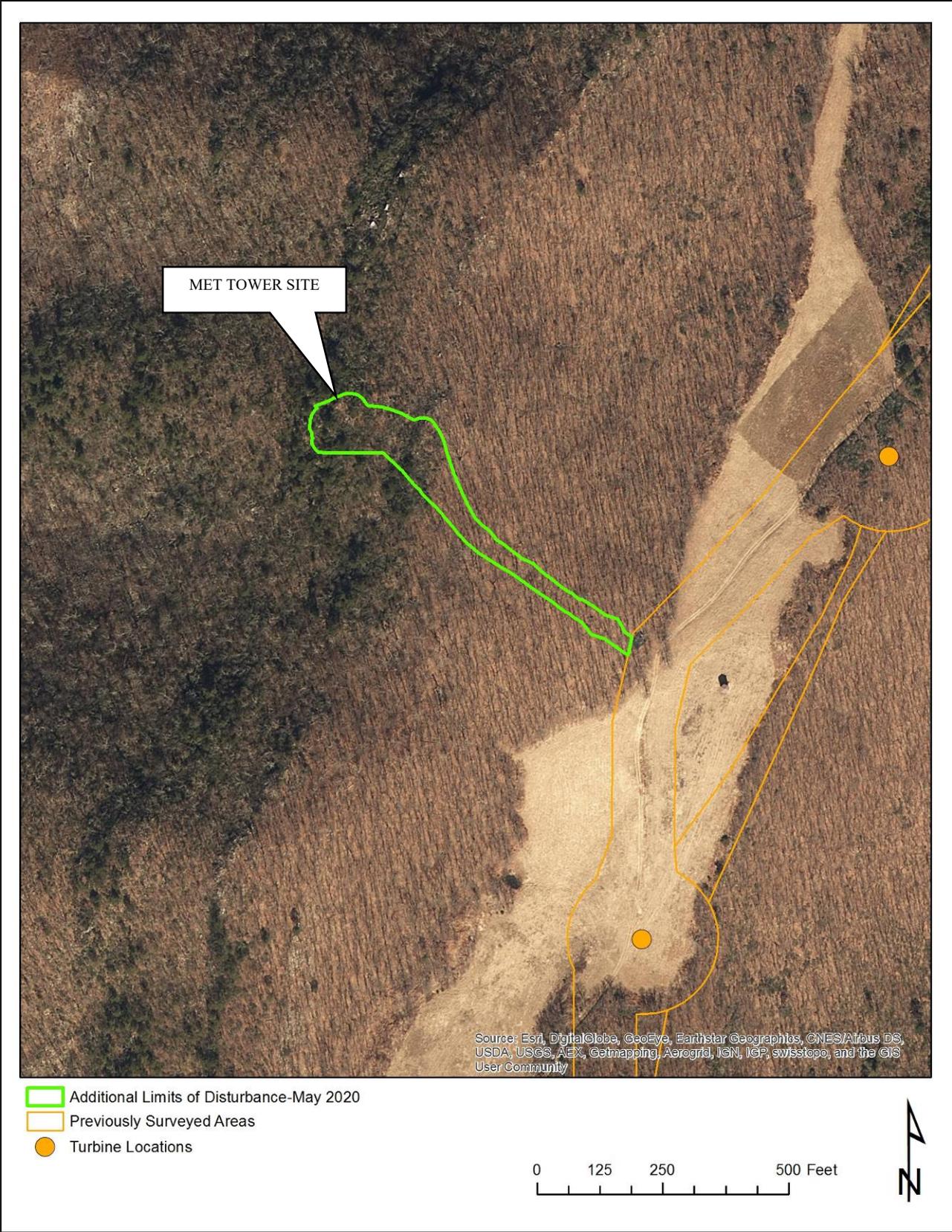


Figure 4: MET Tower site in relation to previously surveyed areas.



Figure 5: Topography of the MET Tower site.



Figure 6: Existing access road at border of treeline and edge of MET Tower survey area, facing north



Figure 7: Existing storage shed at lower edge of MET Tower survey area, facing west



Figure 8: Landscape of lower (eastern) portion of MET Tower survey area, facing east



Figure 9: Steep bluff set centrally in MET Tower survey area, facing northwest



Figure 10: Flat terrace at upper (western) edge of MET Tower survey area, facing north



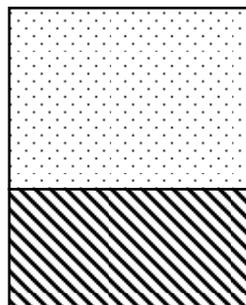
Figure 11: Flat terrace at upper (western) edge of MET Tower survey area, facing west



Figure 12: Rock outcropping and cliff along the upper (western) edge of MET Tower survey area, facing southwest

Pedestrian inspection of the MET Tower site revealed no evidence of cultural activity other than the modern wood storage shed set next to the road at the eastern edge of the survey area. Subsurface testing entailed excavation of shovel tests spaced 15-meters (50 feet) apart along transects also spaced 15-meters (50 feet) apart.

