APPENDIX E

INVESTIGATION FOR WATERS OF THE U.S. REPORT

for the

American Electric Power
Mountaineer Commercial Scale
Carbon Capture and Storage Project
Mason County, West Virginia

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APPENDIX E: INVESTIGATION FOR WATERS OF THE U.S. REPORT

E.1 INTRODUCTION

American Electric Power Service Corporation (AEP) and the United States (U.S.) Department of Energy (DOE), as lead federal agency, are proposing to construct a commercial-scale carbon capture and storage (CCS) facility at its existing Mountaineer Power Plant (a 1,300 megawatt [MW] plant) and other AEP-owned properties in Mason County, West Virginia. This project (referred to as the Mountaineer CCS II Project) would capture carbon dioxide (CO_2) from this existing pulverized coal power plant located near New Haven, West Virginia, transport the captured CO_2 by pipeline to well locations within 12 miles of the plant, and inject approximately 1.5 million metric tons of captured CO_2 into saline formations approximately 1.5 miles below the earth's surface (for permanent geologic storage). AEP is seeking financial assistance from DOE for the proposed project.

DOE is preparing an Environmental Impact Statement (EIS) for this project. Potomac-Hudson Engineering, Inc. (PHE) prepared this Investigation for Waters of the U.S. Report to support the EIS and potential permitting for the project with the U.S. Army Corps of Engineers (USACE). In addition, this appendix supports the required floodplain and wetland assessment for compliance with regulations promulgated at 10 Code of Federal Regulations (CFR) 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements." These regulations provide a guide for DOE compliance with Executive Orders (EOs) 11988, "Floodplain Management," and 11990, "Protection of Wetlands." EO 11988 requires federal agencies, while planning their actions, to avoid to the extent possible adverse impacts associated with the modification of floodplains and to avoid support of floodplain development when there is a practicable alternative. EO 11990 requires that federal agencies, while planning their actions, consider alternatives to affecting wetlands, if applicable, and limit adverse impacts to the extent practicable if they cannot be avoided. The project features are summarized in Table E-1.

The captured and compressed CO_2 would be transported by pipeline to injection wells for permanent geologic storage. AEP is currently considering five properties, all owned by AEP, for the location of the CO_2 injection wells (see Section 2.3.5).

As shown in Attachment A.1 the following properties are under consideration for potential injection wells. They are listed below in descending order of preference:

- Mountaineer Plant
- Borrow Area: 2 miles south of the Mountaineer Plant
- Eastern Sporn Tract: 4.5 miles south of the Mountaineer Plant
- Jordan Tract: 10.5 miles south of the Mountaineer Plant
- Western Sporn Tract: 6 miles west of the Mountaineer Plant

The Mountaineer Plant and the Borrow Area have been identified as preferred injection well sites due to their proximity to the proposed CO_2 capture facility. Both properties are located on contiguous AEP-owned property, but for purposes of this report they are addressed as distinct locations as they are separated by approximately 2 miles. The Western Sporn is the least preferred due to: its smaller size; potential increase in the overall level of environmental impacts; project construction and operation expenses associated with the required separate pipeline route; and a likely requirement of road improvements to access well sites. Since it is not preferred, it is addressed at a lower level of detail.

Table E-1. Proposed Mountaineer CCS II Project Features

Proposed Project Feature	Description	Characteristics
CO_2 Capture Facility	**Location:** A capture facility would be constructed at AEP's Mountaineer Plant. The facility would use the Alstom CAP to capture CO_2 from a 235-MW flue gas slipstream from the plant's 1,300-MW pulverized coal-fired electric generating unit.	**Facility Footprint:** 500 x 1000 feet (11.5 acres), located within a 33-acre area at the Mountaineer Plant.
CO_2 Pipeline(s)	**Route(s):** Pipeline(s) used to transport CO_2 from the Mountaineer Plant to the injection wells would be co-located within existing road and high voltage transmission line ROWs, to the extent possible. The length of the pipeline routes vary by corridor option as shown in Table 2-9. The range of pipeline lengths to the following injection well properties is: (1) Mountaineer Plant (0.13 mile); (2) Borrow Area (2.24 miles); (3) Eastern Sporn Tract (5.00 to 8.65 miles); (4) Jordan Tract (9.24 to 9.68 miles); and (5) Western Sporn Tract (5.69 miles). **Operator:** AEP would own, operate, and maintain the CO_2 pipeline(s).	**Construction ROW Width:** 80-120 feet[a] **Permanent ROW Width:** 50 feet
Injection Wells	**Location(s):** Two co-located injection wells would likely be installed at two to four of the following five properties: (1) Mountaineer Plant (33 acres) (2) Borrow Area (28 acres) (3) Eastern Sporn Tract (400 acres) (4) Jordan Tract (195 acres) (5) Western Sporn Tract (70 acres) **Quantity:** Each well would be designed to inject approximately 0.5 million metric tons of CO_2 per year. The total injection rate would be 1.5 million metric tons per year.	**Construction Area:** Approximately 5 acres per injection well site **Well Depth:** Approximately 1.5 miles (7,920 feet) below ground surface **Operational Area:** 0.5 acre per site
Monitoring Wells	**Location(s):** The final approved UIC Well Permit from the West Virginia Department of Environmental Protection would dictate the final number of, and siting requirements for monitoring wells. Characterization wells could be designed to allow for conversion to monitoring wells in the future. For this analysis, it is estimated that AEP would construct and use one to three monitoring wells per injection well, and that the monitoring wells would be placed within approximately 1,500 to 3,000 feet of the injection wells.	**Construction Area:** Approximately 5 acres per well site **Well Depth:** Dependent upon UIC Well Permit requirements **Operational Area:** 0.5 acre per site (may be co-located at injection well site(s))

[a] The construction ROW at locations with steep side slopes may exceed 120 feet by up to 20 percent (i.e., up to 144 feet).

AEP = American Electric Power Service Corporation; CAP = chilled ammonia process; CO_2 = carbon dioxide; MW = megawatt; ROW = right-of-way; UIC = Underground Injection Control

Based on preliminary data, AEP anticipates that the project would require a minimum of four injection wells located in pairs at two different injection well properties (e.g., Mountaineer Plant and Borrow Area) to a maximum of eight wells, also sited in pairs, but located at four different properties. AEP has identified preferred injection well sites on each of the five injection well properties, each 5 acres in size.

The preferred injection well sites, along with preferred locations for project features, including access roads and pipelines would be sited based on AEP's siting criteria, which include the following:

- Avoid wetlands – To the extent practical, project features would not be sited in wetland areas.
- Avoid streams and floodplains – To the extent practical, project features would be sited to avoid streams/floodplains and minimize the number of potential stream crossings.
- Avoid sensitive habitat – Project features would not be sited in areas that have been identified with sensitive habitat.
- Avoid cultural resources – Project features would not be sited in areas that have been identified as containing cultural resources.
- Proximity to Public Roads – Project features would be sited, to the extent practicable, near ready access to public roads.
- Topography – Project features would be sited in areas that are generally flat to minimize grading requirements.

The final location of injection wells would be dependent upon the results of a geologic characterization study being conducted by AEP to determine the optimal locations and design for the CO_2 injection wells. AEP anticipates acceptable injection well locations would be identified within the five injection well properties. Although these geologic characterization studies are not part of the Proposed Action, the results are integral to Proposed Action planning.

As part of the geologic characterization studies, AEP plans to initially install geologic characterization wells at the Borrow Area and the Jordan Tract in order to collect data on both caprock and target injection formations. If sufficient data is not obtained from these wells to determine injection well placement and design parameters, then additional geologic characterization wells could be installed at one or all of the remaining injection well properties. AEP is using the injection data collected at the Mountaineer product validation facility, data from geologic characterization studies, and a numerical simulation model for analyzing potential injection location suitability. Geologic characterization data would be fed into the model to further refine its accuracy, and projected injectivity rates and conditions. From these projections, AEP would determine the number and optimal placement of the wells required to handle the CO_2 from the chilled ammonia process (CAP) system.

This report is organized as follows:

- Section E.2 – *Wetland Definition* discusses the wetland definitions as contained in the Clean Water Act (CWA) and the categorization of wetlands used by the U.S. Fish and Wildlife Service (USFWS).
- Section E.3 – *Methodology* discusses the three-parameter delineation methodology and field procedures employed.
- Section E.4 – *Existing Conditions* describes the study area and summarizes the wetlands and waters of the U.S. (WOUS) that were delineated. Separate subsections discuss each potential injection well property and each pipeline corridor.

The following attachments support the report:

- *Attachment A – Figures*
  - A.1 includes an overview map that depicts all the potential injection well properties and the corridors that connect them.
  - A.2 includes three map views of a mosaic of U.S. Geological Survey (USGS) quad sheets that show all the features.

- A.3-01 thru A.3-11 contains 29 map views of a mosaic of Mason County soil survey maps.
- The features shown on the National Wetland Inventory Maps are not shown separately, but are included in the map views in Attachment B.

- *Attachment B - Wetlands and WOUS Figures*
  - B.1 North Corridor (one map view)
  - B.2 South Corridor (six map views)
  - B.3 East Corridor (two map views)
  - B.4 Blessing Road Corridor (one map view)
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  - B.12 Eastern Sporn Site Map (one map view)
  - B.13 Jordan Tract Site Map (one map view)
  - B.14 Western Sporn Site Map (one map view)
- *Attachment C – Wetland Data Sheets*
- *Attachment D – Site Photographs*
- *Attachment E – Qualifications of Preparers*

E.2 WETLAND DEFINITION

Wetlands are defined under the CWA (40 CFR 230) as follows:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Certain features, called WOUS are regulated by the USACE under the CWA because they are important for the preservation of navigable waterways and interstate commerce. WOUS are subject to federal jurisdiction and permitting under Section 404 of the CWA. The regulatory definition of WOUS in the CWA (40 CFR 230) is as follows:

> *(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide*
>
> *(2) All interstate waters including interstate wetlands*
>
> *(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
>
> > *(i) which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
> >
> > *(ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*

(iii) which are used or could be used for industrial purposes by industries in interstate commerce

(4) All impoundments of waters otherwise defined as waters of the United States under this definition

(5) Tributaries of waters identified in paragraphs (s)(1) through (4) of this section

(6) The territorial sea

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s) (1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA.

Wetland types are typically categorized using the methodology described in the USFWS document "*Classification of Wetlands and Deepwater Habitats of the United States*" (hereafter referred to as the "Cowardin classification"). The purpose of this document is to standardize a classification system to describe wetland and deepwater habitats using ecological parameters, arrange them into a system useful to resource managers, furnish units for mapping, and provide uniformity of concepts and terms. This classification system is used by the USFWS when categorizing wetland types to develop the National Wetland Inventory, a series of topical maps that show wetlands and deepwater habitats of the U.S. The classification system consists of a hierarchy that follows the following order: System, Subsystem, Class, Subclass, and modifying terms (Cowardin et al., 1979). Wetlands are defined by the Cowardin classification as follows (Cowardin et al., 1979):

> Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Wetland boundary determinations are typically conducted by applying the Routine Methodology listed in the *1987 Corps of Engineers Wetlands Delineation Manual* (hereafter referred to as the "Manual"). This Methodology requires three criteria be present in order for an area to qualify as a federally-jurisdictional wetland. The three wetland criteria are identified as (USACE, 1987)

(1) hydrophytic vegetation;

(2) hydric soils; and

(3) wetland hydrology.

Hydrophytic vegetation is defined as macrophytic plant life growing in water, soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. The USFWS has developed a list of wetland plants and their affinity for wetland conditions. The "*National List of Plant Species that Occur in Wetlands: Northeast (Region 1)*", lists wetland plants common to the northeastern U.S.

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions within the major portion of the root zone. The National Technical

Committee for Hydric Soils has developed criteria for hydric soil determination in addition to a list of hydric soil types.

The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Many factors influence the hydrology of an area including precipitation, topography, soil permeability and plant cover. The frequency and duration of inundation or soil saturation are the important factors in the determination of the existence of wetland hydrology (USACE, 1987).

E.3 METHODOLOGY

E.3.1 Wetland Identification Background

E.3.1.1 *Vegetation*

As vegetation serves as an indicator of existing environmental conditions, the methodology of the Manual directs the researcher to analyze the existing vegetation. This involves estimation of existing plant species composition by direct observation. Wetlands are usually characterized by the predominance of hydrophytic plant species. Conversely, upland areas would be dominated by plant species better adapted to drier soil conditions. A mesic zone, or the transition zone between wetland and upland habitat, is often comprised of a mixture of facultative wetland species, facultative, and facultative upland species.

With respect to vegetation, the Manual places great emphasis on the presence of hydrophytic species (dominance) as indicators of wetland areas. The determination of whether or not a species is dominant is based upon its percentage of cover. Dominance, as defined herein, refers to the spatial extent of a species, commonly the most abundant species in each vegetation stratum (trees, shrubs, vines, and herbs). When ranked in descending order of abundance and cumulatively totaled, exceeds 50 percent of the total dominance measure (i.e., aerial cover or basal area) (USACE, 1987). Table E-2 presents the criteria for determining wetland indicator classifications.

Table E-2. USFWS Wetland Plant Indicator Status

Wetland Indicator Classification	Percent Occurrence in Wetlands
Obligate Wetland (OBL)	Greater than 99 percent
Facultative Wetland (FACW)	67 to 99 percent
Facultative (FAC)	33 to 66 percent
Facultative Upland (FACU)	1 to 33 percent
Obligate Upland (UPL)	Less than 1 percent

Source: USFWS, 1988

A positive (+) or negative (-) symbol used in conjunction with one of the facultative indicator classes relates to a species preference to either the drier or the wetter end of its indicator class. The positive sign indicates preference to the wetter end of the category and a negative sign is a preference to the drier end (USFWS, 1988). These wetlands indicator classifications were determined for species found in the project area and used in conjunction with their percentage of cover to determine whether a prevalence of wetland species were dominant in any of the vegetation communities occurring in the project area.

E.3.1.2 *Soils*

A hydric soil is formed when soil lies within a saturated, flooded, or ponded area for a sufficient duration during the growing season which aids in the development of anaerobic conditions in the upper part of the soil profile. Typical hydric soil indicators include a low-chroma matrix, redoximorphic features (low-chroma mottles or high-chroma mottles), gleying, oxidized rhizospheres, iron concretions, and manganese

nodules. A soil is generally considered to be hydric if it has a chroma of 1 or a chroma of 2 with mottling (USACE, 1987).

E.3.1.3 *Hydrology*

Wetland hydrology is often the least exact and most difficult parameter to establish in the field, largely due to variations in the seasonal fluctuations of ground water elevation and seasonal precipitation. Additional factors that influence wetland hydrology include topography, plant cover, soil texture, and depth to bedrock. Documenting the existence of wetland hydrology involves the observations of wetland field indicators, which provide direct or indirect evidence of inundation or soil saturation for extended periods during the growing season. Although these indicators are quickly assessed in the field, professional judgment must be used to decide whether these indicators demonstrate that the wetland hydrology criterion has been satisfied. Drift lines, water marks, sediment deposits, root staining, scour areas, buttressed trees and drainage patterns are some of the indicators which commonly identify wetland hydrology (USACE, 1987).

E.3.1.4 *Waters of the U.S.*

WOUS include all navigable waterways, their tributaries, as well as wetlands contiguous to and adjacent to those navigable waterways and tributaries. Isolated wetlands (those that have no surface hydrologic connection to WOUS) are not regulated under federal jurisdiction unless they are adjacent to WOUS. Determinations of whether features should be considered WOUS were based on field observations and desktop reviews of available mapping (e.g., USGS topographic maps) based on the CWA definition provided in Section E.2.

E.3.2 Wetland Delineation Methodology

The field investigations for this project were conducted over a span of several months, from June 2010 through August 2010. Based upon field inspections it was determined that there were no wetlands on the potential Borrow Area or Mountaineer Plant well sites. The Eastern Sporn and Jordan properties were initially investigated during the period June 1-11, 2010. The potential pipeline corridors, the Mountaineer Plant, and the Borrow Areas were investigated during the periods July 26-30, 2010, and August 23-27, 2010. Follow-up activities were conducted at the Eastern Sporn and Jordan properties during the July and August field efforts. The Western Sporn Tract was inspected on several occasions throughout the field investigation efforts; however, a formal delineation was not conducted, nor intended, on that parcel. Field investigations at the Western Sporn Tract and the Mountaineer Plant focused on the 5-acre portion of each property identified for a potential well, along with potential access road to those areas. As stated earlier, the Western Sporn Tract is the least preferred alternative.

The wetland delineation activities were conducted using the *Corps of Engineers Wetlands Delineation Manual* (1987) guidelines based upon the three parameter approach defined earlier (hydrophytic vegetation, hydric soils, and wetland hydrology). When WOUS were encountered as defined by the CWA (40 CFR 230.3), the bank height and streambed widths were recorded, and each feature was then classified according to the Cowardin classification as defined earlier in this report. For WOUS encountered within the potential corridors, the bank height and streambed width were provided for the area within the crossing. For WOUS encountered on the Tracts, an average height and width were noted for banks and streambeds, respectively.

The locations of all wetland and WOUS features identified were marked in the field using flagging tape and subsequently recorded using either a Trimble ProXRT or ProXRH Global Positing System (GPS) unit capable of sub-meter accuracy using differential GPS and/or data post-processing procedures. All features were recorded for horizontal position using West Virginia State Plane North, North American Datum 83 coordinates in feet.

A hand auger was used to extract soil profiles for inspection from multiple points along potential wetland boundaries and adjacent uplands. Soil samples were taken to a depth of approximately 12 inches below ground surface and examined for hydric soil traits (i.e., color, texture, and moisture content). The color of the soil matrix was then compared to the colors presented in the Munsell Soil Color Chart to confirm the colors were consistent with the hydric soil criteria. U.S. Department of Agriculture soils maps for all potential injection well properties and pipeline corridors are shown in Attachment A.3, which were consulted prior to the commencement of field activities.

For the injection well properties, the centerlines of all intermittent and ephemeral WOUS features were flagged and located with GPS from the top (headwaters) of each feature to its terminus; perennial streams were flagged and surveyed with GPS on both banks. For the corridor areas, all features which crossed through (or in some cases adjacent to) the potential rights-of-way (ROWs) were delineated only within the 120-foot ROW, plus an additional nominal length (generally 20 to 30 feet) on either side to ensure adequate coverage.

E.4 EXISTING CONDITIONS

E.4.1 Introduction

This section presents the field observations for all of the sites that would be potentially impacted by the proposed project. This includes the following:

- The Mountaineer Plant, which includes the following features (Section E.4.2):
  - CO_2 capture facility site
  - Barge unloading facility for large items during construction of the CO_2 capture facility
  - 5-acre injection well site
  - Pipeline corridors from the CO_2 capture facility to on and offsite injection wells
- Each of the other four properties that have been proposed for the installation of CO_2 injection wells (Section E.4.3)
- The pipeline corridors that have been identified to access each of the injection well properties (Section E.4.4)

It is expected that two injection wells would be installed at two to four of the five potential injection well sites, pending the results of ongoing geologic characterization work. Representative photographs of the injection well properties and corridors are included in Attachment D.

E.4.2 CO_2 Capture Facility

The Mountaineer Plant is located on a 450-acre parcel near New Haven in Mason County, West Virginia, and is bounded to the west by State Route 62, to the east by the Ohio River, and to the south by AEP's Phillip Sporn Power Plant (see Attachments A.1 and A.2 [Map View 1 of 4]).

