



Rolling Hills Generating, LLC

Delineation of Wetlands and Waterways

Portions of Wilkesville, Salem, Rutland,
and Cheshire Townships/Vinton, Meigs,
and Gallia Counties, OH

As of March 6, 2014

Table of Contents

1.0 INTRODUCTION	1
1.1 PURPOSE	1
1.2 LOCATION OF PROPOSED PROJECT	2

2.0 STUDY METHODS	3
2.1 IDENTIFICATION AND DELINEATION OF WETLANDS AND WATERWAYS.....	3
2.1.1 Desktop Analysis and Field Investigation	3
2.1.2 Wetland Delineation	4
2.1.3 Stream Delineation.....	4
2.1.4 Open Water Delineation	5
2.1.5 Ditches and Basins.....	5

3.0 OVERVIEW OF SITE.....	6
3.1 GEOLOGY AND TOPOGRAPHY.....	6
3.2 CLIMATE	6
3.3 SOILS	6

4.0 RESULTS/EXISTING CONDITIONS.....	7
4.1 UPLAND HABITAT SUMMARY	7
4.2 WETLANDS AND WATERWAYS HABITAT SUMMARY.....	8
4.3 ROLLING HILLS GENERATING PROPERTY.....	8
4.4 PROPOSED PIPELINE EASEMENT	10

5.0 ADDITIONAL INFORMATION	15
5.1 STREAMS	15

6.0 CONCLUSION – POTENTIAL WETLANDS AND WATERWAYS.....	16
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REFERENCES	18
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Appendices

Appendix A – Figures

Appendix A-1 – Site Map

Appendix A-2 – Soil Survey Maps

Appendix A-3 – National Wetland Inventory Maps

Appendix A-4 – Wetlands and Water Features Maps

Appendix B – Wetlands and Water Features Descriptions, Photographs, Data Forms

Appendix C – US Army Corps of Engineers Preliminary Jurisdictional Determination for the RHG Property

Tables

Table 1. Water Features Identified at the RHG Property

Table 2. Water Features Identified Along the Proposed Pipeline Easement

Table 3. Water Features To Be Avoided Via Realignment of the Proposed Pipeline Easement

1.0 Introduction

1.1 PURPOSE

Stantec Consulting Services Inc. (Stantec) was retained by Rolling Hills Generating, LLC (RHG) to conduct a delineation of wetlands and waterways at the RHG property, along a proposed pipeline easement, and at the intake/outfall structures, collectively referred to as the “Site” (Appendix A-1). The proposed pipeline easement is linear in nature and extends from the RHG property, north of Wilkesville, Ohio, to the intake/outfall structures located below the ordinary high water mark (OHWM) on the Ohio River. The purpose of this delineation was to identify wetlands and waterways potentially regulated by the US Environmental Protection Agency (USEPA) and US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA, 33 U.S.C. 1344) which may be affected by the proposed conversion of the RHG property and construction of the proposed pipelines.

The USACE has provided a preliminary jurisdictional determination (JD) of the presence and extent of wetlands and waterways subject to regulation under CWA Section 404 at the RHG property (Appendix C). All wetlands and waterways at the RHG property which are to be permanently impacted by the proposed conversion are Waters of the United States (WOUS). Due to the magnitude of the area encompassed by the proposed pipeline easement, RHG is assuming, at this time, that all potential wetlands and waterways identified along the proposed pipeline easement are jurisdictional features for the purposes of project permitting. No features along the proposed pipeline easement will be permanently impacted.

Note that portions of the intake/outfall structures situated below the OHWM of the Ohio River will also fall under Section 404 regulatory authority, as well as Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) which prohibits the unauthorized obstruction or alteration of any navigable water of the United States. Section 10 regulations are also implemented by the USACE.

Wetlands that are determined by the USACE to be non-jurisdictional (not WOUS) and thus not subject to CWA Section 404 regulation may be defined by the Ohio Environmental Protection Agency (OEPA) as isolated wetlands. Isolated wetlands may fall under the regulatory jurisdiction of the OEPA (Pursuant to Ohio Revised Code 6111.02 to 6111.028) which requires an Isolated Wetland Permit from the OEPA for discharge of dredged or fill material into isolated wetlands in Ohio. The USACE JD indicates that all permanently impacted wetlands and waterways at the RHG property are WOUS. Therefore, no isolated wetlands will be impacted and an Isolated Wetland Permit will not be required.