Testing revealed that in general, soils throughout the survey area typically consist of a thick layer of dark brown humus and root mat over a light brown sandy clay subsoil with decomposed bedrock. In some areas, solid bedrock was encountered beneath only a thin layer of subsoil. A typical soil profile in the area consisted of a 5YR4/4 topsoil layer that extended approximately 10-18 cm below ground surface. This overlaid a 5YR6/8 subsoil (Figure 13).



5YR4/4 loamy humus
16cmbs

5YR6/8 sandy clay with
decomposed bedrock

Figure 13: Representative Shovel Test Photo and stratigraphy (ST 10)

A total of twenty (20) systematic shovel tests were placed throughout the survey area, with four (4) not excavated due to slope (Figure 14). Of the excavated shovel tests, all were negative for cultural material. Coupled with pedestrian survey that resulted in no evidence of cultural activity, the potential for the MET Tower site to contain intact significant archaeological deposits is considered extremely low and project improvements within this area will have no effect on any NRHP-eligible or listed cultural resources. Therefore, it is D+A's recommendation that no further archaeological investigations are recommended.



Figure 14: Location of shovel tests within the MET Tower survey area

ASSESSMENT OF IMPACTS

No cultural resources were identified as part of the field investigations for the additional LOD, and therefore these areas will not impact any NRHP-eligible resources.

VIEWSHED ASSESSMENT

As part of the original study, a viewshed model prepared by Hill Studio was utilized to assess visibility of the project from NRHP-eligible resources within a 1.5-mile survey buffer or a 5-mile consideration buffer around the project. That effort found there would be visibility of the project from the Tredegar House (VDHR# 011-0215) that would result in adverse impacts. Mitigation was subsequently prepared and accepted by the VDHR. The model also showed that there would be no visibility or adverse impacts to any other NRHP-eligible resources within the buffers.

Since that study, the configuration of the proposed turbines has been modified from 25 550-foot turbines to 22 680-foot turbines. As a result of the change, the previously prepared viewshed model was updated by Hill Studio with the recommendation that the reduction in turbines and increase in height would only minimally increase visibility of the project and would not introduce any additional visibility or impacts to NRHP-eligible resources beyond those to the Tredegar House which was already adversely impacted and mitigated.

A simulation showing a comparison of the original and currently proposed turbine heights is provided in Figure 15 and the updated viewshed model illustrating visibility at the originally proposed 550-foot height and currently proposed 680-foot height is provided in Figure 16.

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Request 1: Tip Height Increase, Decrease in Turbines



