ADDENDUM

TO: Ms. Jennie Geiger, Apex Clean Energy

CC: Ben Rosner, WSSI
Jennifer Feese, WSSI

FROM: Jacob Fleckenstein, WSSI

SUBJECT: **Rocky Forge Wind Project**
Ecological Community Group
Vegetation Assessment
WSSI #22766.03

DATE: June 19, 2020

Wetland Studies and Solutions, Inc. (WSSI) has conducted an Ecological Community Survey within the additional survey areas of the current disturbance footprint for the Rocky Forge Wind Project in Botetourt County, Virginia. This addendum provides the results of the additional surveys and supplements the October 17, 2016 Ecological Community Group Vegetation Assessment report.

Fieldwork was performed by Jacob Fleckenstein, Jennifer D. Feese[i] and Mike Smith on October 29, 2019 and June 11, 2020. The Ecological community assessment was performed pursuant to the "Rapid Assessment Field Surveys for Ecological Community Groups within Proposed Wind Energy Project Areas" (May 9, 2011), the Natural Communities of Virginia: Ecological Groups and Community Types Technical Report[ii], and the Natural Communities of Virginia: Classification of Ecological Community Groups[iii] website. Additional information on methodology used can be found in the 2016 Ecological Community Group Vegetation Assessment report.

Based on observations made by WSSI scientists, no changes were made to previous findings. Attached to this addendum is a revised map showing the additional study areas and the communities that are within these boundaries.

Regards,

WETLAND STUDIES AND SOLUTIONS, INC.

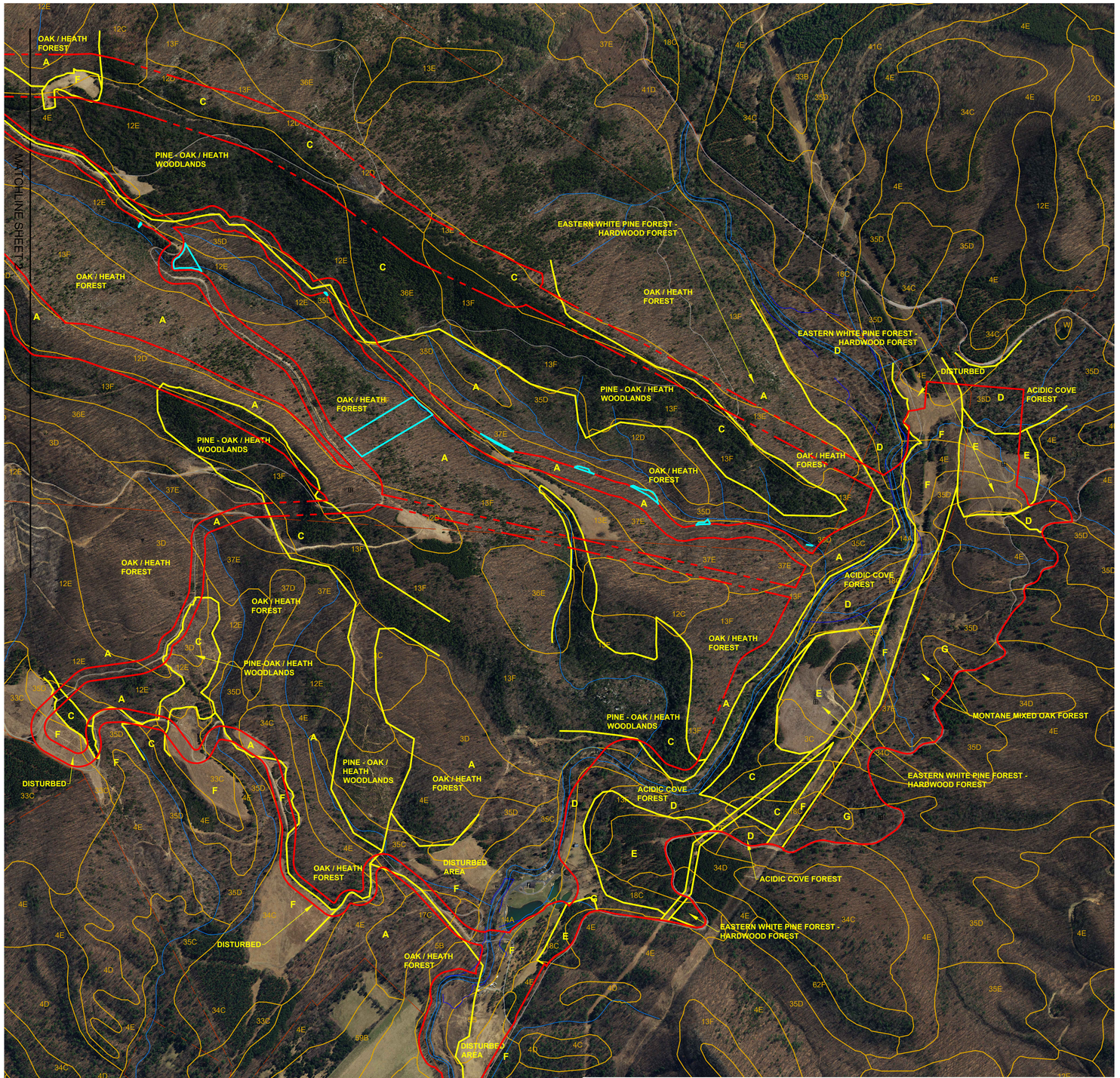
Jacob Fleckenstein
Environmental Scientist