The area at the Mountaineer Plant that has been identified as the site of the proposed CO_2 capture facility has been historically developed and disturbed. The area includes a large maintained lawn, a partially overgrown gravelly area near the Ohio River, and paved access roads and small buildings with other structures. A stormwater drain and monitoring well were observed within the grass lawn.

The land area proposed for the barge unloading facility upgrades would be immediately to the north of an existing pad for cranes to unload barges. It is in an area that was previously graded and consists of crushed limestone (gravel) that has been graded and stabilized to support the movement of very heavy vehicles. The adjacent bank of the Ohio River is covered with rip-rap from the top of bank (where the crushed limestone area is) down to the water's edge.

No wetlands or streams were identified in any of the areas on the Mountaineer Plant site that would potentially be disturbed by the project. There is a small (less than 0.1 acre) palustrine emergent wetland in the center of a depression to the southwest of the land area proposed for barge unloading facility upgrades that accepts drainage from interior portions of the site and then discharges that stormwater to the Ohio River. This wetland area would not be directly disturbed by any project activities.

E.4.3 Injection Well Sites

E.4.3.1 *Mountaineer Plant*

General Site Description

The potential 5-acre injection well site at the Mountaineer Plant is located in a highly developed area of the facility. No wetland features or native vegetation currently exist. The surrounding areas consist of bituminous asphalt or gravel and contain buildings, wells, and other utilities.

The pipeline corridors on the Mountaineer Plant that connect the CO_2 capture facility to the potential injection well onsite and the pipeline corridors that continue offsite to the other four potential injection well sites are through level areas that were previously graded and developed as the Mountaineer Plant. They consist of mowed lawn, and gravel and bituminous asphalt roads and parking areas.

Summary of Wetland Features

No wetlands or streams were identified in any of the areas on the Mountaineer Plant site that would potentially be disturbed by the proposed injection well.

E.4.3.2 *Borrow Areas*

General Site Description

Borrow Areas 1 (12 acres) and 7 (4.90 acres) are located on AEP property, south of the existing Little Broad Run Landfill (see Attachments A.1, A.2 [Map View 1], and B.1 [Map View 2]). The Borrow Areas consist of broad, relatively flat, heavily disturbed areas. These areas were small hills that have been removed leaving a relatively flat area that has been stabilized. The vegetation currently consists of grassland dominated by upland grasses, cornflower (*Centaurea cyanus*), white clover (*Trifolium repens*), and red clover (*Trifolium pretense*).

Borrow Area 8 (10.94 acres) is located within and adjacent to an existing transmission ROW on AEP property, in the vicinity of the Little Broad Run Landfill. Borrow Area 8 is also partially located within the North Corridor (see Attachments A.1, A.2 [Map View 1], and B.1 [Map View 2]). The area has been formerly cleared, and it currently consists of mainly shrubby vegetation extending from the existing transmission ROW. Evidence of a former road was also observed within this Borrow Area. Herbaceous vegetation similar to the other Borrow Areas (e.g., upland grasses, cornflower [*Centaurea cyanus*], white clover [*Trifolium repens*], and red clover [*Trifolium pretense*] exists within the former road. Dominant vegetation throughout the remainder of the Borrow Area includes saplings of tulip tree (*Liriodendron tulipifera*), quaking aspen (*Populus tremuloides*), cottonwood (*Populus deltoides*), black locust (*Robinia pseudoacacia*), red oaks (*Quercus rubra*), and Allegheny blackberry (*Rubus allegheniensis*).

Summary of Wetland Features

No wetlands are located in Borrow Area 1, Borrow Area 7, or Borrow Area 8. One ephemeral stream (LPO-7) was identified adjacent to the southern boundary of Borrow Area 8. LPO-7 is included in the discussion of the North Corridor later in this text. No other wetlands were identified in the vicinity of the Borrow Areas.

E.4.3.3 *Eastern Sporn Tract*

General Site Description

The Eastern Sporn Tract (403.87 acres) is located near the intersection of State Route 62 and Blessing Road in Mason County (see Attachments A.1 and B.12). An active railroad line is located adjacent to a portion of the eastern property boundary, lying between the property and the Ohio River. Brinker Run, a perennial stream, lies along the southernmost portion of the property. The property is predominately undeveloped and densely vegetated. The majority of the property consists of mature, closed-canopy forest, with the exception of disturbed areas adjacent to Blessing Road, and along an existing transmission corridor which traverses the property in a general east-west direction.

In the undisturbed forested portions of the property, dominant trees include pignut hickory (*Carya glabra*), sugar maple (*Acer saccharum*), white oak (*Quercus alba*), red oak (*Quercus rubrus*), tulip tree (*Liriondendron tulipifera*) silver maple (*Acer saccharinum*), American beech (*Fagus grandifolia*), basswood (*Tilia Americana*), cucumber tree (*Magnolia acuminate*), black walnut (*Juglans nigra*), black cherry (*Prunus serotina*), and sweet birch (*Betula lenta*); understory includes pawpaw (*Asimina triloba*), hickories (*Carya spp.*), flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*) Christmas fern (*Polystichum acrostichoides*), Virginia creeper (*Parthenocissus quinquefolia*), ashes (*Fraxinus spp.*), spicebush (*Lindera benzoin*), garlic mustard (*Alliaria petiolata*), and lady's thumb (*Polygonum persicaria*).

In the existing transmission ROW, vegetation consists of dense shrubs and saplings with some herbaceous areas along access roads and near tower structures. Dominant species include Russian or autumn olive (*Eleagnus spp.*), black locust (*Robinia pseudoacacia*), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), blackberry (*Rubus allegheniensis*), grapes (*Vitis spp.*), poison ivy (*Toxicodendron radicans*), and wing-stem (*Verbesina alternifolia*).

Disturbed areas along existing roadways, and particularly adjacent to the existing railroad corridor, are dominated by box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), elms, and staghorn sumac (*Rhus typhinia*). These areas also include Virginia creeper (*Parthenocissus quinquefolia*), Japanese honeysuckle (*Lonicera japonica*), trumpet creeper (*Campsis radicans*), grapes (*Vitis spp.*), poison ivy (*Toxicodendron radicans*); Shrubby vegetation includes spicebush (*Lindera benzoin*), invasive shrub honeysuckles (e.g., *Lonicera tatarica*), Japanese knotweed (*Polygonum cuspidatum*) and elderberry (*Sambucus canadensis*); other common species include jewelweed (*Impatiens capensis*), Canada thistle (*Cirsium arvense*), poison hemlock (*Conium maculatum*), various grasses and sedges, and orange daylily (*Hemerocallis fulva*).

Summary of Water Features

The Eastern Sporn Tract contains a total of 90 ephemeral streams, 25 intermittent streams, and 1 perennial stream (Brinker Run), all of which are listed in Table E-3. The total length of linear stream features, including all ephemeral, intermittent, and perennial streams, is approximately 43,419 feet. This corresponds to an area of 99,256 square feet (2.3 acres), or approximately 1 percent of the area of Eastern Sporn Tract. In addition, there is 0.2 acre of wetlands on the Eastern Sporn Tract, as summarized in Table E-4.

Table E-3. Summary of Potential Waters of the U.S. Identified at Eastern Sporn Tract

Feature ID	Stream Width (ft)	Subsystem	Class	Subclass	Stream Length (ft)	Area (ft^2)
1A	3	Intermittent	Streambed	Cobble-Gravel	637.75	1913.26
1B	2	Intermittent	Streambed	Mud	580.56	1161.13
1C	<1	Ephemeral	Streambed	Mud	106.10	106.10
1D	1	Ephemeral	Streambed	Mud	243.04	243.04
1E	<1	Ephemeral	Streambed	Mud	164.24	164.24
1F	2	Ephemeral	Streambed	Mud	443.37	886.75
1G	1	Ephemeral	Streambed	Mud	241.92	241.92
1H	<1	Ephemeral	Streambed	Mud	462.09	462.09
1I	<1	Ephemeral	Streambed	Mud	142.84	142.84
2	<1	Ephemeral	Streambed	Mud	164.59	164.59
3	1	Ephemeral	Streambed	Mud	436.27	436.27
4A	1	Ephemeral	Streambed	Mud	733.65	733.65
4B	1	Ephemeral	Streambed	Mud	228.48	228.48
4C	<1	Ephemeral	Streambed	Mud	367.97	367.97
5A	2	Ephemeral	Streambed	Mud	1406.30	2812.61
5B	4	Intermittent	Streambed	Rubble	1420.41	5681.67
5C	<1	Ephemeral	Streambed	Mud	306.17	306.17
5D	<1	Ephemeral	Streambed	Mud	93.75	93.75
5E	<1	Ephemeral	Streambed	Mud	287.67	287.67
5F	<1	Ephemeral	Streambed	Mud	106.64	106.64
5G	<1	Ephemeral	Streambed	Mud	104.75	104.75
5H	<1	Ephemeral	Streambed	Mud	85.66	85.66
5I	<1	Ephemeral	Streambed	Mud	67.14	67.14
5K	<1	Ephemeral	Streambed	Mud	211.37	211.37
5L	2	Intermittent	Streambed	Cobble-Gravel	895.93	1791.85
5M	<1	Ephemeral	Streambed	Cobble-Gravel	82.21	82.21
5N	1	Ephemeral	Streambed	Cobble-Gravel	186.44	186.44
5O	<1	Ephemeral	Streambed	Cobble-Gravel	249.43	249.43
5P	<1	Ephemeral	Streambed	Cobble-Gravel	231.63	231.63
5Q	<1	Ephemeral	Streambed	Mud	140.12	140.12
5R	5	Intermittent	Streambed	Rubble	1004.15	5020.74
6A	2	Intermittent	Streambed	Cobble-Gravel	416.45	832.89
6B	<1	Ephemeral	Streambed	Mud	345.09	345.09
6C	1	Ephemeral	Streambed	Cobble-	597.05	597.05

Table E-3. Summary of Potential Waters of the U.S. Identified at Eastern Sporn Tract

Feature ID	Stream Width (ft)	Subsystem	Class	Subclass	Stream Length (ft)	Area (ft^2)
				Gravel		
6D	1	Ephemeral	Streambed	Cobble-Gravel	573.01	573.01
6E	<1	Ephemeral	Streambed	Mud	70.04	70.04
6F	1	Ephemeral	Streambed	Cobble-Gravel	165.88	165.88
7A	2	Intermittent	Streambed	Cobble-Gravel	475.29	950.58
7B	<1	Ephemeral	Streambed	Cobble-Gravel	81.96	81.96
7C	<1	Ephemeral	Streambed	Mud	90.54	90.54
7D	1	Ephemeral	Streambed	Cobble-Gravel	269.18	269.18
8	1	Ephemeral	Streambed	Cobble-Gravel	189.67	189.67
9A	2	Intermittent	Streambed	Cobble-Gravel	214.82	429.64
9B	<1	Ephemeral	Streambed	Mud	114.19	114.19
10	1	Ephemeral	Streambed	Mud	219.11	219.11
11	1	Ephemeral	Streambed	Mud	154.31	154.31
13	1	Ephemeral	Streambed	Mud	79.17	79.17
16	1	Ephemeral	Streambed	Mud	784.85	784.85
17A	5	Intermittent	Streambed	Rubble	964.85	4824.23
17B	1	Ephemeral	Streambed	Mud	375.14	375.14
17C	1	Ephemeral	Streambed	Mud	423.00	423.00
17D	<1	Ephemeral	Streambed	Mud	70.56	70.56
17E	<1	Ephemeral	Streambed	Mud	87.33	87.33
17F	2	Ephemeral	Streambed	Mud	506.78	1013.56
17G	2	Ephemeral	Streambed	Mud	692.98	1385.95
17H	<1	Ephemeral	Streambed	Mud	195.48	195.48
17I	3	Intermittent	Streambed	Rubble	1441.22	4323.66
17J	<1	Ephemeral	Streambed	Mud	139.12	139.12
17K	<1	Ephemeral	Streambed	Mud	169.83	169.83
17L	2	Ephemeral	Streambed	Mud	700.48	1400.96
17M	1	Ephemeral	Streambed	Mud	367.80	367.80
17N	3	Intermittent	Streambed	Cobble-Gravel	965.89	2897.67
18A	2	Intermittent	Streambed	Rubble	1169.01	2338.03
18B	<1	Ephemeral	Streambed	Mud	36.62	36.62
18C	<1	Ephemeral	Streambed	Mud	130.20	130.20
18D	1	Ephemeral	Streambed	Mud	282.66	282.66

Table E-3. Summary of Potential Waters of the U.S. Identified at Eastern Sporn Tract

Feature ID	Stream Width (ft)	Subsystem	Class	Subclass	Stream Length (ft)	Area (ft^2)
18E	2	Intermittent	Streambed	Mud	696.58	1393.16
18F	<1	Ephemeral	Streambed	Mud	81.09	81.09
18G	2	Ephemeral	Streambed	Mud	426.15	852.31
18H	<1	Ephemeral	Streambed	Mud	70.75	70.75
18I	1	Ephemeral	Streambed	Mud	377.12	377.12
18J	<1	Ephemeral	Streambed	Mud	103.29	103.29
19	1	Ephemeral	Streambed	Mud	559.75	559.75
20A	4	Intermittent	Streambed	Rubble	1038.58	4154.33
20B	1	Ephemeral	Streambed	Mud	219.05	219.05
20C	<1	Ephemeral	Streambed	Mud	105.39	105.39
20D	<1	Ephemeral	Streambed	Mud	352.70	352.70
20E	<1	Ephemeral	Streambed	Mud	102.35	102.35
20F	3	Intermittent	Streambed	Rubble	593.98	1781.93
20G	1	Ephemeral	Streambed	Mud	220.22	220.22
20H	3	Intermittent	Streambed	Cobble-Gravel	1220.26	3660.79
21A	5	Intermittent	Streambed	Rubble	1688.14	8440.69
21B	3	Intermittent	Streambed	Rubble	981.81	2945.44
21C	1	Ephemeral	Streambed	Mud	249.28	249.28
21D	1	Ephemeral	Streambed	Mud	257.19	257.19
21E	<1	Ephemeral	Streambed	Mud	101.39	101.39
21F	<1	Ephemeral	Streambed	Mud	95.38	95.38
21G	1	Ephemeral	Streambed	Mud	275.86	275.86
21H	1	Ephemeral	Streambed	Mud	223.07	223.07
21I	1	Ephemeral	Streambed	Mud	200.78	200.78
21J	<1	Ephemeral	Streambed	Mud	59.72	59.72
21K	<1	Ephemeral	Streambed	Mud	66.97	66.97
23A	1	Ephemeral	Streambed	Mud	553.73	553.73
23B	<1	Ephemeral	Streambed	Mud	181.09	181.09
24A	1	Ephemeral	Streambed	Mud	484.17	484.17
24B	1	Ephemeral	Streambed	Mud	151.85	151.85
25A	6	Intermittent	Streambed	Rubble	1810.86	10865.16
25B	<1	Ephemeral	Streambed	Mud	111.43	111.43
25C	2	Ephemeral	Streambed	Cobble-Gravel	209.02	418.04
25D	1	Ephemeral	Streambed	Cobble-Gravel	252.62	252.62
25E	<1	Ephemeral	Streambed	Cobble-Gravel	274.03	274.03

Table E-3. Summary of Potential Waters of the U.S. Identified at Eastern Sporn Tract

Feature ID	Stream Width (ft)	Subsystem	Class	Subclass	Stream Length (ft)	Area (ft^2)
25F	2	Ephemeral	Streambed	Cobble-Gravel	414.54	829.09
25G	1	Ephemeral	Streambed	Mud	372.57	372.57
26A	1	Ephemeral	Streambed	Cobble-Gravel	273.86	273.86
26B	<1	Ephemeral	Streambed	Mud	217.71	217.71
27A	2	Intermittent	Streambed	Mud	570.87	1141.74
27B	2	Intermittent	Streambed	Mud	406.45	812.91
28A	2	Intermittent	Streambed	Mud	524.95	1049.91
28B	<1	Ephemeral	Streambed	Mud	105.00	105.00
28C	1	Ephemeral	Streambed	Mud	111.16	111.16
28D	1	Ephemeral	Streambed	Mud	165.69	165.69
29	6	Upper Perennial	Rock Bottom	Rubble	468.87	2813.20
				Total	**43,419.53**	**99,256.10**

ft = feet; ft^2 = square feet

Table E-4. Summary of Wetland Features Identified at Eastern Sporn Tract

Feature ID	System	Subsystem	Class	Area (acres)
ESW-2	Palustrine	Scrub-Shrub	Broad-Leaved Deciduous	0.087
ESW-3	Palustrine	Scrub-Shrub	Broad-Leaved Deciduous	0.090
ESW-4	Palustrine	Forested	Broad-Leaved Deciduous	0.029
			Total	**0.206**

E.4.3.4 *Jordan Tract*

General Site Description

The Jordan Tract (168.02 acres) is located along Shirley Road in Mason County (see Attachments A.1 and B.13). The property is largely undeveloped and vegetated. Shirley Road enters the property from the south through the center of the property then bends to the west before turning back towards the north and ultimately running along the northern property boundary. One small abandoned residence is located along Shirley Road in the south-central portion of the property. An existing transmission corridor crosses the western side of the property in a north-south direction. Tombleson Run, a perennial stream, runs along a portion of the northern property boundary. An unnamed tributary to Tombleson Run, also a perennial stream, crosses the Jordan Tract on the eastern portion of the property.

The majority of the Jordan Tract consists of mature, closed-canopy forest. These areas of the property predominantly contain hickory (*Carya spp.*), Norway maple (*Acer platanoides*), tulip tree (*Liriondendron tulipifera*), ironwood (*Carpinus caroliniana*), American beech (*Fagus grandifolia*), red oak (*Quercus*

rubra), white oak (*Quercus alba*), and Ohio buckeye (*Aesculus glabra*) in the canopy layer; understory vegetation include Christmas fern (*Polystichum acrostichoides*), cinnamon fern (*Osmunda cinnamomea*), maiden-hair fern (*Adiantum pedatum*), greenbrier (*Smilax rotundifolia*), witch hazel (*Hamamelis virginiana*), horsechestnut (*Aesculus hippocastanum*), and microstegium (*Microstegium vimineum*).

Disturbed areas exist onsite within the transmission corridor and along Shirley Road. These portions contain mostly shrubs, saplings, and herbaceous vegetation, which typically include young maples (*Acer spp.*), oaks (*Quercus spp.*), and tulip tree (*Liriodendron tulipifera*), as well as wingstem (*Verbesina alternifolia*), asters, blackberry (*Rubus spp.*), poison ivy (*Toxicodendron radicans*), sensitive fern (*Onoclea sensibilis*), winged sumac (*Rhus copallinum*), Jack-in-the-pulpit (*Arisaema triphyllum*), spicebush (*Lindera benzoin*), jewelweed (*Impatiens capensis*), multifloral rose (*Rosa multiflora*), greenbrier (*Smilax rotundifolia*), and little bluestem (*Schizachyrium scoparium*).

A large area of prior disturbance is located at the top of a ridge located near the center of the property. This area appears to have been cleared of native vegetation at some point historically, and has been revegetated with predominantly white pine trees (*Pinus stroba*) and saplings, along with a few pitch pines (*Pinus rigida*). Other vegetation in this area includes Allegheny blackberry (*Rubus allegheniensis*), goldenrods (*Solidago spp.*) and milkweed (*Asclepias spp.*); grasses include meadow fescue (*Fescue pratensis*) and Kentucky bluegrass (*Poa pratensis*).