The Site includes approximately 335 acres of land, consisting of the 182-acre RHG property and 153 acres for the proposed pipeline easement. The proposed pipeline easement acreage is computed based on a 75-foot easement width, as well as additional acreages for a pump

station, access roads, and other miscellaneous acreages associated with the intake/outfall structures. The entire 335-acre Site was included in the potential wetlands and waterways delineation effort, as well as several areas outside of the proposed pipeline easement where preliminary delineation efforts resulted in realignment of the proposed pipeline easement.

Stantec assisted in locating the proposed pipeline easement by identifying potential wetlands and waterways within a preliminary corridor identified by RHG. The results of Stantec's investigation were utilized to avoid and minimize impacts, to the extent practicable, to potential wetlands and waterways during further development of the preliminary pipeline easement, including realignment of the easement to avoid forested and scrub-shrub wetlands.

1.2 LOCATION OF PROPOSED PROJECT

The Site is located in Wilkesville, Salem, Rutland, and Cheshire Townships, in portions of Vinton, Meigs, and Gallia Counties, Ohio (Appendix A-1). The RHG property is located in Wilkesville Township, Vinton County, Ohio, the approximate center of which is located at 39.0870625, -82.3315236 (Lat/Long). The proposed pipeline easement extends southeast from the RHG property for approximately 17.1 miles and terminates below the OHWM of the Ohio River. The proposed pipeline easement includes the intake/outfall structures and one the pump station.

2.0 Study Methods

2.1 IDENTIFICATION AND DELINEATION OF WETLANDS AND WATERWAYS

2.1.1 Desktop Analysis and Field Investigation

The Wilkesville, Salem, Rutland, and Cheshire, Ohio 7.5 Minute Series USGS topographic maps (Appendix A-1), Soil Survey of Vinton, Meigs, and Gallia Counties, Ohio (Appendix A-2), and National Wetlands Inventory Data (Appendix A-3) were reviewed to assess the likelihood of occurrence, and probable location of wetlands within the Site. Following this desktop review and analysis, Stantec performed field investigations of the Site on dates ranging from February through November, 2012. The objectives of this effort were to: (1) characterize vegetation, (2) classify soils, (3) inspect hydrology including potential streams, watercourses, and open water features (4) based on these data, assess whether wetlands and waterways were present within the Site, and (5) avoid or minimize impacts to wetlands and waterways by suggesting alignment adjustments to the proposed pipeline easement. Alignment adjustments were considered and implemented by RHG based on several factors including terrain and the practicality of adjustments.

Wetlands, streams, watercourses, stormwater ditches, detention/retention basins, and open water features encountered during the Site investigation are described in Appendix B. Stantec collected data and completed relevant assessment forms, which included: Headwater Habitat Evaluation Index (HHEI) (OEPA 2012) and Qualitative Habitat Evaluation Index (QHEI) forms for watercourses (OEPA 2006); Routine Determination Forms (RDF) for wetlands, and Ohio Rapid Assessment Method forms (ORAM, v. 5; Mack 2001) for wetlands. Appropriate forms were completed during the Site field investigation and are provided in Appendix B.

Several features along the proposed pipeline easement are labeled as “potential wetland”. These features were identified during field investigation as likely to be wetland, but were not delineated. The proposed pipeline easement was subsequently modified to avoid these features. As a result, specific wetland indicator data for these features, such as class, hydrology, vegetation, soils, etc. may not have been collected, although we included these features in Appendix A-4 and Appendix B. Potential wetland features are not consecutively numbered along the proposed pipeline easement because some features were revisited, delineated, and given a different wetland name (see Section 4.4) and various portions were investigated as permission to access was granted by landowners. Therefore, gaps occur in the numbering of these potential features. Note that some features where specific wetland data were collected were avoided and do not lie within the proposed pipeline easement and thus the length and area of these features within the Site is zero.

The HHEI is used to evaluate small headwater streams (< 1.0 mi² drainage area), which are often undefined or not assigned a beneficial use in Ohio water quality standards. The QHEI is

used to assess larger streams, which are often named streams assigned a beneficial use in Ohio water quality standards.

Wetland and waterway boundaries were located using a Global Positioning System (GPS) Trimble® GeoXT or GeoXH receiver. GPS data were used to create stream and wetland delineation maps (Appendix A-4).

2.1.2 Wetland Delineation

Wetlands, for the purpose of this study, were identified in the field per the “Corps of Engineers Wetlands Delineation Manual” (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2).