5300 Wellington Branch Drive • Suite 100 • Gainesville, Virginia 20155 • Phone 703.679.5766 • Fax 703.679.5601
Jfleckenstein@wetlands.com • www.wetlands.com

[i] *International Society of Arborculture (ISA) Certified Arborist, MA-5134A; Professional Wetland Scientist #1871, Society of Wetlands Scientists Certification Program, Inc.; VA Certified Professional Wetland Delineator #3402-000095; Society for Freshwater Science (SFS) Certified Family Level Taxonomist: All Phyla;i*

[ii] *Fleming, Gary P. and Karen D. Patterson 2013. Natural Communities of Virginia: Ecological Groups and Community Types. Natural Heritage Technical Report 13-16. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, Virginia. 36 pages.*

[iii] *Fleming, G.P., K.D. Patterson, K. Taverna, and P.P. Coulling. 2013. The natural communities of Virginia: classification of ecological community groups. Second approximation. Version 2.6. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA. http://www.dcr.virginia.gov/natural-heritage/natural-communities/ncintro.shtml*



NOTES:

1. This map has been oriented to The Virginia Coordinate System of 1983, South Zone. This map is a revision of a previously submitted map in 2016 and references the field work performed at that time. Sample Plots were located in the field using a GETAC F110 Tablet GPS unit, in Geographic Latitude and Longitude.

2. Wetland Studies and Solutions, Inc (WSSI) conducted an Ecological Community Group Assessment for the Rocky Forge Wind Project in Botetourt County, Virginia. Field work was performed by Jacob Fleckenstein, Jennifer D. Feese and Mike Smith on October 29, 2019 and June 11, 2020.

3. Boundary information was obtained from Apex Clean Energy, Inc, and a Spring 2019 Natural Color Imagery aerial photograph from Virginia Base Mapping Program was used as a base for this Attachment.

4. Five major forest stand types were identified within the study area. Ecological community group descriptions are provided on DCR-NHR's "The Natural Communities of Virginia: Classification of Ecological Community Groups" website. These stand types are as follows:

Forest Stand A: Oak/Heath Forest. The Oak-Heath Forest community was the largest community group observed throughout the study area (approximately 219 acres) and was represented by six sampling plots (Plots A-1 through A-6). This community received an ecological integrity rating of B (Good), due to the large stand size, the relatively large size of the canopy trees, minimal presence of invasive species, and the presence of dirt access roads. Dominant and common species throughout the six sampling plots included white oak (*Quercus alba*), black oak (*Quercus velutina*), chestnut oak, mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), black gum, tulip poplar, red oak, flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*), striped wintergreen, cat brier, and a blueberry species. Multiflora rose was documented as rare in the herbaceous layer of Plot A-3.