Summary of Wetland Features

The Jordan Tract contains a total of 37 ephemeral streams, 10 intermittent streams, and one perennial stream (unnamed tributary to Tombleson Run), all of which are listed in Table E-5. No other wetland areas were identified on the property. The total length of linear stream features, including all ephemeral, intermittent, and perennial streams, is approximately 18,227 feet. This corresponds to an area of 50,076 square feet (1.1 acres), or approximately 0.6 percent of the area of the Jordan Tract. All of the ephemeral and intermittent stream features onsite at Jordan Tract eventually discharge either directly to Tombleson Run (a perennial stream), located offsite, or through an onsite unnamed tributary to Tombleson Run (perennial stream).

Table E-5. Summary of Potential Waters of the U.S. Identified at Jordan Tract

Feature ID	Subsystem	Class	Subclass	Stream Width (ft)	Stream Length (ft)	Area (ft^2)
1	Perennial	Streambed	Cobble-Gravel	7	3208.32	22458.26
2	Ephemeral	Streambed	Mud	1	289.03	289.03
3	Ephemeral	Streambed	Mud	2	468.83	937.66
4	Ephemeral	Streambed	Mud	2	210.81	421.63
5	Ephemeral	Streambed	Mud	1	243.63	243.63
6A	Intermittent	Streambed	Rubble	1	393.89	393.89
6B	Ephemeral	Streambed	Cobble-Gravel	3	213.61	419.93
6D	Ephemeral	Streambed	Mud	1	388.94	388.94
7	Ephemeral	Streambed	Mud	1	473.24	473.24
8	Ephemeral	Streambed	Cobble-Gravel	2	482.88	965.75
9A	Intermittent	Streambed	Rubble	2	893.20	1363.60
9B	Ephemeral	Streambed	Rubble	5	29.97	149.84
9C	Ephemeral	Streambed	Rubble	1	55.87	55.87
9E	Ephemeral	Streambed	Rubble	3	179.75	539.25
9F	Ephemeral	Streambed	Rubble	2	211.39	422.78
9G	Ephemeral	Streambed	Rubble	1	104.27	104.27

Table E-5. Summary of Potential Waters of the U.S. Identified at Jordan Tract

Feature ID	Subsystem	Class	Subclass	Stream Width (ft)	Stream Length (ft)	Area (ft^2)
10A	Ephemeral	Streambed	Cobble-Gravel	3	599.34	1798.02
11A	Intermittent	Streambed	Cobble-Gravel	3	395.50	1186.49
11B	Ephemeral	Streambed	Mud	1	149.58	149.58
11C	Ephemeral	Streambed	Mud	1	85.96	85.96
11D	Ephemeral	Streambed	Mud	1	121.82	121.82
12A	Ephemeral	Streambed	Cobble-Gravel	2	405.41	810.81
12B	Ephemeral	Streambed	Cobble-Gravel	1	94.77	94.77
13	Ephemeral	Streambed	Cobble-Gravel	2	331.26	662.53
14A	Intermittent	Streambed	Cobble-Gravel	3	374.09	1122.27
14B	Ephemeral	Streambed	Cobble-Gravel	1	379.82	379.82
14C	Ephemeral	Streambed	Cobble-Gravel	2	386.75	773.50
14D	Intermittent	Streambed	Cobble-Gravel	3	548.19	1644.56
14E	Ephemeral	Streambed	Cobble-Gravel	1	125.71	125.71
14F	Ephemeral	Streambed	Mud	1	139.30	139.30
14G	Ephemeral	Streambed	Mud	1	105.73	105.73
15A	Intermittent	Streambed	Cobble-Gravel	2	691.41	1382.82
15B	Ephemeral	Streambed	Mud	1	287.75	287.75
15C	Ephemeral	Streambed	Mud	1	253.19	253.19
16A	Intermittent	Streambed	Cobble-Gravel	3	971.40	2914.19
16B	Intermittent	Streambed	Cobble-Gravel	3	823.88	2471.64
16C	Ephemeral	Streambed	Mud	2	87.72	175.43
16D	Ephemeral	Streambed	Cobble-Gravel	1	541.42	541.42
16E	Ephemeral	Streambed	Cobble-Gravel	2	157.87	315.74
16F	Ephemeral	Streambed	Cobble-Gravel	1	166.84	166.84
16G	Ephemeral	Streambed	Mud	1	142.76	142.76
16H	Intermittent	Streambed	Cobble-Gravel	1	773.93	773.93
16I	Ephemeral	Streambed	Mud	2	330.21	660.42
17	Ephemeral	Streambed	Mud	1	185.86	185.86
18	Intermittent	Streambed	Cobble-Gravel	1	279.55	279.55
19A	Ephemeral	Streambed	Mud	3	126.85	380.55
19B	Ephemeral	Streambed	Mud	1	164.26	164.26
19C	Ephemeral	Streambed	Mud	1	151.25	151.25
				Total	**18,227.01**	**50,076.04**

ft = feet; ft^2 = square feet

E.4.3.5 *Western Sporn Tract*

General Site Description

The Western Sporn Tract (69.48 acres) is located near the junction of Lieving Road, Sassafras Road, and Foglesong Road in Mason County (see Attachment A.1 and B.14). The Western Sporn Tract consists of three primary areas: a large, forested hill on the western portion, a small forested hill in the southeast corner of the property, and a historically disturbed floodplain area consisting mostly of young trees and

shrubby vegetation. The floodplain is located along and adjacent to Tenmile Creek and an unnamed tributary to Tenmile Creek, two perennial streams located onsite. The area within and adjacent to the potential 5-acre injection well location was subjected to a more detailed inspection.

The larger forested hill onsite is dominated by mature forest containing sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), hickories (*Carya spp.*), and oaks (*Quercus spp.*). The understory is mostly open, with pawpaw (*Asimina triloba*), Christmas fern (*Polystichum acrostichoides*), and Virginia creeper (*Parthenocissus quinquefolia*).

The smaller hill on the southeast corner of the property contains oaks (*Quercus spp.*), maples (*Acer spp.*), black cherry (*Prunus serotina*), and hickories (*Carya spp.*), as well as a few pitch pines (*Pinus rigida*); the understory contains mostly fern but also blackberry (*Rubus spp.*), multifloral rose (*Rosa multiflora*), and wingstem (*Verbesina alternifolia*) within a narrow swath along a utility corridor in this area.

Vegetation in the previously disturbed floodplain area consists primarily of young American sycamore (*Platanus occidentalis*) and sweetgum (*Liquidambar styraciflua*). Understory vegetation includes a number of obligate wetland species including a variety of sedges (*Carex spp.*) and dark green bulrush (*Scirpus atrovirens*), as well as other invasive species.

Summary of Wetland and WOUS Features

A complete, formal delineation of wetland features and WOUS at the Western Sporn Tract was not intended as part of the project at this time. Identification of potential wetland features, including WOUS, was only conducted in the immediate vicinity of the potential 5-acre injection well site and the adjacent floodplain.

No wetland features or WOUS were identified within the potential injection well site on the Western Sporn Tract. There are two perennial streams on the remainder of the property – Tenmile Creek and an un-named tributary to Tenmile Creek. They are respectively 6 to 7 feet wide and 2 to 3 feet wide. While the floodplain associated with these perennial streams is dominated by wetland vegetation, the results of hand-augered soil borings demonstrated that the soils are not hydric. Therefore, the floodplain is not a wetland.

E.4.3.6 *Injection Well Site Summary*

Table E-6 below summarizes the total number of each water feature observed at the injection well properties, as well as their corresponding areas. Table E-7 summarizes the total number of each wetland observed at the injection well properties, as well as their corresponding areas.

Table E-6. Summary of Stream Feature Types by Property

Injection Well Properties	Number of Each Type			Area within Property (ft^2)		
	Ephemeral	Intermittent	Perennial	Ephemeral	Intermittent	Perennial
Jordan Tract	37	10	1	12,287	13,533	22,458
Eastern Sporn Tract	90	25	1	28,031	68,411	89,606
Western Sporn Tract[a]	0	0	2	0	0	16,428
Mountaineer Plant	0	0	0	0	0	0
Borrow Area	0	0	0	0	0	0
Total	**127**	**35**	**4**	**40,318**	**81,944**	**128,492**

[a] Only the 5-acre area adjacent to the potential injection well site and adjacent floodplain was investigated for wetlands and is included in this table.

ft^2 = square feet

Table E-7. Summary of Wetland Area Types by Property

Injection Well Properties	Number of Each Type			Area within Property (ft^2)		
	Emergent	Scrub-Shrub	Forested	Emergent	Scrub-Shrub	Forested
Jordan Tract	0	0	0	0	0	0
Eastern Sporn Tract	0	2	1	0	7,710	1,263
Western Sporn Tract[a]	0	0	0	0	0	0
Mountaineer Plant	0	0	0	0	0	0
Borrow Area	0	0	0	0	0	0
Total	**0**	**2**	**1**	**0**	**7,710**	**1,263**

[a] Only the 5-acre area adjacent to the potential injection well site and adjacent floodplain was investigated for wetlands and is included in this table.

ft^2 = square feet

E.4.4 Pipeline Corridors

E.4.4.1 *General Description of Corridors*

The ultimate location of the pipeline corridors would be dependent upon which injection well properties are selected. The potential pipeline corridors are comprised of nine distinct corridors (see Table E-8) which are further divided into corridor segments. These corridors allow for alternative pipeline routing options to access the Eastern Sporn and Jordan properties, while providing direct routing to the Borrow Area and the Western Sporn Tract. Table E-8 lists each potential corridor as well as its corresponding length. Maps of these corridors are included in Attachment B.

The potential pipeline corridors cross lands with numerous types of land use and land cover. The majority of the corridors are located within existing transmission line ROWs or are located along existing roadways. However, some corridor segments are located in undeveloped areas.

Typical land uses across these segments include privately-owned property, undisturbed mature forest, existing disturbed ROW, existing roadways, farm fields, pasture land, and otherwise disturbed areas associated with the Mountaineer Plant. Tables E-9 and E-10 provide a summary of the total number of stream and wetland features identified in each corridor, as well as their corresponding areas and classifications.

Table E-8. Potential Corridors and Lengths

Corridors	Length (Miles)
North Corridor	2.69
South Corridor	4.36
Blessing Road Corridor	0.67
East Corridor	1.42
Eastern Sporn Corridor	1.72
Jordan West Corridor	2.20
Jordan East Corridor	2.19
Western Sporn Corridor	3.68
Foglesong Corridor	1.16
Total	**20.09**

Table E-9. Summary of Stream Feature Types by Corridor

Corridor	Number of Crossings			Area Within ROW (ft^2)		
	Ephemeral	Intermittent	Perennial	Ephemeral	Intermittent	Perennial
North Corridor	9	3	1	1,596.22	1,211.67	3,696.34
South Corridor	11	13	6	2,321.95	6297.50	3,697.46
Blessing Road Corridor	2	2	2	351.87	1,535.91	790.85
East Corridor	3	3	2	853.51	1,316.45	2,341.38
Eastern Sporn Corridor	6	6	1	1,029.20	1,858.10	717.34
Jordan West Corridor	4	7	4	738.71	3,123.65	7,446.70
Jordan East Corridor	11	3	2	2,104.83	1,148.28	2,478.92
Western Sporn Corridor	20	10	2	4,870.31	3,989.26	1,976.28
Foglesong Corridor	8	2	0	496.69	5,553.46	0

ROW = right-of-way; ft^2 = square feet

Table E-10. Summary of Wetland Area Types by Corridor

Corridor	Number of Crossings			Area within ROW (ft^2)		
	Emergent	Scrub-Shrub	Forested	Emergent	Scrub-Shrub	Forested
North Corridor	1	1	0	1.29	3.94	0
South Corridor	1	0	0	0.28	0	0
Blessing Road Corridor	0	0	0	0	0	0
East Corridor	0	0	0	0	0	0
Eastern Sporn Corridor	0	0	0	0	0	0
Jordan West Corridor	0	0	0	0	0	0
Jordan East Corridor	0	0	0	0	0	0
Western Sporn Corridor	0	0	0	0	0	0
Foglesong Corridor	0	0	0	0	0	0

ROW = right-of-way; ft^2 = square feet

E.4.4.2 *Summary of Wetland Features by Corridor*

North Corridor

The North Corridor is approximately 2.69 miles in length, beginning at the Mountaineer Plant, extending generally southward before terminating in the vicinity of the Borrow Areas (see Attachment B.1). The North Corridor is located nearly entirely within, or immediately adjacent to, an existing transmission ROW. Much of the area traversed by the North Corridor is currently developed or historically disturbed.

The North Corridor crosses nine ephemeral streams, three intermittent streams, and one perennial stream (Little Broad Run; see Table E-11).

The North Corridor also crosses through two wetland areas, identified as LPO-W1 and LPO-W2, both associated with Little Broad Run (see Table E-12). LPO-W1 is a palustrine, scrub-shrub wetland area

located along the west side of Little Broad Run at the far north end of the North Corridor. LPO-W2 is a palustrine emergent wetland area, located along and between Little Broad Run and a gravel access road associated with the Mountaineer Plant.

Table E-11. Summary of Potential Waters of the U.S. Identified within the North Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
LPO-1	Lower Perennial	Unconsolidated bottom	Cobble-Gravel	3	1232.11	3696.34
LPO-3	Intermittent	Streambed	Mud	2	121.92	243.84
LPO-5	Ephemeral	Streambed	Cobble-Gravel	1	79.32	79.32
LPO-4	Ephemeral	Streambed	Mud	2	89.19	178.38
LPO-6a	Ephemeral	Streambed	Mud	1	170.99	170.99
LPO-6b	Ephemeral	Streambed	Mud	1	145.28	145.28
LPO-6c	Ephemeral	Streambed	Mud	1	206.89	206.89
LPO-6e	Intermittent	Streambed	Mud	3	126.41	379.24
LPO-7	Ephemeral	Streambed	Cobble-Gravel	2	146.84	293.68
LPO-8	Ephemeral	Streambed	Cobble-Gravel	2	127.05	254.10
SC-2	Ephemeral	Streambed	Mud	1	132.69	132.69
SC-3	Ephemeral	Streambed	Mud	1	134.88	134.88
SC-1	Intermittent	Streambed	Cobble-Gravel	3	196.20	588.59
				Total	**2909.77**	**6504.22**

ft = feet; ft^2 = square feet

Table E-12. Summary of Wetland Features Identified within the North Corridor

Feature ID	System	Class	Subclass	Corridor	Total Area (acres)
LPO-W1	Palustrine	Scrub-Shrub	Broad-leaved Deciduous	North Corridor	3.94
LPO-W2	Palustrine	Emergent	Persistent Emergent	North Corridor	1.29
				Total	**5.23**

South Corridor

The South Corridor begins at the terminus of the North Corridor and extends southward to Gill Road (County Route 20; see Attachment B.2). The South Corridor is approximately 4.68 miles. The majority of the South Corridor lies within an existing transmission ROW. The only exception is a small section of the corridor located between County Route 12/8 and County Route 15, in which the potential corridor briefly bends toward the east into forestland. A majority of the northernmost one-third of the South Corridor, north of Blessing Road, crosses through agricultural land (soybeans) and cattle pasture.

A total of 11 ephemeral streams, 13 intermittent streams, and 6 perennials streams are crossed by the South Corridor, as listed in Table E-13. The perennial streams include West Creek and five unnamed tributaries to West Creek.

One area of wetland (SC-W1) was also identified in the South Corridor. SC-W1 is a palustrine emergent wetland located on the north side of a perennial stream tributary to West Creek, as summarized in Table E-14.

Table E-13. Summary of Potential Waters of the U.S. Identified within the South Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
SC-4	Intermittent	Streambed	Cobble-Gravel	3	162.93	488.78
SC-5	Intermittent	Streambed	Cobble-Gravel	3	121.94	365.83
SC-6	Intermittent	Streambed	Cobble-Gravel	3	207.38	622.15
SS-1	Lower Perennial	Unconsolidated Bottom	Cobble-Gravel	6	120.21	721.27
SS-4	Intermittent	Streambed	Mud	2	125.23	250.46
SS-5	Intermittent	Streambed	Mud	4	137.91	551.64
SC-7	Lower Perennial	Unconsolidated Bottom	Rubble	4	143.52	574.06
SS-3	Upper Perennial	Unconsolidated Bottom	Rubble	2	132.66	265.32
SC-8a	Intermittent	Streambed	Mud	2	124.44	248.88
SC-8b	Intermittent	Streambed	Mud	2	145.56	291.11
SC-21	Ephemeral	Streambed	Cobble-Gravel	2	27.43	54.86
SC-22	Ephemeral	Streambed	Cobble-Gravel	2	124.25	248.50
SC-10	Intermittent	Streambed	Cobble-Gravel	2	148.20	296.40
SC-11	Intermittent	Streambed	Cobble-Gravel	2	119.44	238.88
SC-12a	Ephemeral	Streambed	Mud	3	114.81	344.42
SC-12b	Intermittent	Streambed	Mud	3	372.58	1117.75
SC-13	Upper Perennial	Unconsolidated Bottom	Cobble-Gravel	5	120.93	604.64
SC-14	Lower Perennial	Rock Bottom	Rubble	8	169.46	856.16
SC-15	Intermittent	Streambed	Cobble-Gravel	2	178.12	725.71
SC-16a	Ephemeral	Streambed	Mud	2	120.39	240.78
SC-16b	Ephemeral	Streambed	Mud	2	68.42	136.83
SC-17	Ephemeral	Streambed	Mud	2	103.62	207.25
SC-18	Ephemeral	Streambed	Mud	2	122.29	244.57
SC-19	Ephemeral	Streambed	Mud	2	138.20	276.40
SC-20	Ephemeral	Streambed	Mud	2	122.87	245.75
SC-9a	Lower Perennial	Rock Bottom	Rubble	5	135.20	676.01
SC-26	Ephemeral	Streambed	Cobble-Gravel	1	53.43	53.43
ES-1	Ephemeral	Streambed	Mud	3	89.72	269.15
SC-24	Intermittent	Streambed	Cobble-Gravel	2	287.23	574.45
SC-25	Intermittent	Streambed	Mud	3	175.15	525.45
				Total	**4,213.52**	**12,316.89**

ft = feet; ft^2 = square feet

Table E-14. Summary of Wetland Features Identified within the South Corridor

Feature ID	System	Class	Subclass	Corridor	Total Disturbance (acres)
SC-W1	Palustrine	Emergent	Persistent Emergent	South Corridor	0.28

Blessing Road Corridor

The Blessing Road Corridor loosely follows along Blessing Road from the South Corridor eastward to the Eastern Sporn Tract (see Attachment B.4). The Blessing Road Corridor, which does not follow an existing transmission ROW, also crosses through a portion of the East Corridor (described below). It measures 0.68 mile in length. The Blessing Road Corridor is located on the north side of Blessing Road and crosses through some privately-owned properties meadows; only two small segments of this corridor traverse through virgin forestland.

The Blessing Road Corridor includes two perennial streams (West Creek and an unnamed tributary to West Creek), two intermittent streams, and two ephemeral streams (see Table E-15). West Creek crosses through the potential corridor; the unnamed tributary tangentially runs along the northern edge of the Blessing Road Corridor, immediately to the east of its beginning at the South Corridor. No other potential waters were identified along the corridor.