As of August 17, 1991, the USACE was directed to utilize the 1987 Wetlands Manual to identify and delineate wetlands potentially subject to regulation under CWA Section 404. Field identification of wetlands addresses three characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

Vegetative communities were inventoried to assess the dominant plant species in each of four vegetative layers: trees, saplings/shrubs, herbs, and woody vines. The wetland indicator status for each of the dominant species was obtained using the 2012 National Wetland Plant List, Eastern Mountain and Piedmont Region. Delineations conducted prior to issuance of the 2012 National Wetland Plant List (May 9, 2012) utilized the appropriate indicator list in effect at the time of the delineation.

Munsell soil colors were referenced to determine colors within soils profiles (Gretag/Macbeth, 2000) and hydric soil indicators were evaluated using the Field Indicators of Hydric Soils in the United States (USDA, 2010). Wetland hydrology indicators were identified as prescribed by the Corps of Engineers Wetland Delineation Manual and associated supplement.

Wetlands were classified according to “Classification of Wetlands and Deepwater Habitats of the United States” (Cowardin et al. 1979). In this classification system, wetland habitats are divided into five major systems including: (1) Marine, (2) Estuarine, (3) Lacustrine, (4) Palustrine, and (5) Riverine. Each of these systems is further divided into subsystems, classes, and subclasses.

2.1.3 Stream Delineation

Streams that demonstrated a defined channel (bed and bank), OHWM, and the disturbance of terrestrial vegetation were delineated if found to exist within the Site. Delineated streams were classified as ephemeral, intermittent, and perennial per definition in the Federal Register/Vol. 67, No. 10. Functional assessment of streams was based on completion of the OEPA’s HHEI and QHEI forms. The centerline of each waterway was identified and surveyed using GPS and mapped with GIS software. If the stream was greater than 15 feet wide, both banks were surveyed using GPS.

2.1.4 Open Water Delineation

Open water boundaries were assessed using the definition described in the “Classification of Wetlands and Deepwater Habitats of the United States” (Cowardin 1979) which includes wetland and deepwater habitats with most of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up most or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet – estimated for the purposes of this investigation) at low water.

The RHG property also includes a feature labeled as “Pool 1”. This feature is a vernal pool that falls into a category in itself. Vernal pools are small wetlands characterized by a lack of vegetation (though they may support some herbaceous wetland species) resulting from the persistence of standing water for a portion of the year, typically in the spring.

2.1.5 Ditches and Basins

Several constructed stormwater control ditches and basins are located at the RHG property. These features are identified as ditches and basins on appropriate figures and data forms. Ditches are linear, man-made water features that convey stormwater from one area to another. Basins are non-linear, man-made water features that collect and detain/retain stormwater. Several of the ditches may also contain wetlands.

3.0 Overview of Site

3.1 GEOLOGY AND TOPOGRAPHY

Geological information concerning Vinton, Meigs, and Gallia Counties was obtained from the United States Department of Agriculture (USDA) Soil Surveys of Vinton, Meigs, and Gallia Counties, Ohio (USDA 2004). Vinton, Gallia, and Meigs Counties lie wholly in the unglaciated section of Ohio; however as the Illinoian glacier entered Ohio from the north it changed the geology, drainage patterns, and soils in southern Ohio. Glacial deposits blocked drainageways forming lakes that covered southeastern Ohio. As the water levels topped ridgetops, a new drainage system was developed. In Vinton County two systems are identified – the Mississippian and Pennsylvanian. The Conemaugh formations of the Pennsylvanian system are exposed in this area. The Site located in Vinton County largely consists of virgin topography with moderate slopes and valleys.

3.2 CLIMATE

The average winter temperature in Vinton, Meigs, and Gallia Counties is approximately 32°F, and the average daily minimum temperature is 22°F. The average summer temperature is 71°F and the average daily maximum temperature is 84°F. Total annual precipitation is about 40 inches; of this, about 59 percent usually falls April through September (USDA 2004).

3.3 SOILS

In order to assess soil types within the Site, soils information concerning Vinton, Meigs, and Gallia Counties, Ohio was obtained from the USDA Soil Survey Geographic Database (SSURGO, Appendix A-2). Soils identified within or near the Site included Guernsy-Gilpin association (GwE), Pinegrove sand (PnF), and Upshur-Gilpin complex (UgE) in Gallia County. In Meigs County, soils in the study area are dominated by Upshur-Gilpin complex (UgC2, UgD, and UgE). Vinton County has predominately Gilpen- Rarden complex (GhC and GhD), and Omulga silt loam (OmB and OmC) soils in the study area. Of the soils listed within the Site, 2.9 percent of all the soils were considered to be hydric, with 0.7 percent Orville silt loam (OR) as the predominate hydric soil in the study area.