Forest Stand B: Northern Red Oak Forest. The Northern Red Oak Forest community comprised approximately 2 acres in the northeastern portion of the study area and was represented by a single sampling plot (Plot B-1). This community received an overall ecological integrity rating of B (Good) due to the relatively large size of the trees, minimal anthropogenic disturbances (dirt access road) and the absence of invasive species. Dominant and common species observed included: northern red oak (*Quercus rubra*), chestnut oak (*Quercus montana*), sweet birch (*Betula lenta*), blueberry species (*Vaccinium* sp.), striped maple (*Acer pensylvanicum*), and striped wintergreen (*Chimaphilia maculata*).

Forest Stand C: Pine - Oak/Heath Woodlands. The Pine-Oak/Heath Woodlands community comprised approximately 95 acres, is located in the central, southern, and western portions of the study area, and was represented by three sampling plots (Plots C-1 through C-3). This community received an overall ecological integrity rating of B (Good) due to the relatively large size and condition of the canopy trees, minimal presence of invasive species and the presence of dirt access roads. Dominant and common species included table mountain pine (*Pinus pungens*), pitch pine (*Pinus rigida*), mountain laurel (*Kalmia latifolia*), chestnut oak, bear oak (*Quercus ilicifolia*), cat brier (*Smilax glauca*), American chestnut (*Castanea dentata*), and black gum (*Nyssa sylvatica*). The invasive species included multiflora rose (*Rosa multiflora*), which was documented as rare in the herbaceous layer of Plot C-1.

Forest Stand D: Acidic Cove Forest. The Acidic Cove Forest community comprised approximately 48 acres in the southern portion of the study area and was represented by a three sampling plots (Plots D-1 through D-3) This community received an ecological integrity rating of C (Fair) due to the presence of invasive species, the young age of the stand, evidence of disease, and its close proximity to Dagger Springs Road. Dominant and common species within the plot included tulip poplar (*Liriodendron tulipifera*), black cherry (*Prunus serotina*), eastern redbud (*Cercis canadensis*), black locust (*Robinia pseudoacacia*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), Christmas fern (*Polystichum acrostichoides*) and grape (*Vitis* sp.). Cucumber magnolia (*Magnolia acuminata*) and white ash (*Fraxinus americana*) were also present in the tree canopy but were considered rare. Invasive species within this stand included garlic mustard (*Alliaria petiolata*), wineberry (*Rubus phoenicolasius*), Japanese honeysuckle (*Lonicera japonica*), and autumn olive (*Elaeagnus umbellata*).

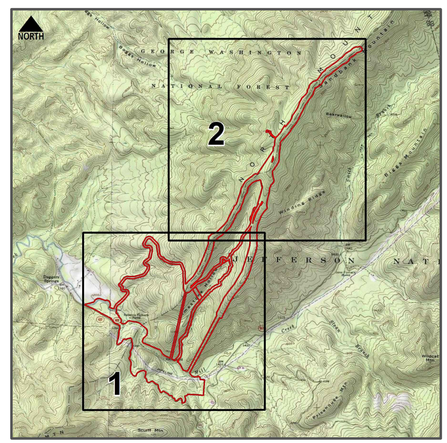
Forest Stand E: Eastern White Pine - Hardwood Forest. The Eastern White Pine - Hardwood Forest community comprised approximately 46 acres in the southern portion of the study area and was represented by three sampling plot (Plot E-1 through E3). This community received an ecological integrity rating of C (Fair) due to evidence of past logging, the presence of invasive species, and the close proximity of the stand to Dagger Springs Road. Dominant and common species present at the site included eastern white pine, tulip poplar, black cherry, black locust, Christmas fern, northern spicebush (*Lindera benzoin*), coralberry (*Symphoricarpos orbiculatus*), grape, greenbriar (*Smilax rotundifolia*), and lady fern (*Athyrium filix-femina*). The invasive tree of heaven (*Ailanthus altissima*) was documented as rare in the subcanopy.