1 Confidential



Figure 15: Comparison simulation of turbine heights. Source: Apex

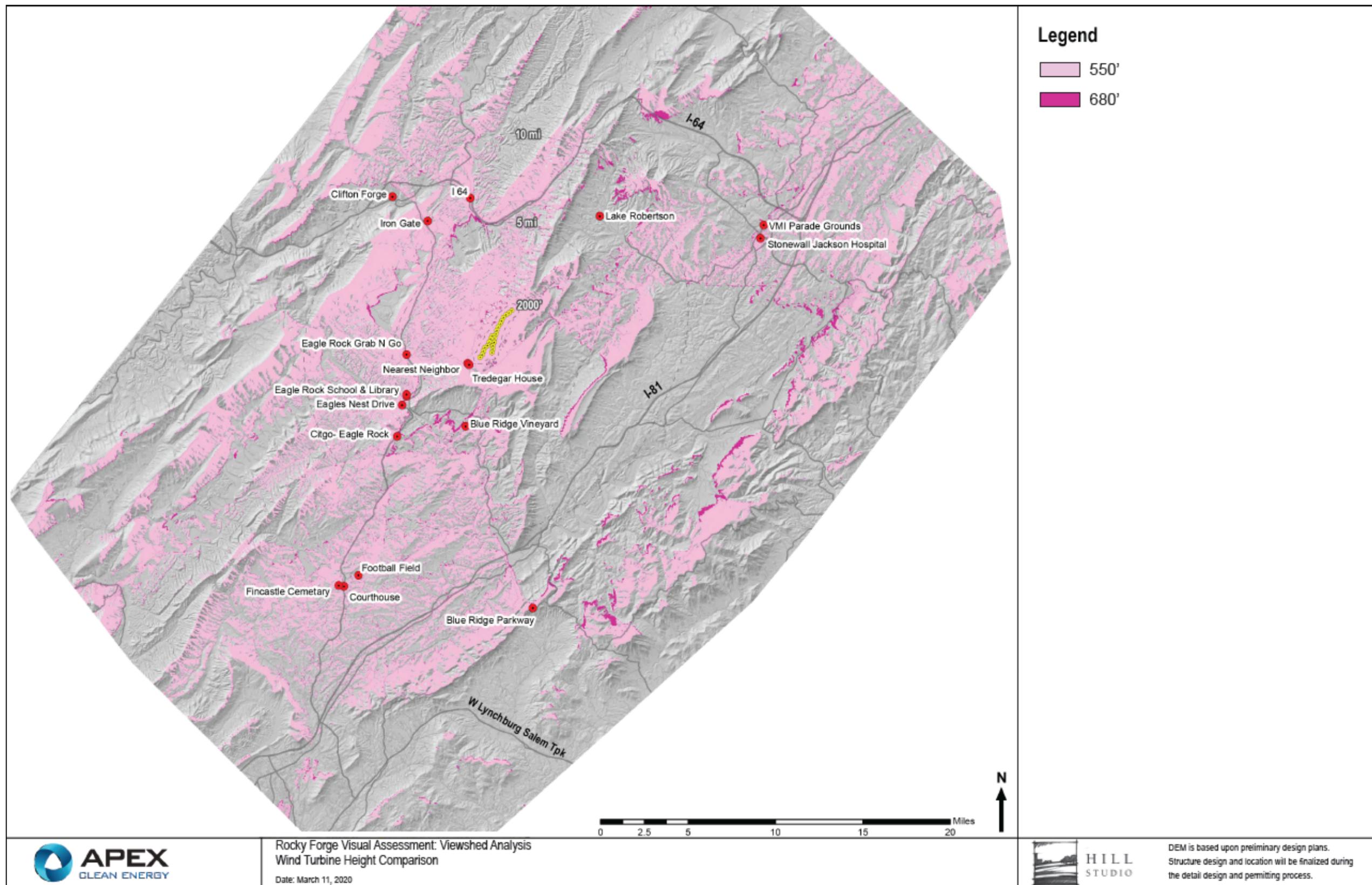


Figure 16: Viewshed model depicting originally proposed visibility with increased visibility. Source: Apex

CONCLUSIONS AND RECOMMENDATIONS

In May 2020, D+A conducted additional cultural resource investigations related to the Rocky Forge Wind Project (project) in Botetourt County, Virginia. The effort included investigation of several additional areas of LOD to the project area made after the initial Phase I survey efforts were complete, as well as a summary of modifications to proposed turbine configuration and viewshed impacts. The purpose of the effort was to identify the presence of cultural resources within these areas, evaluate them for potential NRHP eligibility, and assess potential impacts brought about by the proposed project on those resources considered eligible for listing in the NRHP.

Background research and historic context development revealed no known cultural resources exist directly within the boundaries of the additional LOD. However, because of the nature and history of the project area, special attention was paid to identification of prehistoric rock shelters, as well as surface evidence of historic mining activity.

Most portions of the additional LOD consist of slight adjustments to existing road alignments leading up the mountain and along the ridge to connect turbine locations. Because of the narrow width of these areas adjacent to previous project components, they were sufficiently inspected and/or tested as part of the original Phase I survey. However, a larger expansion includes the area of a proposed MET Tower site near the mountain ridge west of the proposed line of wind turbines. This area extends substantially away from previously surveyed areas, and therefore was subject to field survey as part of this effort.

Field survey of the MET Tower site revealed a relatively gently sloped landscape leading up to and including a terrace along the ridge of the mountain. The area is mostly wooded with a relatively open ground surface and limited rock outcroppings. As such, the area was subject to both pedestrian and systematic subsurface testing. Pedestrian survey revealed no evidence of cultural activity or materials beyond a modern shed which is not yet 50 years of age and is therefore considered not eligible for listing in the NRHP and was not documented. Subsurface archaeological testing resulted in no cultural features or materials, and as such, it is D+A's recommendation that the additional LOD will not impact any NRHP-eligible cultural resources and no further investigations for these areas are recommended.

As a result of turbine design since the original project, there will be a reduction in the total number of turbines, but an increase in height. An updated viewshed model prepared shows there will be no additional visibility of the project or impacts to NRHP-eligible resources within the study tiers beyond those are mitigated for to the Tredegar House (VDHR# 011-0215).