4.0 Results/Existing Conditions

4.1 UPLAND HABITAT SUMMARY

Upland habitat on the Site is predominately forested, with some cleared areas (Appendix A-4). Cleared areas include agricultural fields and pasture, but the habitats can be generally categorized as old field and scrub-shrub. These three upland habitat types are described below.

Forested habitat consisted mainly of second-growth, mature trees characteristic of a mixed mesophytic community. The dominant tree species included sugar maple (*Acer saccharum*, FACU), hickories (*Carya spp.*), American beech (*Fagus grandifolia*, FACU), tulip tree (*Liriodendron tulipifera*, FACU), and sassafras (*Sassafras albidum*, FACU). Other tree species frequently observed included black walnut (*Juglans nigra*, FACU), American sycamore (*Platanus occidentalis*, FACW), and black locust (*Robinia pseudoacacia*, FACU). Dominant mid-story trees and shrubs included flowering dogwood (*Cornus florida*, FACU), black-gum (*Nyssa sylvatica*, FAC), pawpaw (*Asimina triloba*, FAC), spicebush (*Lindera benzoin*, FAC), multiflora rose (*Rosa multiflora*, FACU), black raspberry (*Rubus occidentalis*, UPL), and common greenbriar (*Smilax rotundifolia*, FAC). The dominant herbaceous species within forested habitat included white snakeroot (*Ageratina altissima*, FACU), blue cohosh (*Caulophyllum thalictroides*, UPL), bottlebrush grass (*Elymus hystrix*, UPL), and clubmoss (*Lycopodium sp.*).

Scrub-shrub habitat was often present in the transition zones between forested and old field habitat. Dominant shrubs and small trees encountered in this habitat type included redbud (*Cercis canadensis*, FACU), eastern cottonwood (*Populus deltoides*, FAC), staghorn sumac (*Rhus typhina*, UPL), green ash (*Fraxinus pennsylvanica*, FACW), common blackberry (*Rubus allegheniensis*, FACU), and Japanese honeysuckle (*Lonicera japonica*, FAC). Dominant herbaceous species included goldenrods (*Solidago nemoralis*, FACU, *Euthamia graminifolia*, FAC), calico aster (*Symphiotrichum lateriflorum*, FACW), giant ironweed (*Vernonia gigantea*, FAC), shrubby St. John's-wort (*Hypericum prolificum*, FACU), and deer's-tongue panic grass (*Dichanthelium clandestinum*, FAC).

Dominant herbaceous species in old field habitat included common broom-sedge (*Andropogon virginicus*, FACU), Canada goldenrod (*Solidago canadensis*, FACU), awl aster (*Symphiotrichum pilosum*, FAC), Queen-anne's-lace (*Daucus carota*, FACU), chicory (*Cichorium intybus*, FACU), red clover (*Trifolium pratense*, FACU), and giant ironweed. Dominant woody vegetation included common blackberry (*Rubus allegheniensis*, FACU) and black raspberry.

Note that references to plant species include the plant wetland indicator code as noted below:

Indicator Code	Wetland Type	Comment
OBL	Obligate Wetland	Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	Occurs in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified. If a species does not occur in wetlands in any region, it is not on the National List.
NA	No agreement	The regional panel was not able to reach a unanimous decision on this species.
NI	No indicator	Insufficient information was available to determine an indicator status.
NO	No occurrence	The species does not occur in that region.

4.2 WETLANDS AND WATERWAYS HABITAT SUMMARY

Table 1 and 2 contain a summary of features, including potential wetlands and waterways, identified within the Site. Table 1 identifies potential wetlands and waterways at the RHG property, including features associated with stormwater controls such as ditches and basins. Table 2 identifies potential wetlands and waterways within the proposed pipeline easement which encompasses the remainder of the Site.

Appendix B contains information specific to each feature (wetland, stream, ditch, open water etc.) identified during field investigations. Data for features identified at the RHG property are reported first, followed by features identified along the proposed pipeline easement in the order of occurrence from the RHG property to the Ohio River. Note that most features reported are located within either the RHG property boundaries or the proposed pipeline easement. There are some reported features that lie outside of the proposed pipeline easement (Table 3). These features were identified during preliminary routing of the proposed pipeline easement and the easement was subsequently adjusted to avoid these features. While linear and areal measurements for features within the Site are restricted to the RHG property boundaries or within the proposed pipeline easement, features along but outside of the proposed pipeline easement may have arbitrary limits that do not include the entire feature. These potential wetlands and waterways are reported to provide information regarding features that were delineated during the field investigation and were avoided via rerouting.