Table E-15. Summary of Potential Waters of the U.S. Identified within the Blessing Road Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
BR-1	Lower Perennial	Unconsolidated Bottom	Rubble	6	125.97	755.80
SC-7	Lower Perennial	Unconsolidated Bottom	Rubble	4	8.76	35.05
EC-3	Ephemeral	Streambed	Cobble-Gravel	1	270.74	270.74
1A[1]	Intermittent	Streambed	Cobble-Gravel	3	308.38	925.14
1B[a]	Intermittent	Streambed	Mud	2	305.39	610.77
1C[a]	Ephemeral	Streambed	Mud	<1	81.13	81.13
				Total	**1,100.37**	**2678.63**

[a] These features are co-located within the boundaries of the Eastern Sporn Tract as well; therefore they are also included in the discussion of that property as well.

ft = feet; ft^2 = square feet

East Corridor

The East Corridor is 1.42 miles in length and does not follow an existing transmission ROW. The corridor is a semi-circle shaped alignment, beginning near the northern end of the South Corridor. It extends eastward, turns south, and then bends back to the west, reconnecting with the South Corridor just south of Blessing Road (see Attachment B.3).

The northernmost approximately one-fourth of the East Corridor crosses through pasture, while the southernmost approximately one-fourth crosses through meadow. In between, the East Corridor predominantly crosses through virgin forestland.

The East Corridor includes three ephemeral streams, three intermittent streams, and two perennial stream crossings. Both perennial stream crossings are of the same feature (West Creek) in two separate areas (see Table E-16). No other potential waters were identified along the corridor.

Table E-16. Summary of Potential Waters of the U.S. Identified within the East Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
EC-10	Ephemeral	Streambed	Mud	1	210.99	210.99
EC-7	Ephemeral	Streambed	Mud	1	116.49	116.49
EC-4	Intermittent	Streambed	Cobble Gravel	3	187.34	562.03
EC-5	Intermittent	Streambed	Rubble	2	126.28	252.57
EC-6	Intermittent	Streambed	Rubble	4	125.46	501.85
EC-9	Lower Perennial	Unconsolidated Bottom	Cobble-Gravel	15	130.81	1962.13
EC-2	Ephemeral	Streambed	Rubble	3	175.34	526.03
EC-1	Lower Perennial	Unconsolidated Bottom	Rubble	3	126.42	379.25
				Total	**1,199.13**	**4,511.34**

ft = feet; ft^2 = square feet

Eastern Sporn Corridor

The Eastern Sporn Corridor generally runs in a north-south direction, beginning at a portion of the South Corridor and terminating at the Eastern Sporn Tract. The Eastern Sporn Corridor lies completely within or immediately adjacent to existing transmission ROWs for its entire length, which is approximately 1.72 miles (see Attachment B.5).

The Eastern Sporn Corridor crosses six ephemeral streams, six intermittent streams, and one perennial stream (Brinker Run; see Table E-17). No other potential waters were identified along the corridor.

Table E-17. Summary of Potential Waters of the U.S. Identified within the Eastern Sporn Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
ES-1	Ephemeral	Streambed	Mud	3	208.23	624.68
ES-1a	Ephemeral	Streambed	Mud	1	62.98	62.98
ES-2	Intermittent	Streambed	Cobble-Gravel	3	177.58	532.74
ES-3	Ephemeral	Streambed	Mud	1	58.67	58.67
ES-4	Intermittent	Streambed	Cobble-Gravel	2	128.90	257.81
ES-4a	Ephemeral	Streambed	Cobble-Gravel	1	50.57	50.57
ES-5	Intermittent	Streambed	Cobble-Gravel	2	120.21	240.42
ES-5a	Ephemeral	Streambed	Mud	1	219.17	219.17
ES-6	Ephemeral	Streambed	Mud	1	13.13	13.13
ES-7	Intermittent	Streambed	Mud	3	122.92	368.75
27A[a]	Intermittent	Streambed	Mud	2	98.83	197.67
27B[a]	Intermittent	Streambed	Mud	2	130.36	260.72
29[a]	Upper Perennial	Rock Bottom	Rubble	6	172.20	717.34
				Total	**1,563.75**	**3,604.65**

[a] These features are co-located within the boundaries of the Eastern Sporn Tract as well; therefore they are also included in the discussion of that property as well.

ft = feet; ft^2 = square feet

Jordan West Corridor

The Jordan West Corridor is approximately 2.2 miles in length and extends southward from the southern terminus of the South Corridor to the Jordan Tract (see Attachment B.8). It predominantly lies within an existing transmission ROW, with the exception of two short sections that traverse through virgin forestland.

The Jordan West Corridor crosses four ephemeral streams, seven intermittent streams, and four perennial streams. From north to south, the perennial stream crossings are Claylick Creek, two unnamed tributaries to Tombleson Run, and Tombleson Run (see Table E-18). No other potential waters were identified along the corridor.

Table E-18. Summary of Potential Waters of the U.S. Identified within the Jordan West Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
JT-10	Lower Perennial	Unconsolidated Bottom	Cobble-Gravel	7	128.52	899.61
JT-1a	Intermittent	Streambed	Rubble	5	187.78	938.91
JT-1b	Ephemeral	Streambed	Cobble-Gravel	1	2.72	2.72
JT-2	Intermittent	Streambed	Rubble	4	132.95	531.80
JT-3a	Intermittent	Streambed	Mud	3	160.63	481.89
JT-3b	Intermittent	Streambed	Cobble-Gravel	3	8.73	26.18
JT-3c	Ephemeral	Streambed	Cobble-Gravel	1	122.93	122.93
JT-4	Lower Perennial	Rock Bottom	Rubble	14	120.07	1681.03
JT-5a	Intermittent	Streambed	Mud	2	176.49	352.98
JT-5b	Intermittent	Streambed	Mud	2	254.56	509.13
JT-6	Ephemeral	Streambed	Mud	1	84.37	84.37
JT-7	Intermittent	Streambed	Rubble	6	47.13	282.77
JT-8	Lower Perennial	Unconsolidated Bottom	Cobble-Gravel	10	185.55	1855.53
JT-9	Lower Perennial	Rock Bottom	Rubble	8	376.32	3010.53
13[a]	Ephemeral	Streambed	Cobble-Gravel	2	264.35	528.70
				Total	**2,253.10**	**11,309.08**

[a] This feature is co-located within the boundaries of the Jordan Tract as well; therefore it is also included in the discussion of that property as well.
ft = feet; ft^2 = square feet

Jordan East Corridor

The Jordan East Corridor is approximately 2.19 miles in length and extends southward from the southern terminus of the South Corridor to the Jordan Tract (see Attachment B.7). The Jordan East Corridor meets the South Corridor at the same location as the Jordan West Corridor. However, the Jordan East Corridor takes a more easterly route towards the south, following an existing transmission ROW for nearly its entire length. It should be noted that the center approximately one-third (approximately 2,890 linear feet) of the Jordan East Corridor crosses through a private parcel for which access was not granted at the time of this investigation. The inaccessible properties are indicated on the attached maps (Attachment B.7).

The Jordan East Corridor crosses 11 ephemeral streams, three intermittent streams, and two perennial streams, which include Tombleson Run and an unnamed tributary to it (see Table E-19). No other potential waters were identified along the corridor.

Table E-19. Summary of Potential Waters of the U.S. Identified within the Jordan East Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
JE-1	Ephemeral	Streambed	Mud	1	106.79	106.79
JE-10	Ephemeral	Streambed	Bedrock	3	176.84	530.51
JE-11	Ephemeral	Streambed	Mud	1	120.98	120.98
JE-12	Intermittent	Streambed	Cobble-Gravel	3	127.16	381.48
JE-13	Intermittent	Streambed	Rubble	3	213.99	641.97
JE-14	Ephemeral	Streambed	Mud	1	86.87	86.87
JE-2	Ephemeral	Streambed	Mud	2	99.29	198.58
JE-3	Ephemeral	Streambed	Mud	1	60.17	60.17
JE-4	Ephemeral	Streambed	Mud	2	128.65	257.29
JE-5	Ephemeral	Streambed	Mud	3	73.97	221.90
JE-6	Ephemeral	Streambed	Mud	1	72.67	72.67
JE-7	Intermittent	Streambed	Bedrock	1	124.82	124.82
JE-8	Lower Perennial	Streambed	Cobble-Gravel	7	136.13	952.88
JE-9	Lower Perennial	Unconsolidated Bottom	Cobble-Gravel	6	254.34	1526.04
12A[a]	Ephemeral	Streambed	Cobble-Gravel	2	205.62	411.25
12B[a]	Ephemeral	Streambed	Cobble-Gravel	1	37.82	37.82
				Total	**2026.11**	**5732.02**

[a] Features are co-located within the boundaries of the Jordan Tract as well; therefore they are also included in the discussion of that property as well.

ft = feet; ft^2 = square feet

Western Sporn Corridor

The Western Sporn Corridor runs in an approximately east-west direction, extending from the North Corridor on AEP property westward to Dave Foglesong Road (County Route 3/3; see Attachment B.10). This corridor is 3.68 miles in length and traverses along and within the north side of an existing double transmission ROW. The corridor runs through or adjacent to several open fields/meadows, and a corn field.

The Western Sporn Corridor crosses 20 ephemeral streams, 10 intermittent streams, and two perennial streams, as listed in Table E-20. The perennial streams include Broad Run and Little Broad Run.

Foglesong Corridor

The Foglesong Corridor extends from the terminus of the Western Sporn Corridor westward to the Western Sporn property (see Attachment B.11). The corridor follows along and adjacent to the north side of Dave Foglesong Road (County Route 3/3). The Foglesong Corridor is approximately 1.16 miles in length.

The Foglesong Corridor crosses eight ephemeral streams and two intermittent streams, as listed in Table E-21. All eight of the ephemeral streams drain to the same intermittent stream. No perennial streams were observed in this corridor. No other potential waters were identified along the corridor.

Table E-20. Summary of Potential Waters of the U.S. Identified within the Western Sporn Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
LPO-6e	Intermittent	Streambed	Mud	3	55.48	166.43
WS-10	Ephemeral	Streambed	Mud	2	151.50	302.99
WS-11	Intermittent	Streambed	Mud	2	125.51	251.01
WS-12	Intermittent	Streambed	Mud	2	308.72	617.44
WS-12a	Intermittent	Streambed	Mud	2	12.18	24.35
WS-13	Ephemeral	Streambed	Mud	1	9.37	9.37
WS-14	Ephemeral	Streambed	Mud	1	126.26	126.26
WS-15	Ephemeral	Streambed	Mud	1	144.14	144.14
WS-16	Ephemeral	Streambed	Mud	1	131.10	131.10
WS-17	Intermittent	Streambed	Mud	2	185.28	370.55
WS-17a	Ephemeral	Streambed	Mud	1	47.67	47.67
WS-17b	Ephemeral	Streambed	Mud	1	145.70	145.70
WS-18	Intermittent	Streambed	Mud	3	136.93	410.78
WS-19	Ephemeral	Streambed	Mud	1	69.04	69.04
WS-20	Ephemeral	Streambed	Mud	1	91.76	91.76
WS-20a	Ephemeral	Streambed	Mud	1	60.91	60.91
WS-21	Ephemeral	Streambed	Mud	2	387.69	775.37
WS-22	Intermittent	Streambed	Cobble-Gravel	8	121.47	971.75
WS-23	Ephemeral	Streambed	Mud	2	384.06	768.12
WS-23c	Ephemeral	Streambed	Mud	1	17.26	17.26
WS-24	Ephemeral	Streambed	Mud	2	107.66	215.31
WS-24a	Ephemeral	Streambed	Mud	1	38.27	38.27
WS-1	Ephemeral	Streambed	Mud	3	276.99	830.98
WS-2	Lower Perennial	Unconsolidated Bottom	Mud	6	144.08	864.45
WS-3	Intermittent	Streambed	Mud	4	61.99	247.96
WS-4	Ephemeral	Streambed	Mud	3	245.24	735.72
WS-4a	Ephemeral	Streambed	Mud	2	31.70	63.39
WS-5	Ephemeral	Streambed	Mud	1	40.64	40.64
WS-6	Ephemeral	Streambed	Mud	2	128.14	256.28
WS-7	Lower Perennial	Unconsolidated bottom	Mud	9	123.54	1111.83
WS-8	Intermittent	Streambed	Mud	3	144.08	432.24
WS-9	Intermittent	Streambed	Mud	2	248.37	496.74
				Total	**4,302.73**	**10,835.81**

ft = feet; ft^2 = square feet

Table E-21. Summary of Potential Waters of the U.S. Identified within the Foglesong Corridor

Feature ID	Subsystem	Class	Subclass	Width (ft)	Total Length (ft)	Total Area (ft^2)
F-1	Intermittent	Streambed	Cobble-Gravel	4	1129.39	4517.55
F-1a	Ephemeral	Streambed	Mud	1	60.49	60.49
F-1b	Ephemeral	Streambed	Mud	1	47.17	47.17
F-1c	Ephemeral	Streambed	Mud	1	56.65	56.65
F-1d	Ephemeral	Streambed	Mud	1	50.77	50.77
F-1e	Ephemeral	Streambed	Mud	1	49.02	49.02
F-1f	Ephemeral	Streambed	Mud	1	46.90	46.90
F-1h	Ephemeral	Streambed	Mud	1	36.16	36.16
WS-24	Ephemeral	Streambed	Mud	2	74.76	149.52
WS-25	Intermittent	Streambed	Mud	4	258.98	1035.91
				Total	1,810.29	6,050.14

ft = feet; ft^2 = square feet

E.4.5 References

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U.S. Fish and Wildlife Service. 2008. National Wetland Inventory – Fish and Wildlife Services. Accessed October 16, 2008 at http://www.nwi.fws.gov/