Forest Stand G: Montane Mixed Oak Forest.The Montane Mixed Oak Forest community comprised approximately 57 acres in the southern portion of the Facility Impact Area and was represented by two sampling plots (Plots G-1 and G-2). This community received an overall ecological integrity rating of C (Fair) due to the presence of invasive species, the young age of the stand and its close proximity to Dagger Springs Road. Dominant and common species within the plot include chestnut oak (*Quercus montana*), tulip poplar (*Liriodendron tulipifera*), mockernut hickory (*Carya tomentosa*), sweet birch (*Betula lenta*) red maple (*Acer rubrum*), striped maple (*Acer pensylvanicum*), white oak (*Quercus alba*), red oak (*Quercus rubra*), black gum (*Nyssa sylvatica*), eastern white pine (*Pinus strobus*), cucumber magnolia (*Magnolia acuminata*), mountain laurel (*Kalmia latifolia*), and witch hazel (*Hamamelis virginiana*). American beech (*Fagus grandifolia*) was also present in the subcanopy, but was considered rare. Invasive species within these stands include garlic mustard (*Alliara petiolata*).

5. Non-Forest Communities:

Disturbed Areas (F) - This category comprises ±85 acres located throughout the study area. Disturbed areas consisted primarily of maintained / mowed fields and access roads.

MAPPED SOILS		
Mapping Unit Number	Soils Series Name	Slope
3D	Bailegap cobbly fine sandy loam	15-30%
4E	Berks-Weikert complex	30-60%
5B	Botetourt loam	2-7%
12C	Dekalb channery fine sandy loam	2-15%
12D	Dekalb channery fine sandy loam	15-30%
12E	Dekalb channery fine sandy loam	30-60%
13E	Dekalb-Rock outcrop complex	10-35%
13F	Dekalb-Rock outcrop complex	35-80%
14A	Derroc cobbly loam	0-4%
17C	Ernest silt loam	7-15%
33C	Laidig fine sandy loam	7-15%
34C	Laidig cobbly fine sandy loam	7-15%
35C	Laidig cobbly fine sandy loam	2-15%
35D	Laidig cobbly fine sandy loam	15-30%
36E	Lehew-Dekalb complex	30-60%
37C	Lily gravelly sandy loam	2-15%
37D	Lily gravelly sandy loam	15-30%
37E	Lily gravelly sandy loam	30-60%



LEGEND

- 2019 & 2020 STUDY AREA
- PREVIOUS STUDY AREA BOUNDARY
- ECOLOGICAL COMMUNITY BOUNDARY
- 66A — SOIL SERIES BOUNDARY AND SYMBOL
- ⊟ SP A–1 — APPROXIMATE SAMPLE PLOT LOCATION/NUMBER (orange glo) (NOTE #1)

VCS 1983 SOUTH ZONE

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)

1 inch = 500 ft.

Wetland Studies and Solutions, Inc. — a DAVEY company
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlands.com

Appendix A: Ecological Community Group Map - 2020

Rocky Forge Wind Project

Botetourt County, Virginia

REVISIONS

No.	Date	Description	Rev. By:	App. By:
1	11/15/19	2020 Ecological Community Survey	JSF	BNR
2	6/19/20	2020 Ecological Community Survey	JSF	BNR