4.3 ROLLING HILLS GENERATING PROPERTY

The RHG property was investigated prior to the field investigation conducted along the proposed pipeline easement. As a result, different nomenclature was utilized for referencing water features identified at the RHG property versus those identified along the proposed

pipeline easement. The naming convention utilized for identifying features at the RHG property include a numbering system for wetlands (e.g. Wetland 1, Wetland 2 etc.), and a lettering system for streams, ditches, and basins (e.g. Stream F, Ditch H, Basin S). The vernal pool identified on-site is named “Pool 1”. In addition, several potential wetlands were identified on-site during a follow-up investigation after the initial field visit. These potential wetlands are associated with existing ditches and a stream on-site. These are named utilizing a reference to the ditch/stream associated with the potential wetland (e.g. Wetland M, Wetland D). These features are indicated in Appendix A-4 as, for example, “Ditch/Wetland M”. This indicates the presence of both a ditch and a potential wetland. An acreage is reported for the portion of this feature that is a potential wetland, while a lineal footage is reported for the ditch portion of these features. There is no geographic overlap of the wetland acreage and lineal footage within this type of feature.

Table 1 provides the water features identified at the RHG property. Bold/underlined features identify those at the RHG property which will be permanently impacted by the conversion project.

Table 1: Water Features Identified at the RHG Property

Feature Name	Classification	Linear Footage (ft.)	Linear Acreage (ac.)	Non-Linear Acreage (ac.)	Feature Width (ft.)	Feature Score	Scoring Method
Wetland 1	Palustrine Emergent	--	--	0.46	--	NA	--
Wetland 2	Palustrine Emergent	--	--	0.54	--	NA	--
Wetland 3	Palustrine Emergent	--	--	0.192	--	25	ORAM
Wetland 4	Palustrine Emergent	--	--	0.143	--	29	ORAM
<u>Wetland 5</u>	<u>Palustrine Emergent</u>	--	--	<u>0.011</u>	--	<u>18</u>	<u>ORAM</u>
<u>Pool 1</u>	<u>Palustrine Emergent</u>	--	--	<u>0.014</u>	--	<u>51</u>	<u>ORAM</u>
Stream A	Ephemeral	340	0.018	--	2.3	23	HHEI
Stream B	Perennial	403	0.045	--	4.9	48	HHEI
Stream C	Perennial	2,382	0.235	--	4.3	47	HHEI
Stream/Wetland D	Intermittent/Palustrine Emergent	967	0.044	0.292	2.0	27/32.5	HHEI/ORAM
Stream E	Ephemeral	267	0.028	--	4.6	52	HHEI
<u>Stream F1</u>	<u>Ephemeral</u>	<u>302</u>	<u>0.021</u>	--	<u>3.0</u>	<u>11</u>	<u>HHEI</u>
<u>Stream F2</u>	<u>Ephemeral</u>	<u>430</u>	<u>0.028</u>	--	<u>2.8</u>	<u>12</u>	<u>HHEI</u>
Ditch G	Ephemeral	318	0.037	--	5.0	--	--
Ditch I	Ephemeral	381	0.022	--	2.5	--	--
Ditch J	Ephemeral	502	0.029	--	2.5	--	--
Ditch K	Ephemeral	490	0.028	--	2.5	--	--
<u>Ditch/Wetland L</u>	<u>Ephemeral/Palustrine Emergent</u>	<u>283</u>	<u>0.026</u>	<u>0.076</u>	<u>4.0</u>	<u>34/16</u>	<u>HHEI/ORAM</u>
<u>Ditch/Wetland M</u>	<u>Ephemeral/Palustrine Emergent</u>	<u>620</u>	<u>0.050</u>	<u>0.087</u>	<u>3.5</u>	<u>24/9.5</u>	<u>HHEI/ORAM</u>

Feature Name	Classification	Linear Footage (ft.)	Linear Acreage (ac.)	Non-Linear Acreage (ac.)	Feature Width (ft.)	Feature Score	Scoring Method
Basin N	Palustrine Emergent	--	--	0.338	--	21	ORAM
Ditch O	Ephemeral	142	0.003	--	1.0	24	HHEI
Ditch/Wetland P	Ephemeral/Palustrine Emergent	151	0.007	0.010	2.0	24/21	HHEI/ORAM
Ditch/Wetland Q	Ephemeral/Palustrine Emergent	156	0.026	0.029	7.2	24	ORAM
Basin R	Palustrine Emergent	--	--	1.016	--	--	--
Basin S	Palustrine Emergent	--	--	0.065	--	29	ORAM
Basin T	Palustrine Emergent/Scrub Shrub	--	--	0.045	--	23	ORAM
Basin U	Palustrine Emergent/Scrub Shrub	--	--	0.031	--	24	ORAM
Wetland V	Palustrine Emergent	--	--	0.141	--	27	ORAM
TOTAL All Features		8134	0.647	3.490			