Mountaineer CCS II Project

Wetland Survey

Attachment A

Figures

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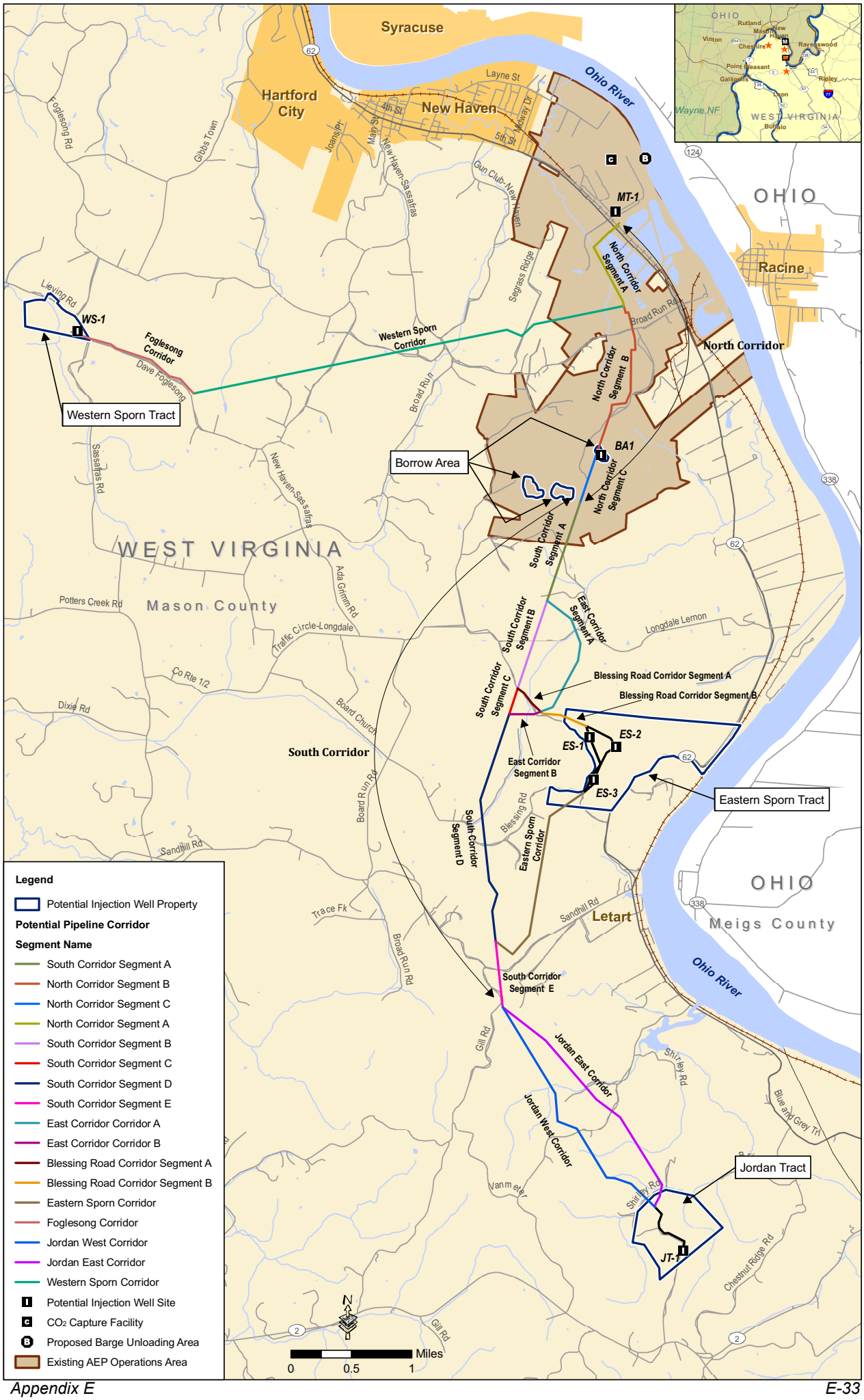
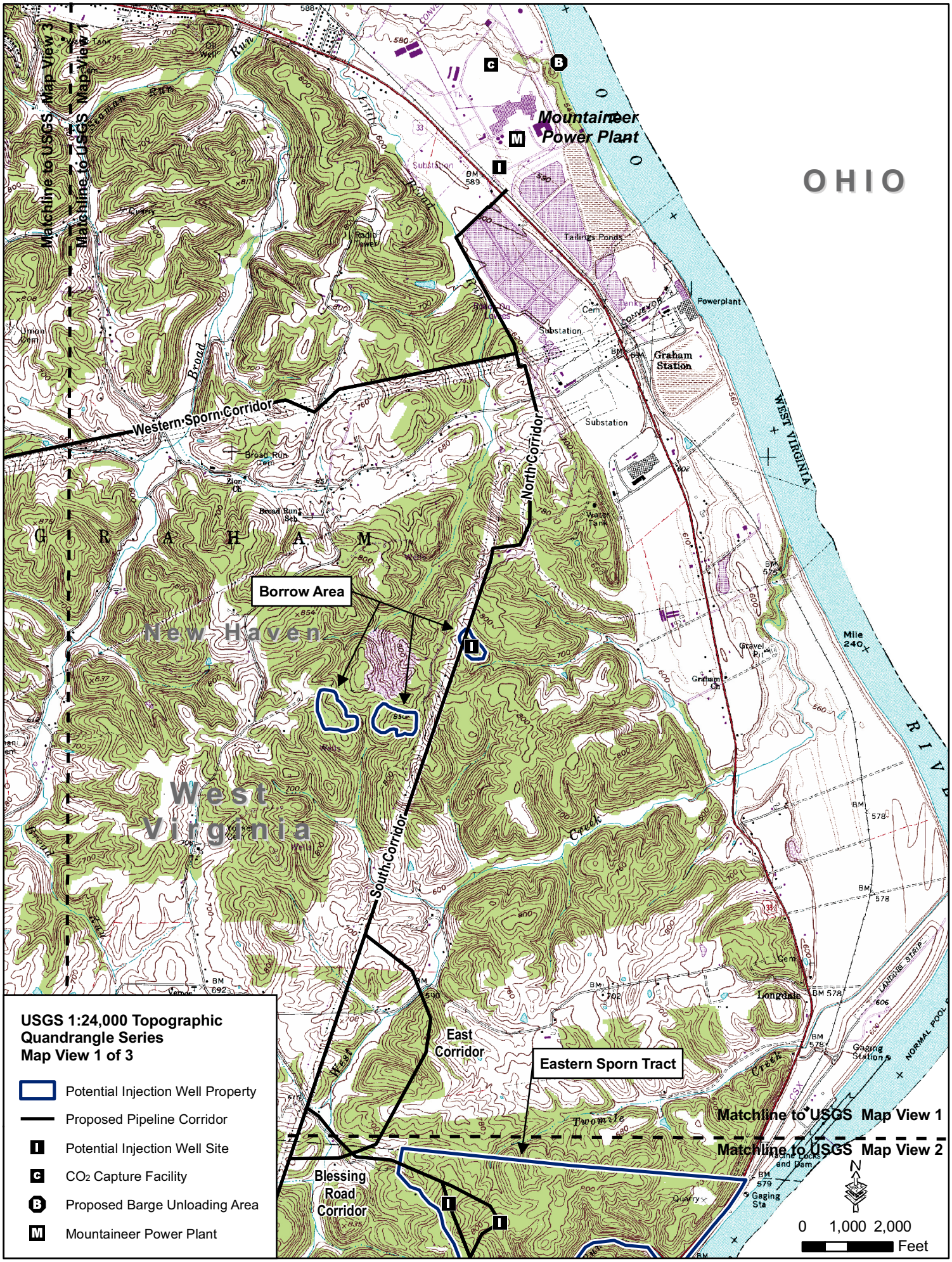
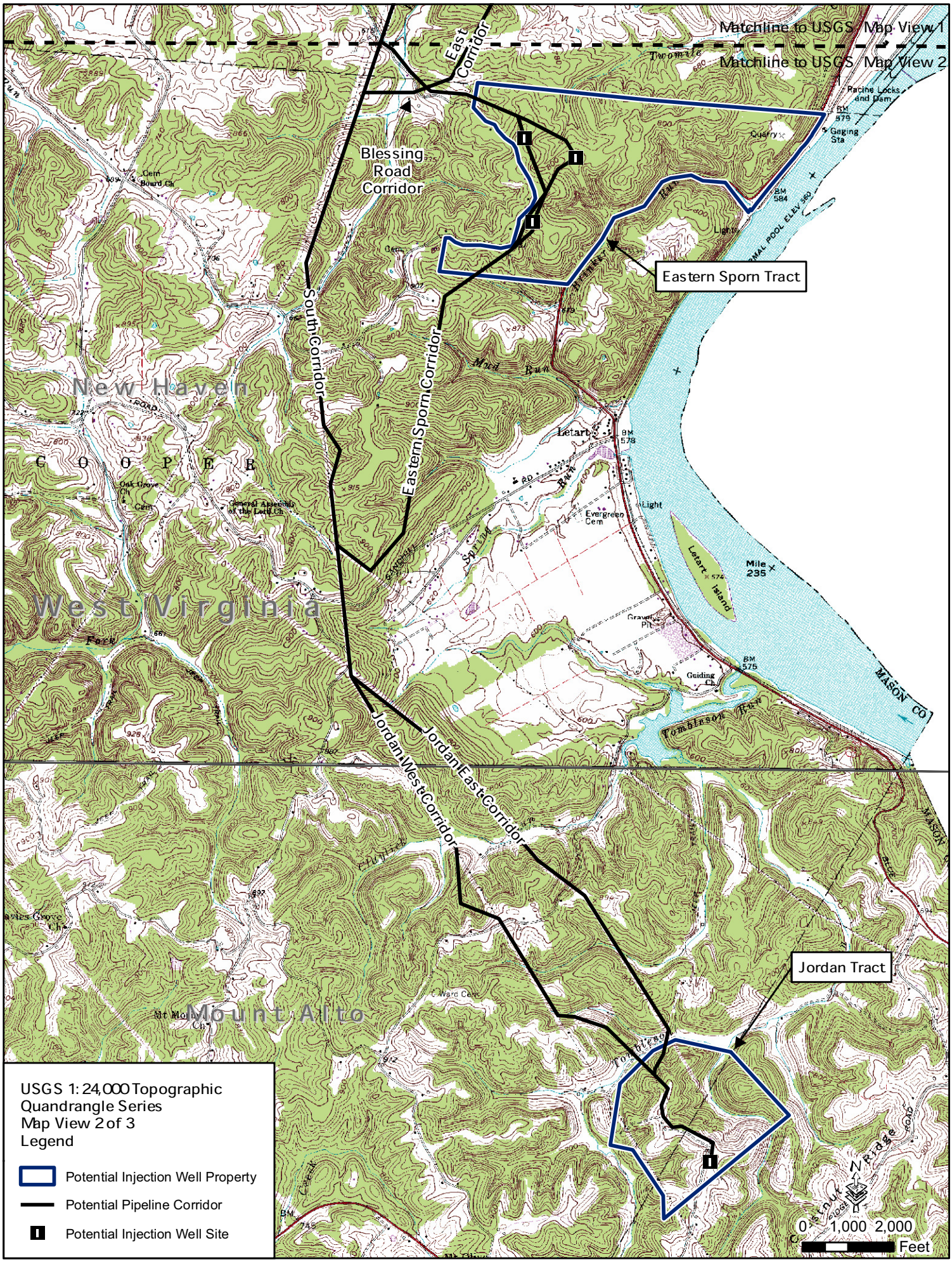
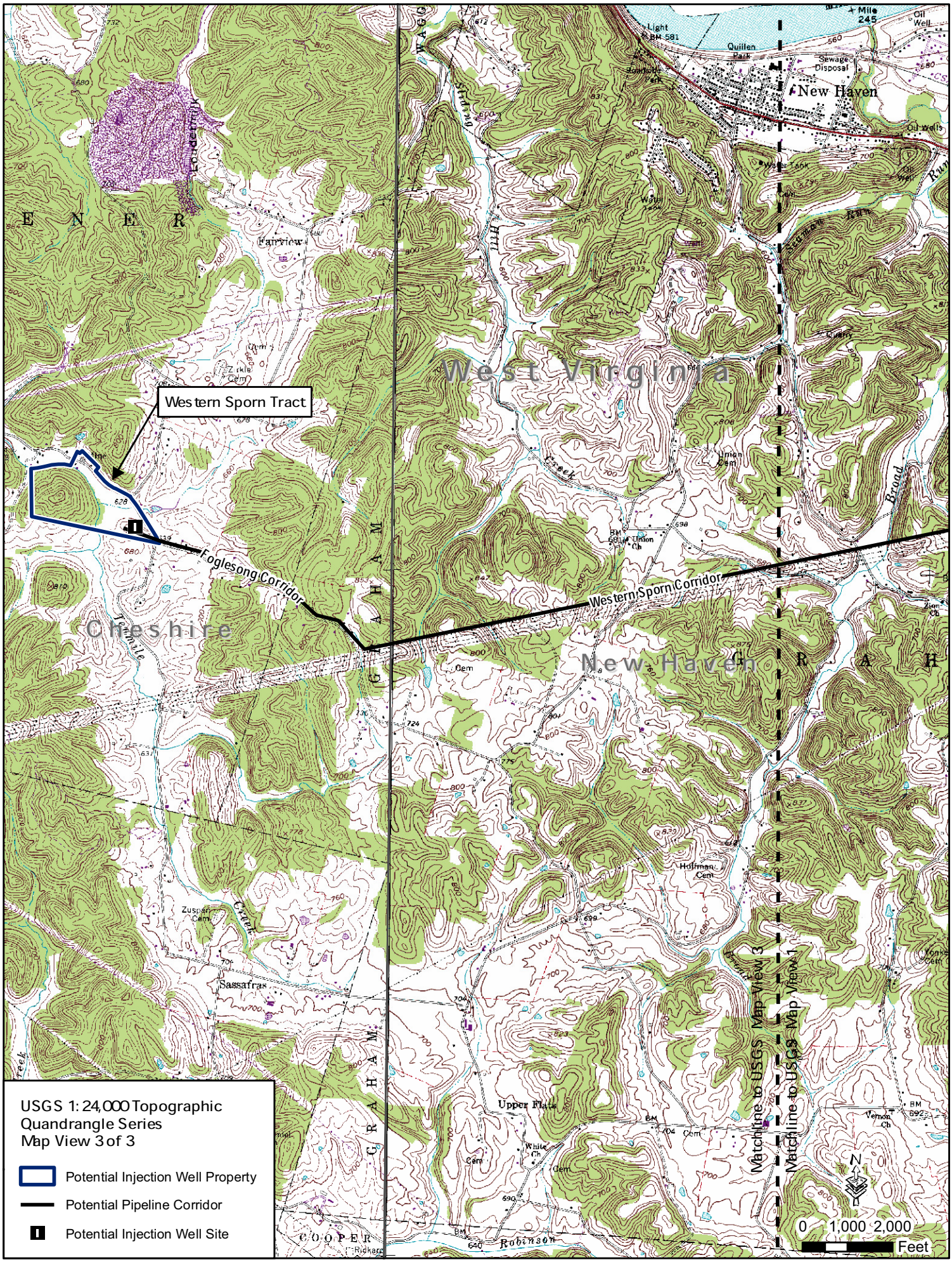
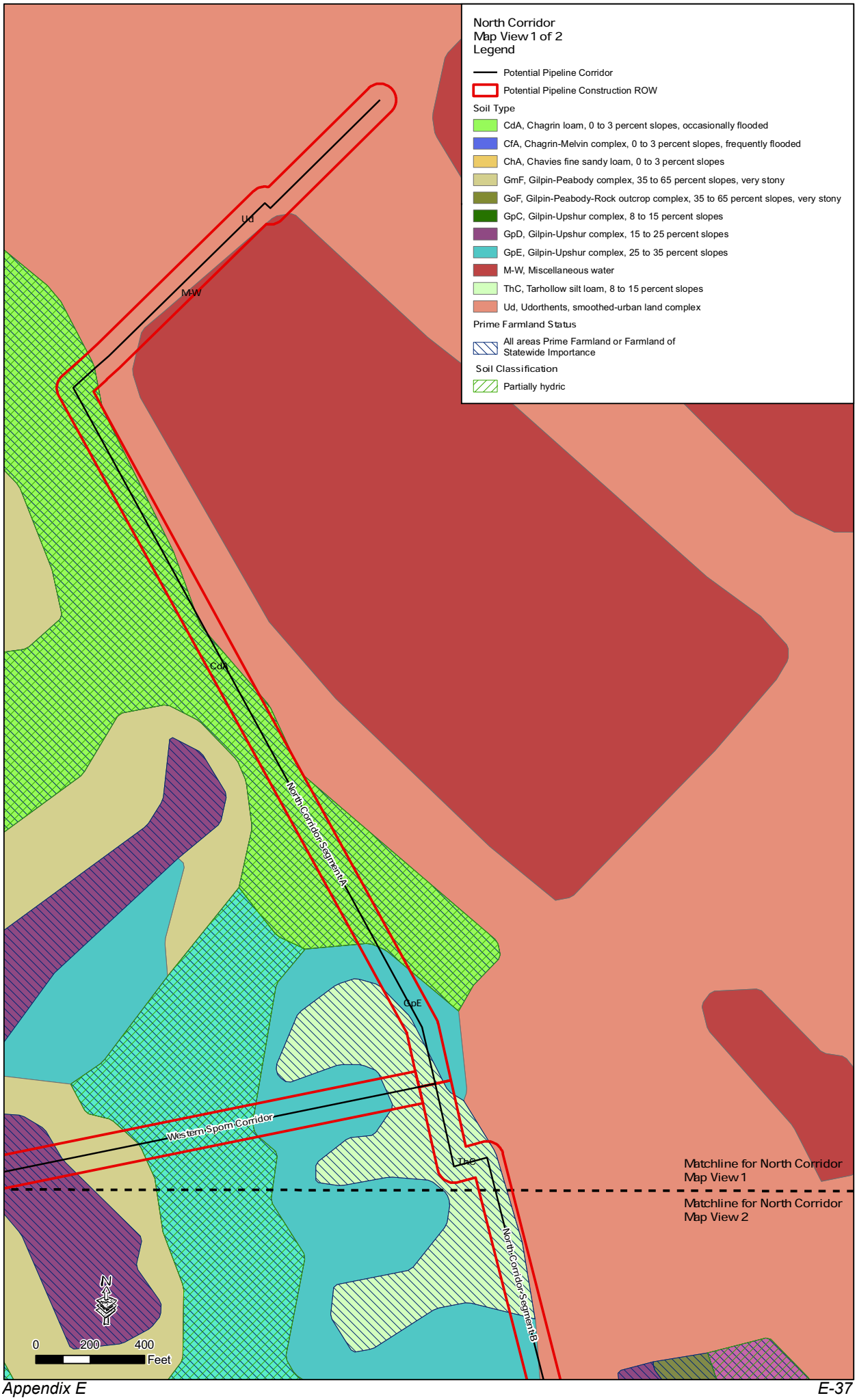
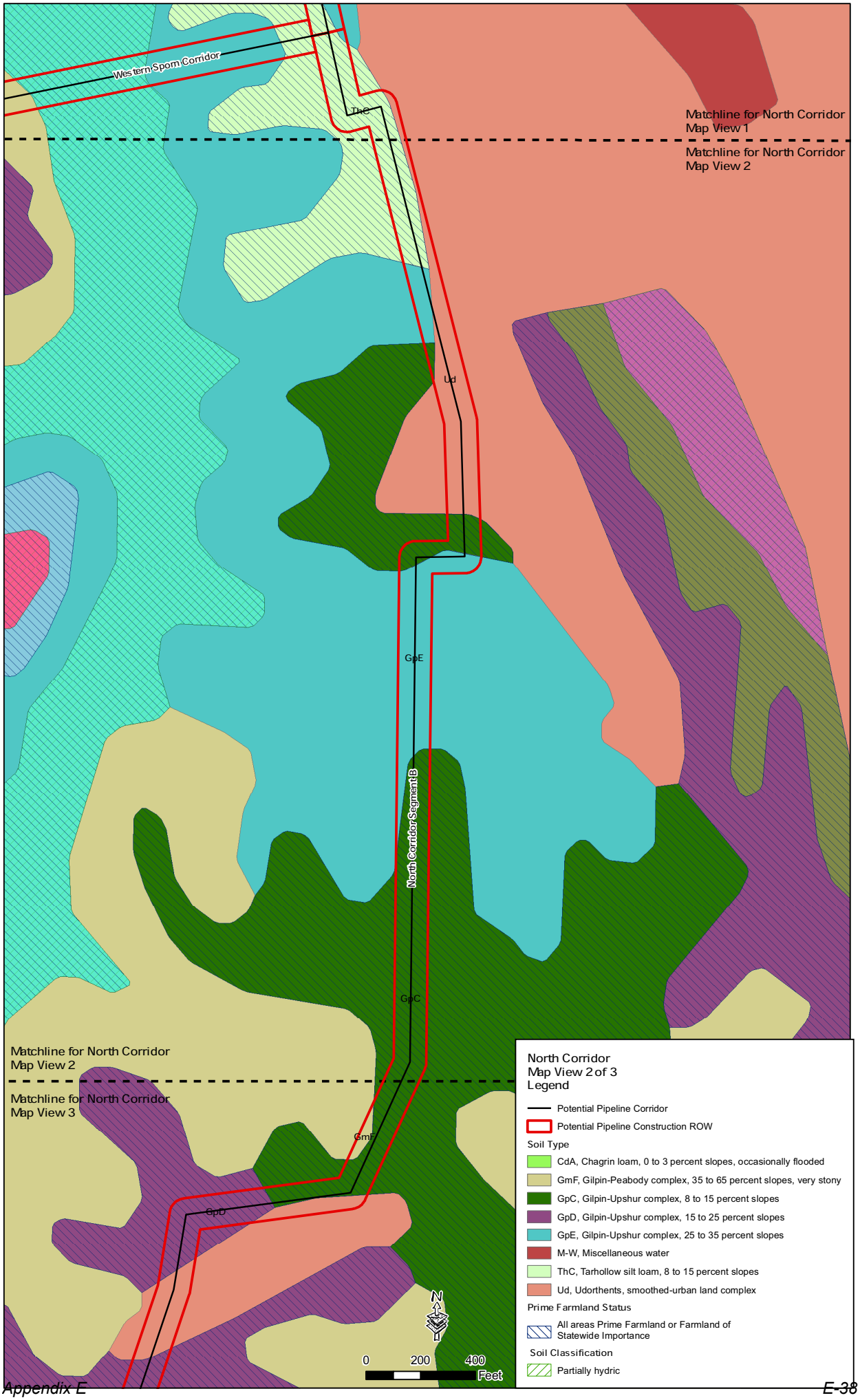

Syracuse
Hartford City
New Haven
Ohio River
OHIO
Racine
WEST VIRGINIA
Mason County
Meigs County
Letart
Wayne NF
Western Sporn Tract
Foglesong Corridor
Western Sporn Corridor
WS-1
MT-1
BA1
Borrow Area
North Corridor
North Corridor Segment A
North Corridor Segment B
North Corridor Segment C
South Corridor
South Corridor Segment A
South Corridor Segment B
South Corridor Segment C
South Corridor Segment D
South Corridor Segment E
East Corridor Segment A
East Corridor Segment B
Blessing Road Corridor Segment A
Blessing Road Corridor Segment B
ES-1
ES-2
ES-3
Eastern Sporn Tract
Eastern Sporn Corridor
Jordan East Corridor
Jordan West Corridor
Jordan Tract
JT-1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Segment Name
South Corridor Segment A
North Corridor Segment B
North Corridor Segment C
North Corridor Segment A
South Corridor Segment B
South Corridor Segment C
South Corridor Segment D
South Corridor Segment E
East Corridor Corridor A
East Corridor Corridor B
Blessing Road Corridor Segment A
Blessing Road Corridor Segment B
Eastern Sporn Corridor
Foglesong Corridor
Jordan West Corridor
Jordan East Corridor
Western Sporn Corridor
Potential Injection Well Site
CO2 Capture Facility
Proposed Barge Unloading Area
Existing AEP Operations Area
N
Miles
0
0.5
1