SCALE: As Noted C.I.: N/A

DATE: October 2016

Horizontal Datum: VCS NAD 83

Vertical Datum: N/A

Boundary and Topo Source: Apex Clean Energy, Inc. USGS

Design	Draft	Approved
MCS	JDF	BNR

Sheet # 1 of 2

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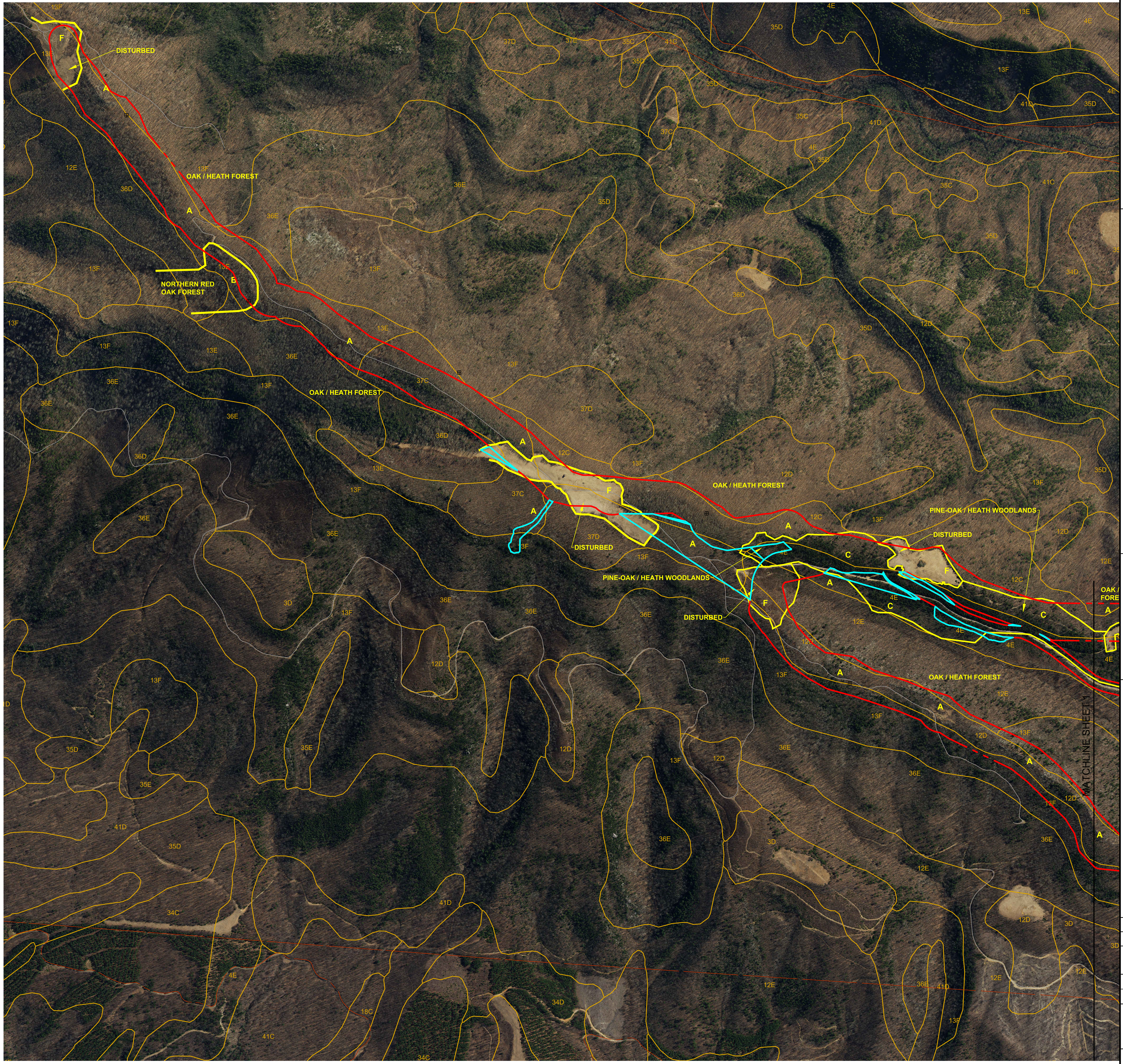
VCS 1983 SOUTH ZONE

SEE SHEET 1 FOR NOTES AND LEGEND



GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

Wetland Studies and Solutions, Inc.
a DAVEY company
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Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
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Appendix A:
Ecological Community Group Map - 2020

Rocky Forge Wind Project
Botetourt County, Virginia

REVISIONS

No.	Date	Description	Rev. By	App. By
1	11/15/19	2020 Ecological Community Survey	JSF	BNR
2	6/19/20	2020 Ecological Community Survey	JSF	BNR

DATE: October 2016 SCALE: 1" = 500' C.I.: N/A

Horizontal Datum: VCS NAD 83
Vertical Datum:
Boundary and Topo Source: Apex Clean Energy, Inc. USGS

Design	Draft	Approved
MCS	JDF	BNR

Sheet #
2 of 2

Computer File Name:
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