4.4 PROPOSED PIPELINE EASEMENT

Features identified along the proposed pipeline easement are named with a system typically utilized by Stantec for linear project areas. The stream names contain a leading letter indicating stream (S) followed by a sequential number (e.g. S04 = stream 4). The ending characters indicate the initials of field personnel conducting the investigation. The wetland names contain a leading letter indicating wetland (W) followed by a sequential number and letter combination that includes the initials of the field person conducting the investigation (e.g. W01KAL = wetland 01L investigated by KA). Note that the initials of the field personnel are located between the letter/number combination. Each feature has a distinctive letter/number combination. Streams have a corresponding length within the proposed pipeline easement and width reported, as well as an acreage within the proposed pipeline easement computed from the length and width. Wetland and open water features have a corresponding acreage reported based on the GPS survey of the feature within the proposed pipeline easement.

Table 2 provides the water features identified along the proposed pipeline easement which will be temporarily impacted by the installation of the water pipelines.

Table 2: Water Features Identified Along the Proposed Pipeline Easement

Feature Name	Classification	Width (ft.)	Linear Footage	Acreage (acres)	Feature Score	Scoring Method
S107MK	Intermittent	4	94.6	0.009	52	HHEI
S02MK	Intermittent	5	102.7	0.01	37	HHEI
S104MK	Ephemeral	3	91.6	0.006	11	HHEI
S06MK	Perennial	8	78.7	0.014	58	QHEI

Feature Name	Classification	Width (ft.)	Linear Footage	Acreage (acres)	Feature Score	Scoring Method
S05MK	Intermittent	4	97.2	0.009	33	HHEI
S04MK	Intermittent	3	80.4	0.006	33	HHEI
S03MK	Ephemeral	3	81.5	0.006	11	HHEI
S07MK	Intermittent	8	130	0.024	54	HHEI
S08MK	Ephemeral	3	41.6	0.003	23	HHEI
S105MK	Ephemeral	1	1.6	0.0001	12	HHEI
S09MK	Intermittent	6	91.2	0.013	45	HHEI
S48MK	Intermittent	4	76.8	0.007	40	HHEI
S47MK	Intermittent	5.9	183.1	0.025	63	HHEI
S46MK	Ephemeral	1.5	98.1	0.003	18	HHEI
S45MK	Ephemeral	2.5	101.7	0.006	20	HHEI
S44MK	Ephemeral	3	108.3	0.007	20	HHEI
S108MK	Perennial	5.2	57.5	0.007	60	HHEI
S16MK	Perennial	6	27.1	0.004	75	HHEI
S15MK	Intermittent	5.5	112.5	0.014	38	HHEI
S14MK	Ephemeral	2	74.3	0.003	14	HHEI
S13MK	Ephemeral	2	83.4	0.004	14	HHEI
S12MK	Ephemeral	2.5	105	0.006	23	HHEI
S11MK	Ephemeral	1	122	0.003	13	HHEI
S10MK	Intermittent	6	77.5	0.011	38	HHEI
S76MK	Intermittent	4	142.4	0.013	33	HHEI
S77MK	Intermittent	5.2	590.4	0.07	64	HHEI
S78MK	Intermittent	4.5	154	0.016	48	HHEI
S79MK	Ephemeral	2.3	75.5	0.004	28	HHEI
S80MK	Intermittent	5.2	92.4	0.011	44	HHEI
S81MK	Ephemeral	1.3	208.4	0.006	11	HHEI
S82MK	Ephemeral	2	79.1	0.004	37	HHEI
S83MK	Ephemeral	3	75.2	0.005	11	HHEI
S75MK	Intermittent	3.6	75.5	0.006	42	HHEI
S74MK	Ephemeral	1.6	80.1	0.003	11	HHEI
S73MK	Ephemeral	1	119.9	0.003	11	HHEI
S72MK	Ephemeral	2.6	151.8	0.009	11	HHEI
S71MK	Ephemeral	1.3	101.8	0.003	11	HHEI
S70MK	Ephemeral	2	77.7	0.004	12	HHEI
S69MK	Ephemeral	3	79.5	0.005	15	HHEI