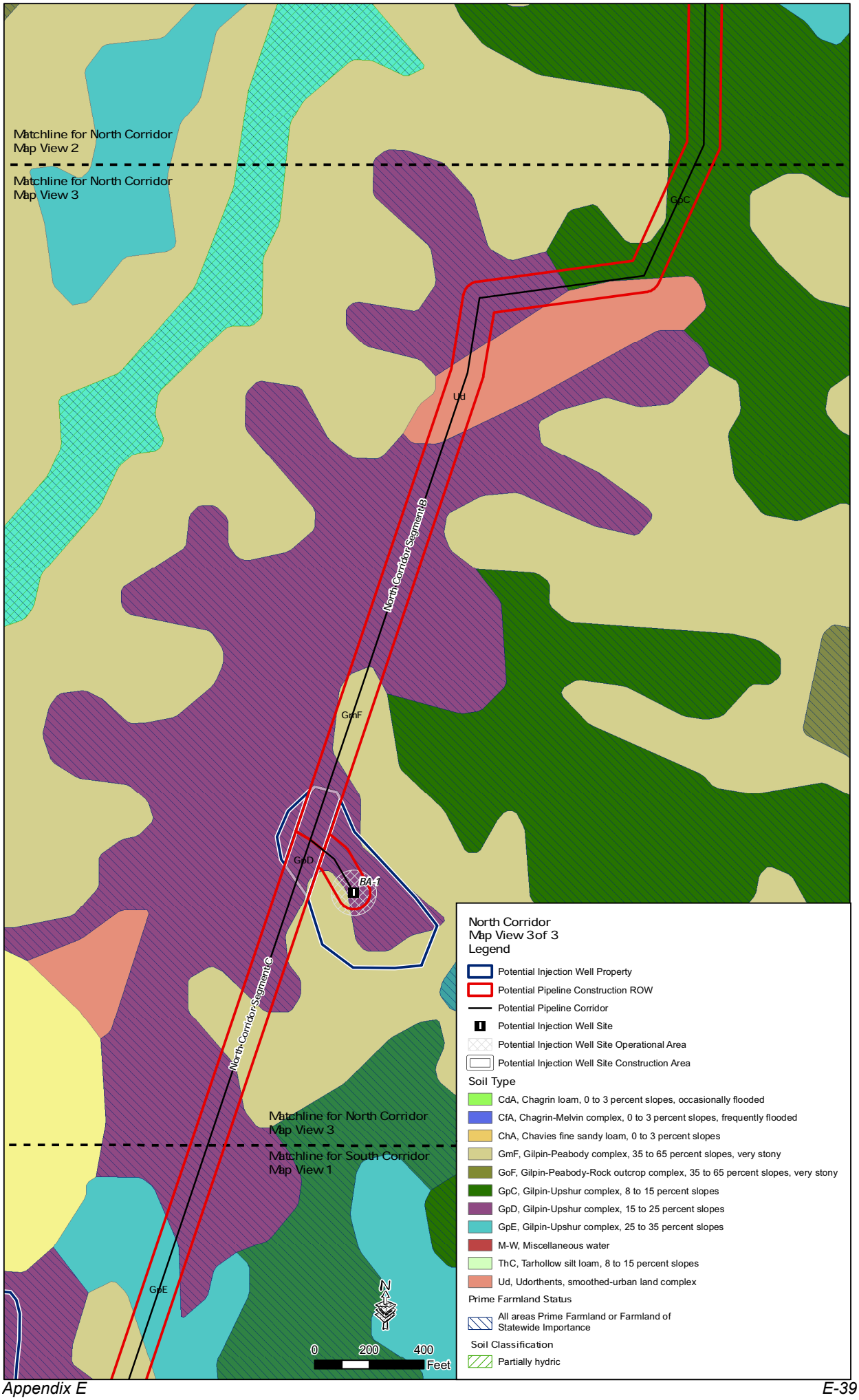

USGS 1:24,000 Topographic Quandrangle Series
Map View 1 of 3
Potential Injection Well Property
Proposed Pipeline Corridor
Potential Injection Well Site
CO2 Capture Facility
Proposed Barge Unloading Area
Mountaineer Power Plant
OHIO
WEST VIRGINIA
Matchline to USGS Map View 3
Matchline to USGS Map View 1
Matchline to USGS Map View 2
Western Sporn Corridor
North Corridor
South Corridor
East Corridor
Eastern Sporn Tract
Blessing Road Corridor
Borrow Area
GRAHAM
New Haven
West Virginia
Graham Station
Tailings Ponds
Substation
Powerplant
Longdale
Broad Run
Broad Run Cem
Zion Ch
Graham Ch
Gaging Station
Quarry
Tuomile
Creek
Mile 240
0 1,000 2,000
Feet

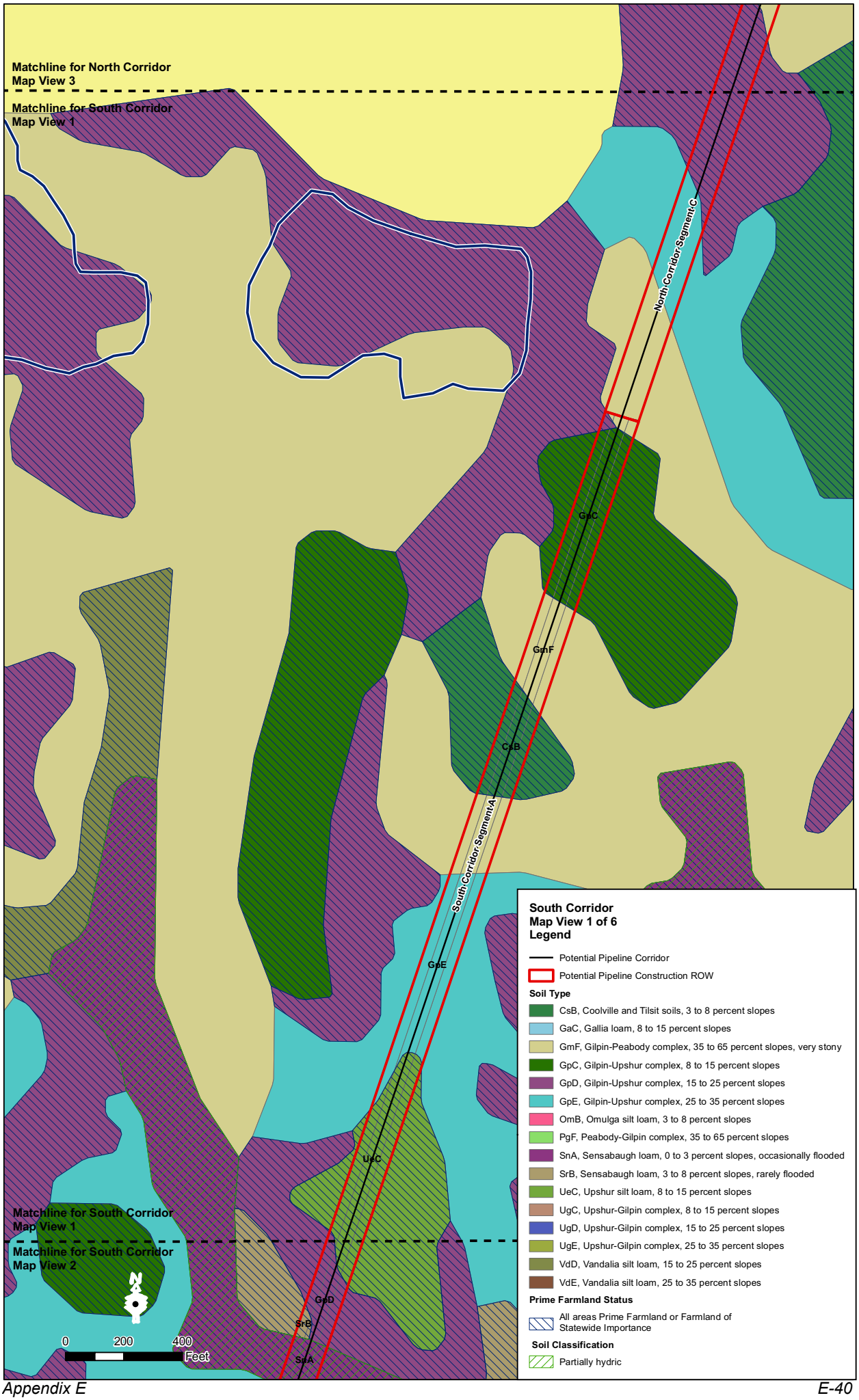

Matchline to USGS Map View 1
Matchline to USGS Map View 2
East Corridor
Blessing Road Corridor
South Corridor
Eastern Sporn Corridor
Eastern Sporn Tract
Jordan West Corridor
Jordan East Corridor
Jordan Tract
New Haven
COOPER
West Virginia
Mount Alto
Letart
Letart Island
Racine Locks and Dam
Evergreen Cem
Guiding Ch
MASON CO
USGS 1:24,000 Topographic Quandrangle Series
Map View 2 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Injection Well Site
0 1,000 2,000
Feet

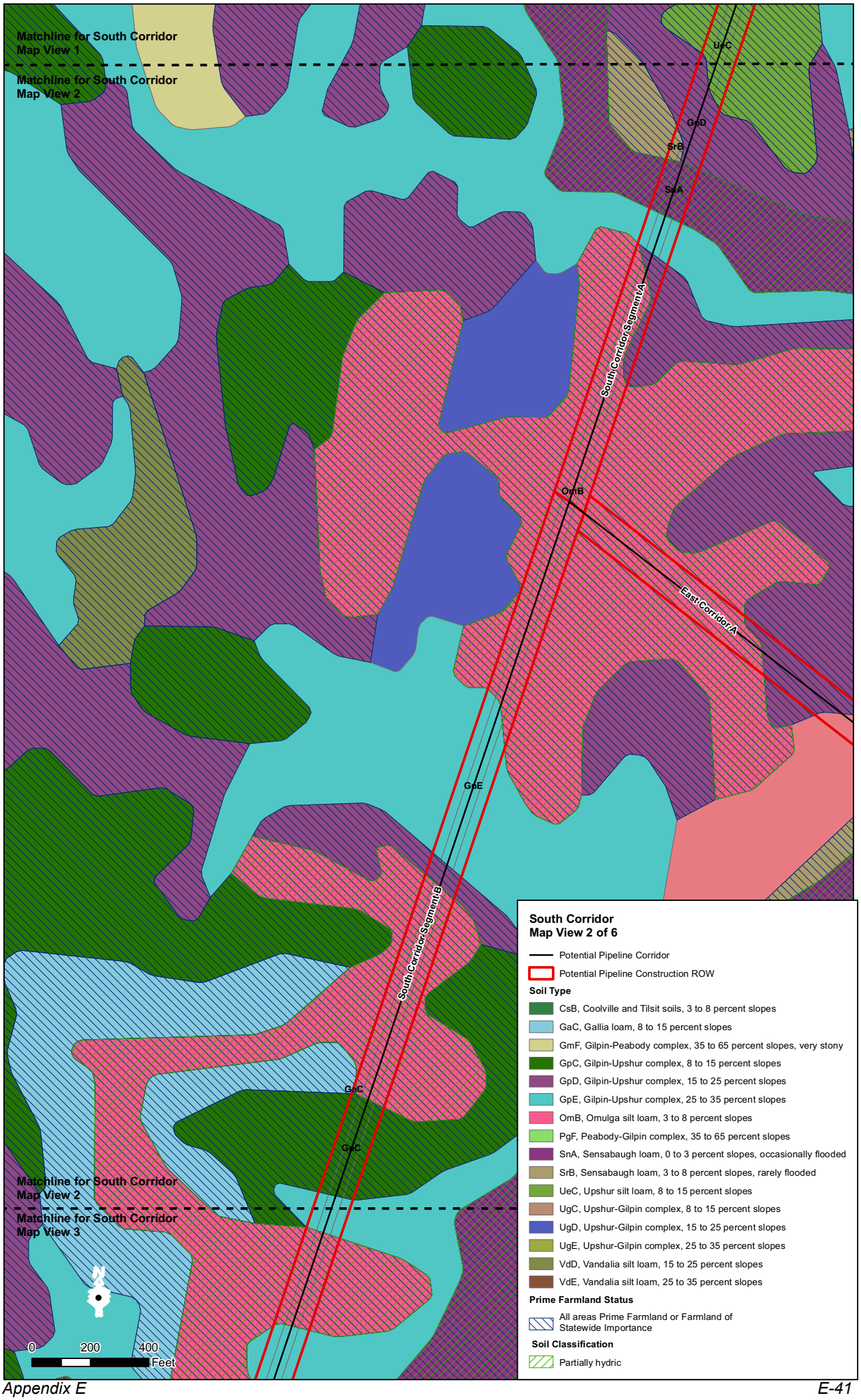

Western Sporn Tract
Foglesong Corridor
Western Sporn Corridor
West Virginia
Cheshire
New Haven
Fairview
Sassafras
Upper Flats
Quillen Park
Sewage Disposal
Oil wells
Water Tank
Union Cem
Hoffman Cem
Zuspan Cem
Zion Ch
Vernon Ch
Robinson
Matchline to USGS Map View 3
Matchline to USGS Map View 1
N
0 1,000 2,000
Feet
USGS 1:24,000 Topographic Quandrangle Series
Map View 3 of 3
Potential Injection Well Property
Potential Pipeline Corridor
Potential Injection Well Site

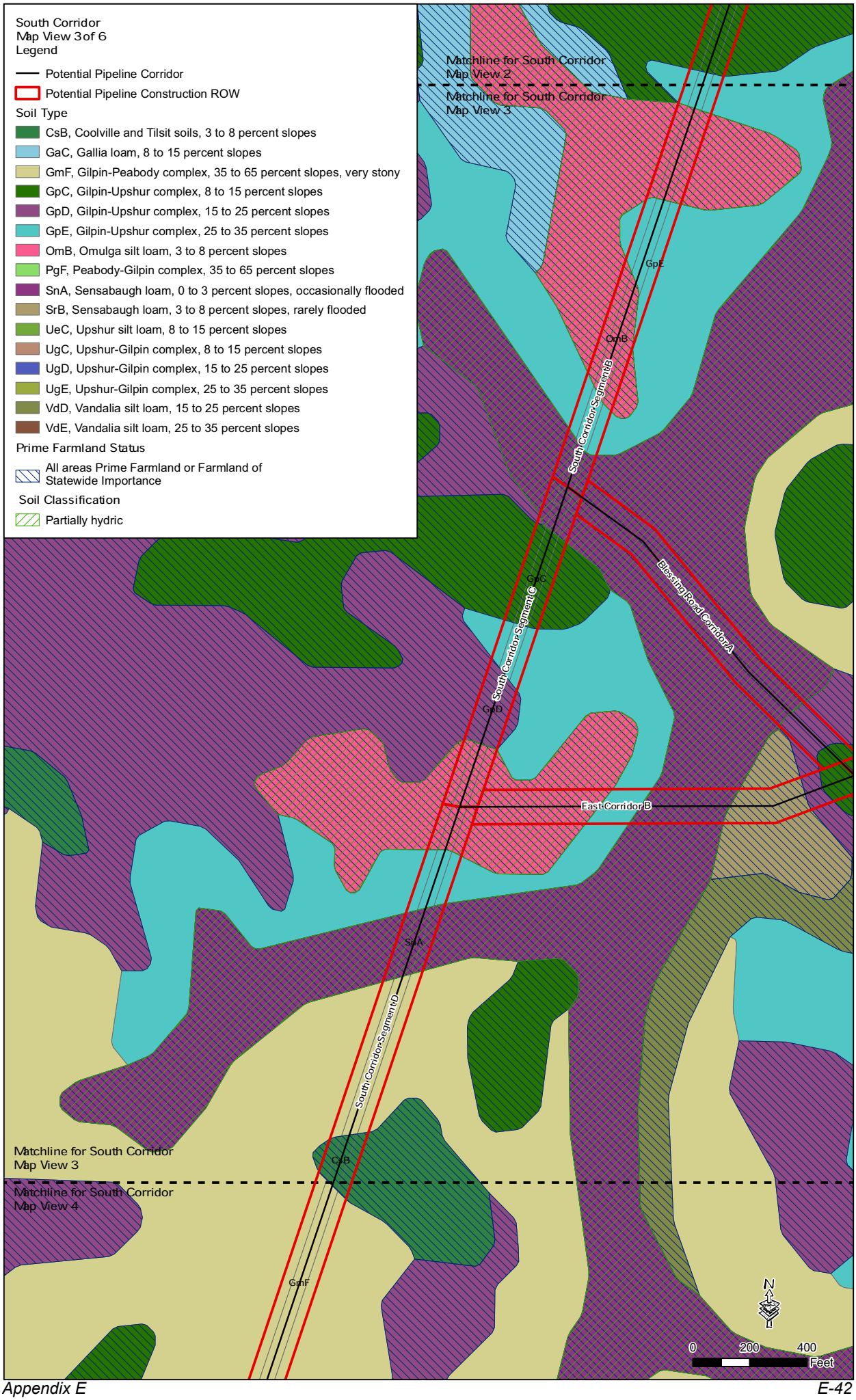

North Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CfA, Chagrin-Melvin complex, 0 to 3 percent slopes, frequently flooded
ChA, Chavies fine sandy loam, 0 to 3 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GoF, Gilpin-Peabody-Rock outcrop complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
M-W, Miscellaneous water
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Ud
M-W
CdA
North Corridor Segment A
GpE
Western Spur Corridor
ThC
North Corridor Segment B
Matchline for North Corridor Map View 1
Matchline for North Corridor Map View 2
N
0
200
400
Feet

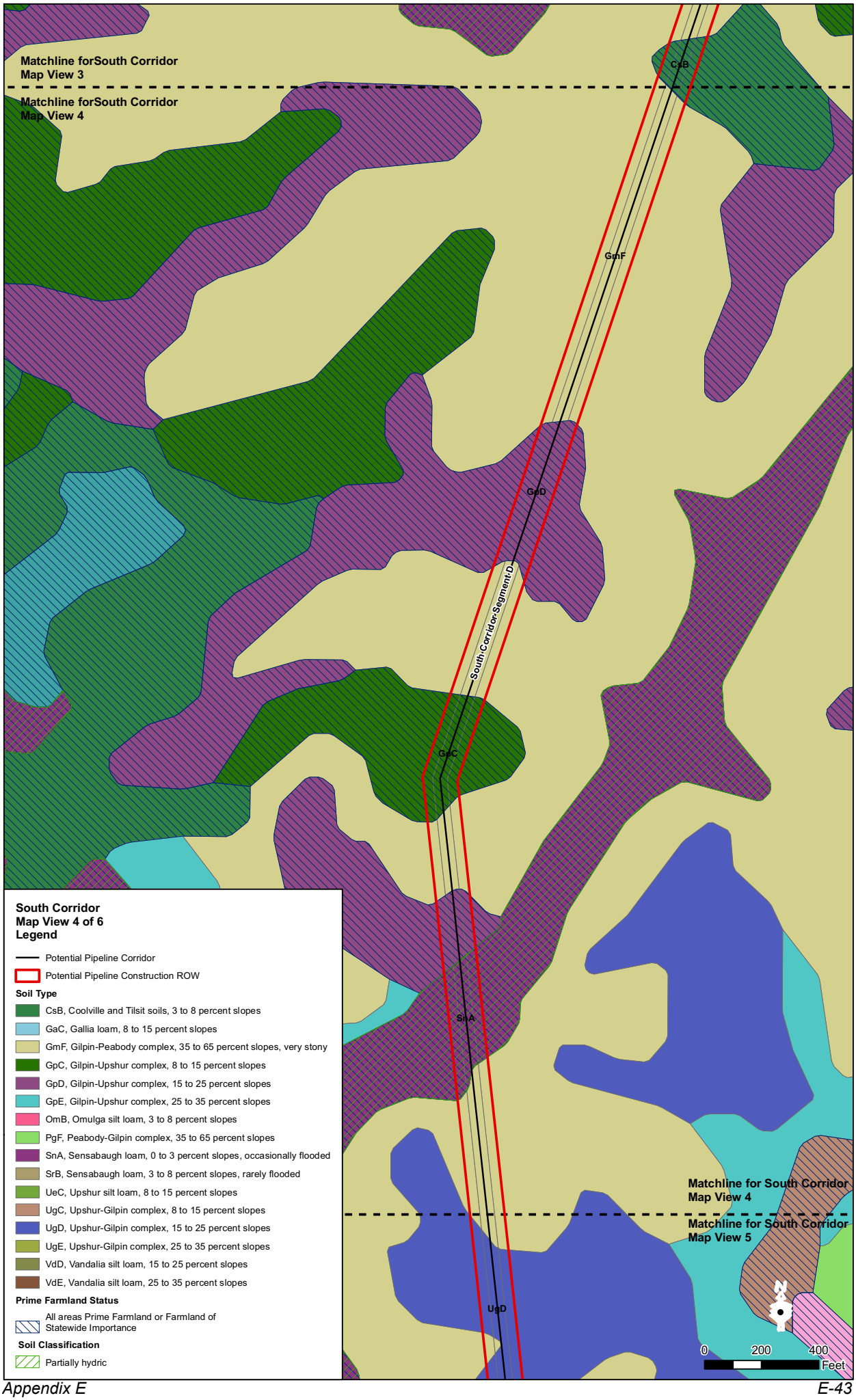

Western Spom Corridor
ThC
Matchline for North Corridor
Map View 1
Matchline for North Corridor
Map View 2
Ud
GpE
North Corridor Segment 1B
GpC
Matchline for North Corridor
Map View 2
Matchline for North Corridor
Map View 3
GmF
GpD
N
0
200
400
Feet
North Corridor
Map View 2 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
M-W, Miscellaneous water
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