Feature Name	Classification	Width (ft.)	Linear Footage	Acreage (acres)	Feature Score	Scoring Method
S68MK	Ephemeral	1.3	109.7	0.003	11	HHEI
S67MK	Ephemeral	1.5	91.7	0.003	12	HHEI
S66MK	Ephemeral	3.5	75.1	0.006	33	HHEI
S65MK	Ephemeral	1	32.4	0.001	11	HHEI
S64MK	Ephemeral	1.5	107.5	0.004	12	HHEI
S63MK	Ephemeral	1	57.5	0.001	14	HHEI
S62MK	Ephemeral	1	39.3	0.001	12	HHEI
S43MK	Perennial	5.9	84.8	0.011	58	HHEI
S42MK	Intermittent	4	93.1	0.009	39	HHEI
S40MK	Ephemeral	3	190.9	0.013	17	HHEI
S41MK	Ephemeral	1.5	87.2	0.003	17	HHEI
S39MK	Ephemeral	2	45.2	0.002	15	HHEI
S38MK	Ephemeral	3.5	75.9	0.006	21	HHEI
S37MK	Ephemeral	2	99.2	0.005	20	HHEI
S36MK	Ephemeral	3	81	0.006	21	HHEI
S34MK	Ephemeral	3	77.7	0.005	24	HHEI
S35MK	Intermittent	4	57.5	0.005	34	HHEI
S33MK	Ephemeral	3	235.7	0.016	24	HHEI
S103MK	Ephemeral	3	89.7	0.006	16	HHEI
S102MK	Ephemeral	2.6	92.8	0.006	20	HHEI
S101MK	Ephemeral	1.6	78.8	0.003	11	HHEI
S100MK	Ephemeral	1	25.6	0.001	11	HHEI
S29MK	Intermittent	8	94.4	0.017	44	HHEI
S25MK	Ephemeral	2	88	0.004	23	HHEI
S24MK	Ephemeral	2	76.2	0.003	23	HHEI
S23MK	Ephemeral	3	108.6	0.007	17	HHEI
S22MK	Ephemeral	1.5	84.2	0.003	17	HHEI
S21MK	Intermittent	4	90.5	0.008	36	HHEI
S20MK	Intermittent	4	153	0.014	38	HHEI
S19MK	Ephemeral	2.5	92.4	0.005	17	HHEI
S18MK	Ephemeral	2.5	43.4	0.002	14	HHEI
S17MK	Ephemeral	2.5	78.1	0.004	27	HHEI
S87MK	Ephemeral	1.3	87.4	0.003	13	HHEI
S88MK	Ephemeral	1	78.1	0.002	17	HHEI
S89MK	Ephemeral	3	76.4	0.005	31	HHEI

Feature Name	Classification	Width (ft.)	Linear Footage	Acreage (acres)	Feature Score	Scoring Method
S49MK	Ephemeral	1	47.9	0.001	23	HHEI
S50MK	Intermittent	4	119.9	0.011	42	HHEI
S51MK	Ephemeral	1	79.1	0.002	23	HHEI
S94MK	Ephemeral	1.3	75.6	0.002	20	HHEI
S95MK	Ephemeral	2.6	81.3	0.005	24	HHEI
S96MK	Ephemeral	2	178.3	0.008	18	HHEI
S97MK	Ephemeral	3	83	0.006	23	HHEI
S98MK	Ephemeral	2	78.9	0.004	17	HHEI
S99MK	Ephemeral	1.6	93.5	0.003	18	HHEI
S55MK	Perennial	7.9	75.6	0.014	30	QHEI
S54MK	Ephemeral	2.5	112.7	0.006	23	HHEI
S52MK	Intermittent	5	494.5	0.057	60	HHEI
S53MK	Ephemeral	0.7	3	0.0001	17	HHEI
S93MK	Intermittent	2.6	29.2	0.002	42	HHEI
S92MK	Ephemeral	2.0	78.4	0.004	13	HHEI
S91MK	Ephemeral	2.5	91.2	0.005	24	HHEI
S56MK	Ephemeral	1.3	90.1	0.003	23	HHEI
S57MK	Ephemeral	3	305.6	0.021	17	HHEI
S58MK	Intermittent	4	98.3	0.009	48	HHEI
S59MK	Ephemeral	1	86.2	0.002	22	HHEI
S90MK	Ephemeral	3.0	76.4	0.005	26	HHEI
S86MK	Intermittent	3	87.9	0.006	48	HHEI
S61MK	Perennial	6	28.4	0.004	61	QHEI
S84MK	Intermittent	2	81.9	0.004	32	HHEI
S85MK	Ephemeral	4	86.1	0.008	21	HHEI
TOTAL Stream Length and Acreage			9,964.1	0.747		
Wetland W01MKC	PEM	NA	NA	0.037	25	ORAM
Wetland W01MKA	PEM	NA	NA	0.037	18	ORAM
Wetland W01KAM	PEM	NA	NA	0.001	33	ORAM
Wetland W01KAL	PEM	NA	NA	0.030	33	ORAM
TOTAL Wetland Acreage				0.105		