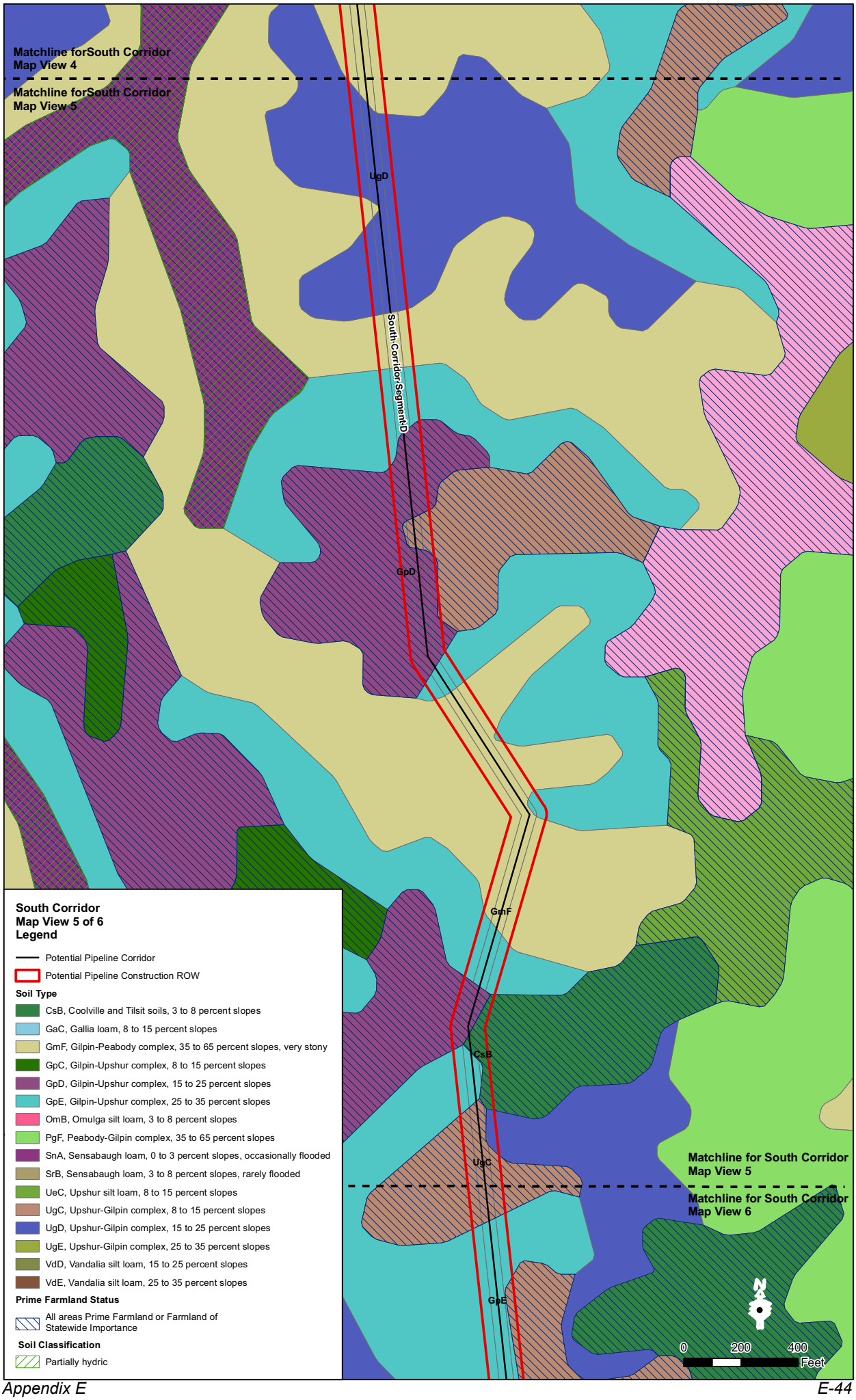

Matchline for North Corridor
Map View 2
Matchline for North Corridor
Map View 3
GoC
Ud
North Corridor Segment B
GmF
GpD
BA-1
North Corridor Segment C
Matchline for North Corridor
Map View 3
Matchline for South Corridor
Map View 1
GpE
N
0
200
400
Feet
North Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Construction ROW
Potential Pipeline Corridor
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CfA, Chagrin-Melvin complex, 0 to 3 percent slopes, frequently flooded
ChA, Chavies fine sandy loam, 0 to 3 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GoF, Gilpin-Peabody-Rock outcrop complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
M-W, Miscellaneous water
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

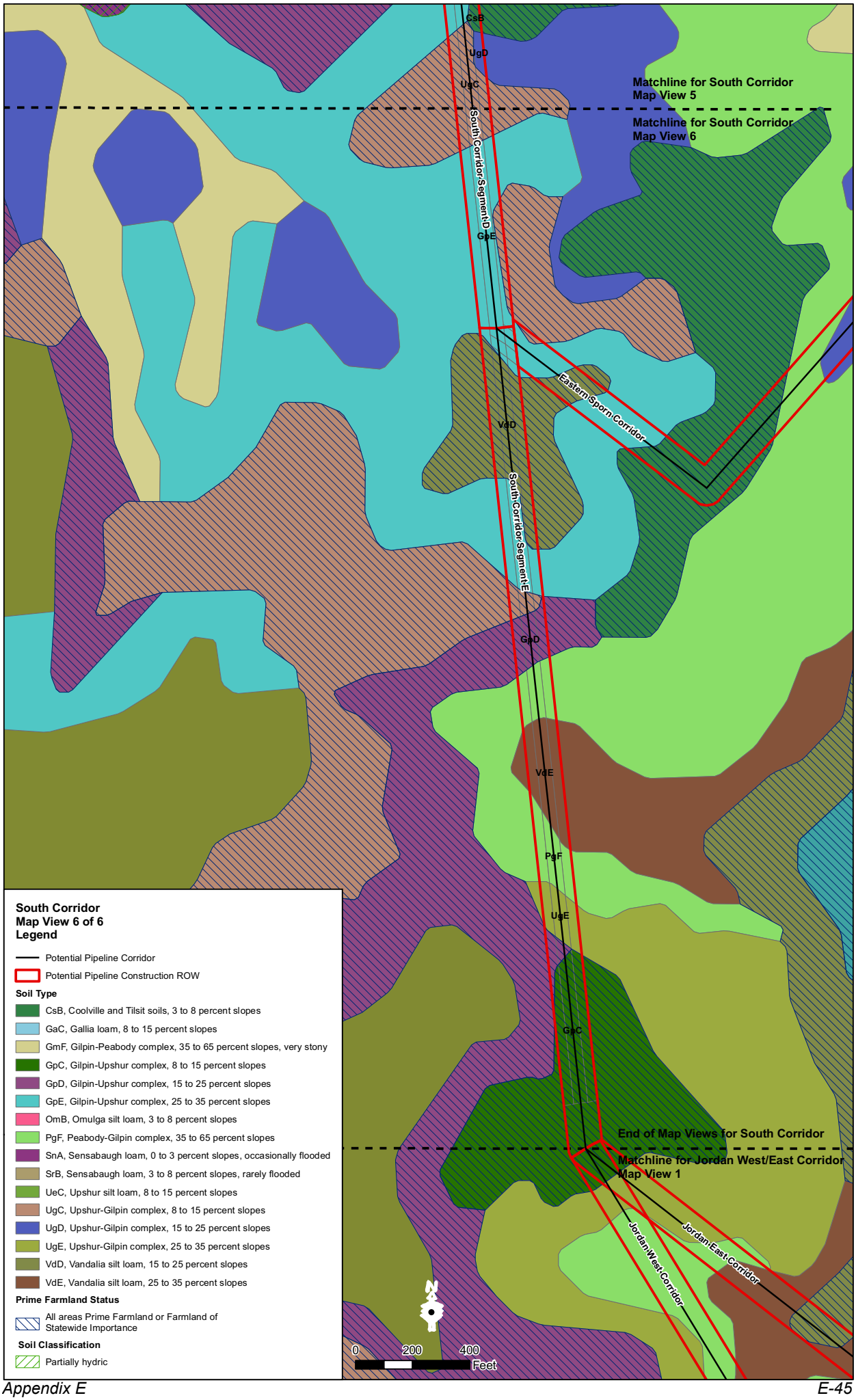

Matchline for North Corridor
Map View 3
Matchline for South Corridor
Map View 1
North Corridor Segment C
GpC
GmF
CsB
South Corridor Segment A
GpE
UgC
GpD
SrB
SnA
Matchline for South Corridor
Map View 1
Matchline for South Corridor
Map View 2
N
0
200
400
Feet
South Corridor
Map View 1 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

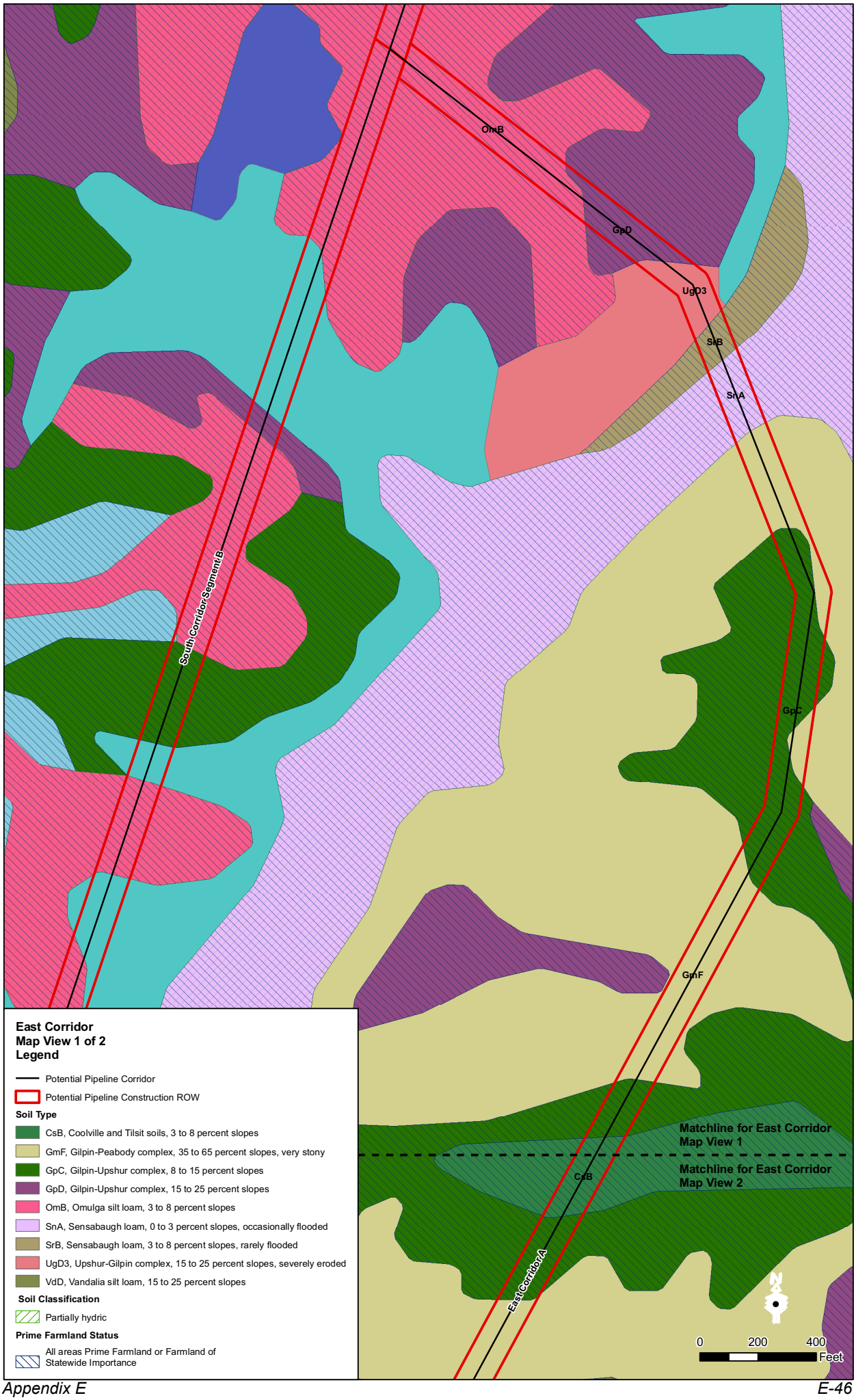

Matchline for South Corridor
Map View 1
Matchline for South Corridor
Map View 2
UeC
GpD
SrB
SnA
South Corridor Segment A
OmB
East Corridor A
GpE
South Corridor Segment B
GaC
GaC
Matchline for South Corridor
Map View 2
Matchline for South Corridor
Map View 3
0
200
400
Feet
South Corridor
Map View 2 of 6
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

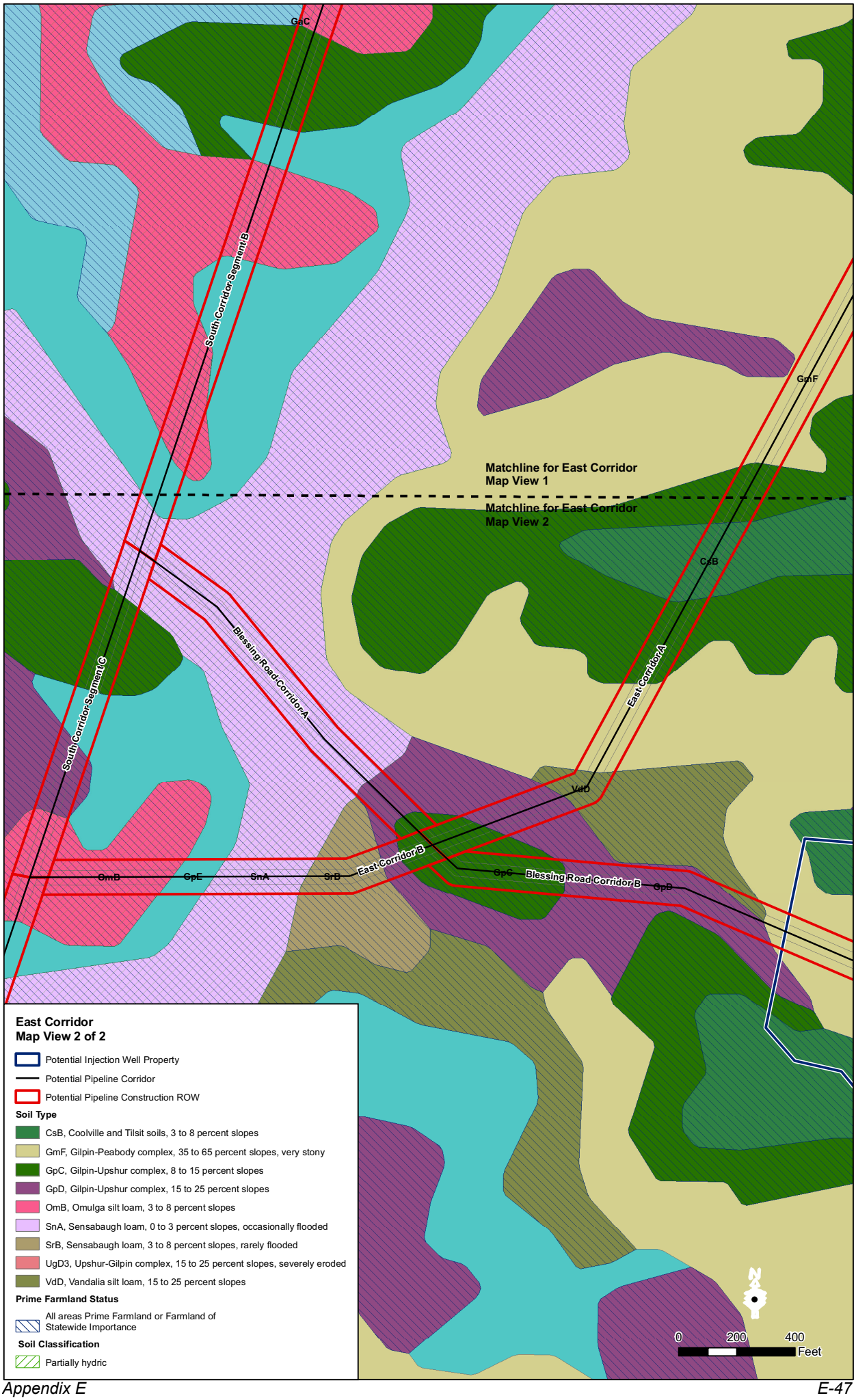

South Corridor
Map View 3 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Matchline for South Corridor Map View 2
Matchline for South Corridor Map View 3
GpE
OmB
South Corridor Segment B
Blessing Road Corridor A
GpC
South Corridor Segment C
GpD
East Corridor B
SnA
South Corridor Segment D
CsB
Matchline for South Corridor Map View 3
Matchline for South Corridor Map View 4
GmF
N
0
200
400
Feet