Table 3 provides the water features identified along the proposed pipeline easement which will be avoided entirely. Realignment of the proposed pipeline easement in the field ensures that these water features will not be impacted by the installation of the water pipelines.

Table 3: Water Features To Be Avoided Via Realignment of the Proposed Pipeline Easement

Feature Name	Classification	Width (ft.)	Linear Footage	Acreage (acres)	Feature Score	Scoring Method
S01MK	Intermittent	3.5	0	0	56	HHEI
S32MK	Ephemeral	1	0	0	20	HHEI
S31MK	Ephemeral	2.3	0	0	25	HHEI
S30MK	Ephemeral	3	0	0	20	HHEI
S28MK	Ephemeral	2	0	0	28	HHEI
S27MK	Ephemeral	3	0	0	19	HHEI
S26MK	Ephemeral	3	0	0	22	HHEI
S60MK	Ephemeral	1	0	0	20	HHEI
S113MK	Perennial	6.6	0	0	61	HHEI
S114MK	Ephemeral	3.0	0	0	15	HHEI
S109MK	Perennial	25.0	0	0	59	QHEI
Potential Wetland 11	PFO	NA	NA	0	NA	ORAM
Wetland W01MKB	PEM	NA	NA	0	48	ORAM
Potential Wetland 10	PFO	NA	NA	0	NA	ORAM
Potential Wetland 9	PEM	NA	NA	0	NA	ORAM
Potential Wetland 8	PFO	NA	NA	0	NA	ORAM
Wetland W01MKD	PEM	NA	NA	0	51.5	ORAM
Wetland W01KAN	PEM	NA	NA	0	37.5	ORAM
Potential Wetland 5	PEM	NA	NA	0	NA	ORAM
Potential Wetland 6	PEM	NA	NA	0	NA	ORAM
Potential Wetland 4	PEM	NA	NA	0	NA	ORAM
Potential Wetland 3	PSS	NA	NA	0	NA	ORAM
Wetland W01KAK	PEM	NA	NA	0	29.5	ORAM

5.0 Additional Information

5.1 STREAMS

There are two occurrences where one stream appears to have two resource names on the maps (Appendix A). S108MK and S16MK are two names given to one perennial stream located on the proposed pipeline easement. This stream was delineated on two different occasions, due to a modification in the alignment and the delineation team named the stream on each visit. Conversely, S80MK and S81MK are actually not the same stream. S81MK is an ephemeral tributary of S80MK, but the scale of the maps and the GPS data does not show the distinction.

6.0 Conclusion – Potential Wetlands and Waterways

Stantec performed a wetland determination and delineation within land areas associated with the conversion of the RHG property and construction of the proposed pipelines located in Vinton, Meigs, and Gallia Counties, Ohio. The purpose and objective of the wetland determination and delineation was to identify the extent and spatial arrangement of potential wetlands and waterways within the Site.

Twenty eight water features were identified and delineated in accordance with state and federal guidelines at the RHG property. A total of 3.490 acres of wetlands and 8,134 linear feet (0.647 acres) of streams and ditches were identified and delineated within the RHG property. Of these features, seven wetlands totaling 0.601 acres and six linear features totaling 1,928 linear feet (0.135 acre) will be permanently impacted at the Site.

Ninety-nine streams totaling 9,964 linear feet (0.747 acres) and four wetlands totaling 0.105 acres were identified and delineated along the proposed pipeline easement. These features will be temporarily impacted by the installation of the water pipelines along the proposed pipeline easement.

Eleven streams and twelve wetlands were avoided via realignment of the proposed pipeline easement. These features will not be impacted by the installation of the water pipelines along the proposed pipeline easement.

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APPENDIX A

Figures

Appendix A-1

Site Map

Appendix A-2

Soil Survey

Appendix A-3

National Wetlands Inventory

Appendix A-4

Wetlands and Water Features Maps

APPENDIX B

Wetlands and Water Features Descriptions, Photographs,
Data Forms

APPENDIX C

US Army Corps of Engineers Preliminary Jurisdictional
Determination for the RHG Property