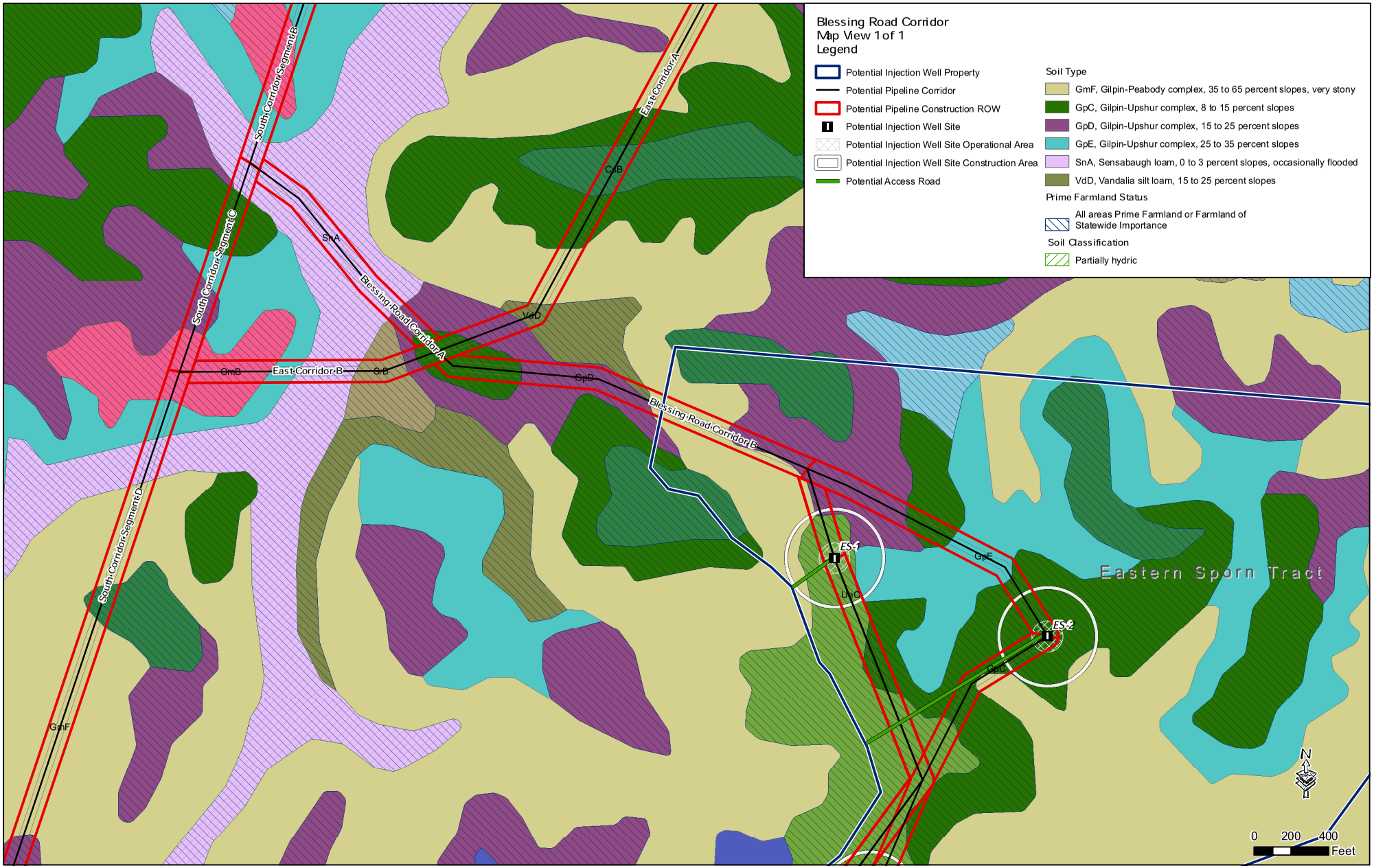

Matchline forSouth Corridor
Map View 3
Matchline forSouth Corridor
Map View 4
CsB
GmF
GpD
South Corridor-Segment-D
GpC
SnA
UgD
Matchline for South Corridor
Map View 4
Matchline for South Corridor
Map View 5
0
200
400
Feet
South Corridor
Map View 4 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

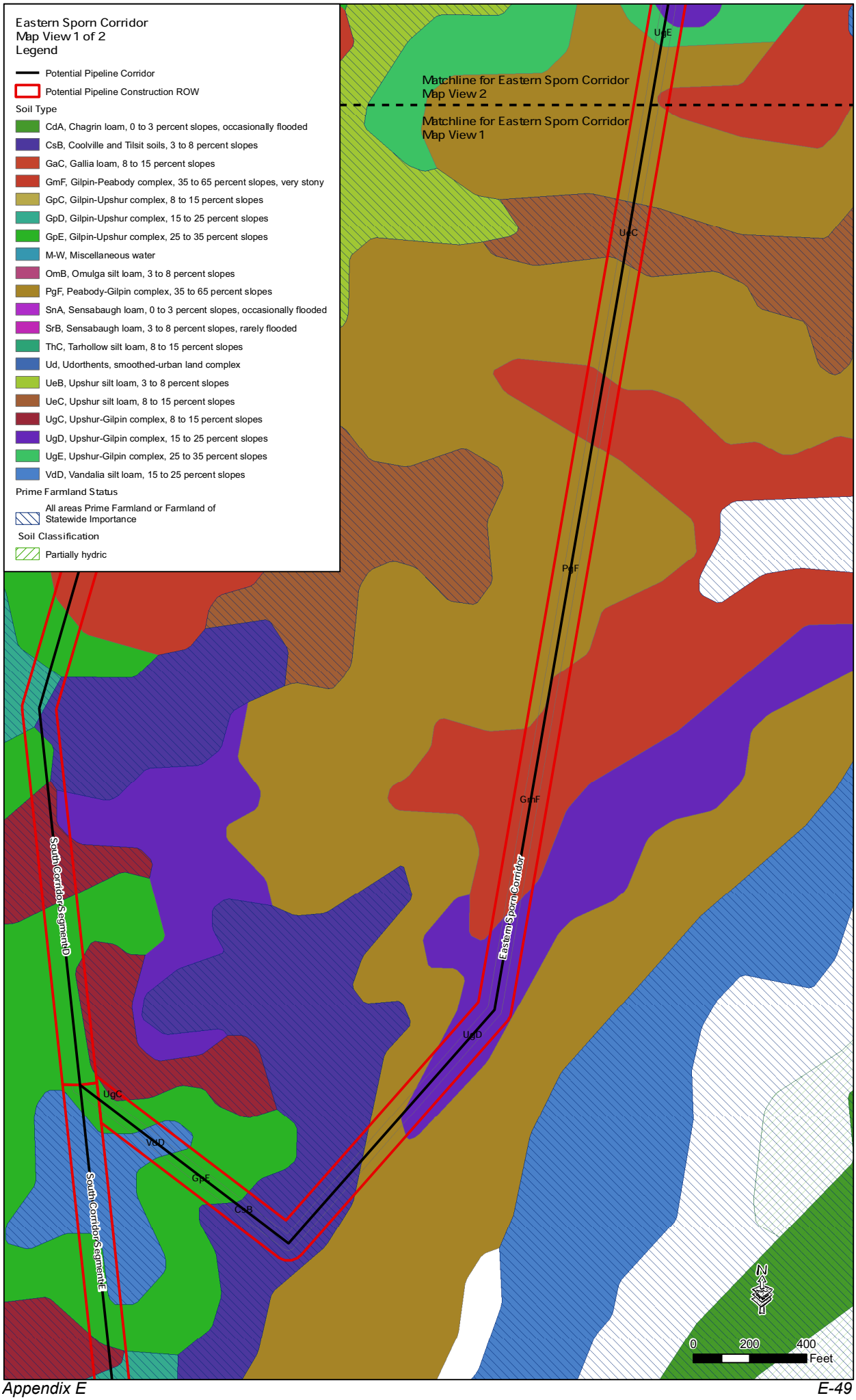

Matchline forSouth Corridor
Map View 4
Matchline forSouth Corridor
Map View 5
UgD
South Corridor Segment D
GpD
GmF
CsB
UgC
GpE
Matchline for South Corridor
Map View 5
Matchline for South Corridor
Map View 6
0
200
400
Feet
South Corridor
Map View 5 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

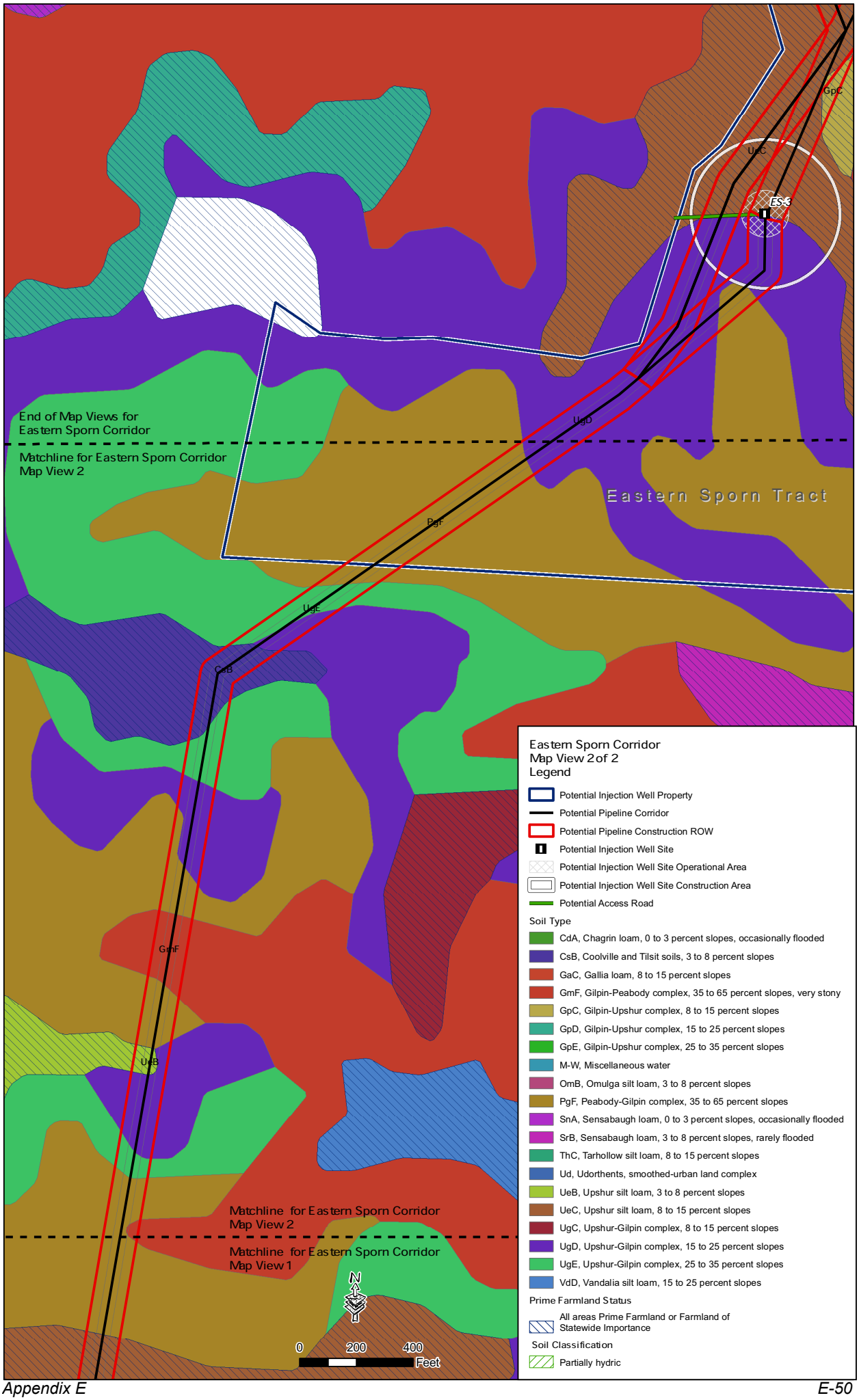

CsB
UgD
UgC
Matchline for South Corridor
Map View 5
Matchline for South Corridor
Map View 6
South Corridor Segment D
GpE
Eastern Sporn Corridor
VdD
South Corridor Segment E
GpD
VdE
PgF
UgE
GpC
End of Map Views for South Corridor
Matchline for Jordan West/East Corridor
Map View 1
Jordan West Corridor
Jordan East Corridor
N
0
200
400
Feet
South Corridor
Map View 6 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

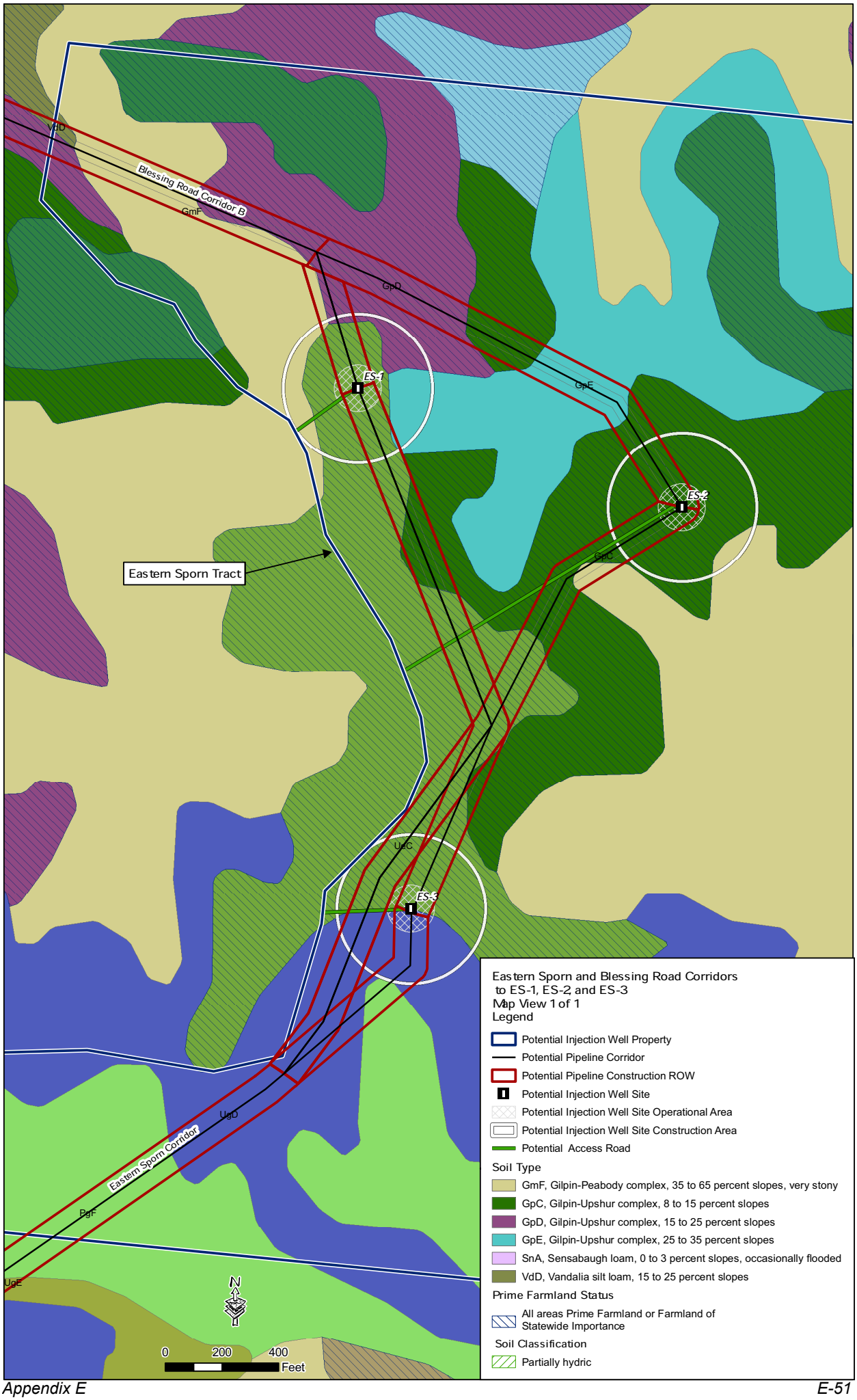

OmB
GpD
UgD3
SrB
SnA
GpC
GmF
CsB
South Corridor Segment B
East Corridor A
Matchline for East Corridor Map View 1
Matchline for East Corridor Map View 2
0
200
400
Feet
East Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UgD3, Upshur-Gilpin complex, 15 to 25 percent slopes, severely eroded
VdD, Vandalia silt loam, 15 to 25 percent slopes
Soil Classification
Partially hydric
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance

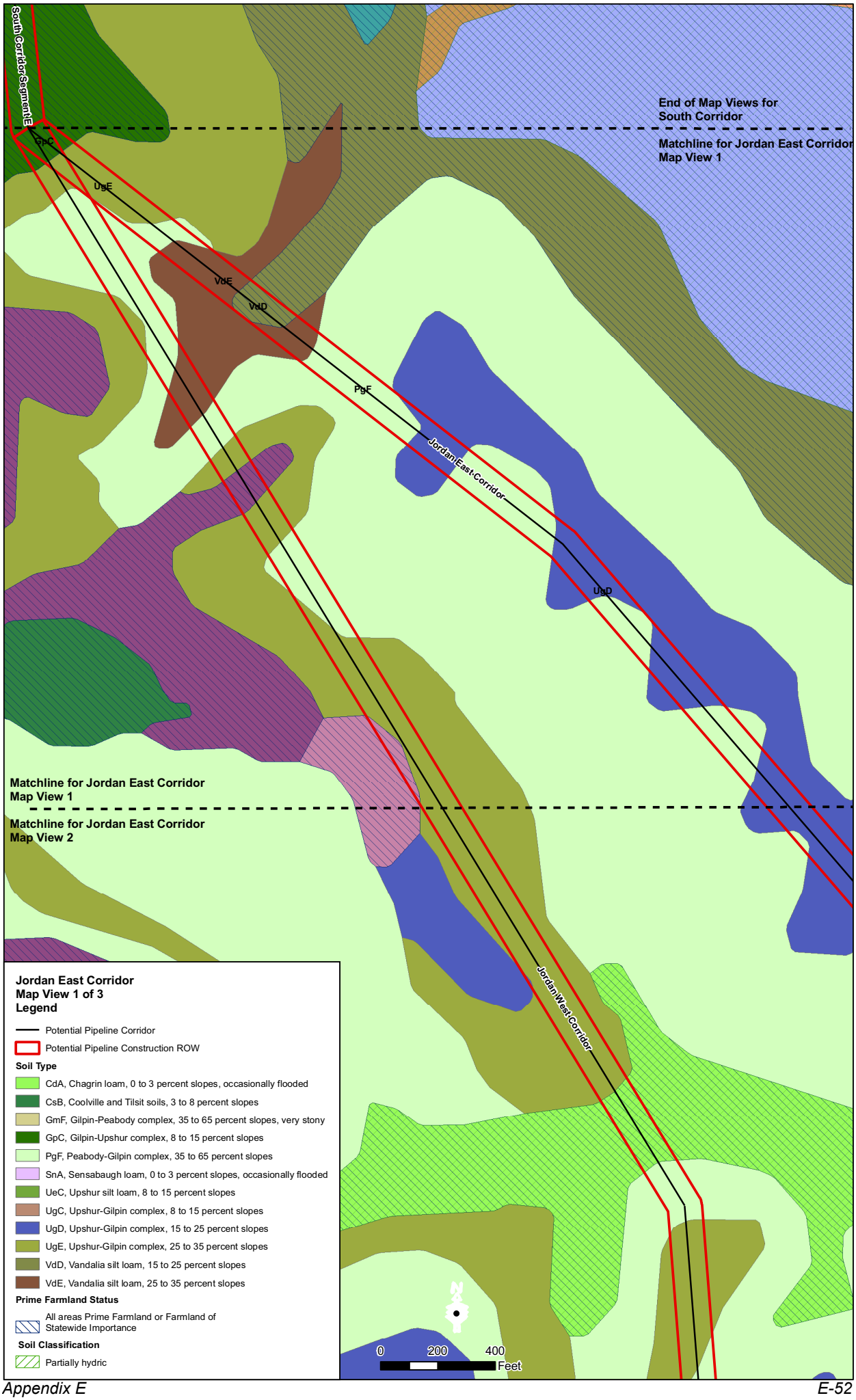

GaC
South Corridor Segment B
GmF
Matchline for East Corridor
Map View 1
Matchline for East Corridor
Map View 2
CsB
Blessing Road Corridor A
East Corridor A
South Corridor Segment C
VdD
East Corridor B
OmB
GpE
SnA
SrB
GpC
Blessing Road Corridor B
SpD
East Corridor
Map View 2 of 2
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
OmB, Omulga silt loam, 3 to 8 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
UgD3, Upshur-Gilpin complex, 15 to 25 percent slopes, severely eroded
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
N
0
200
400
Feet

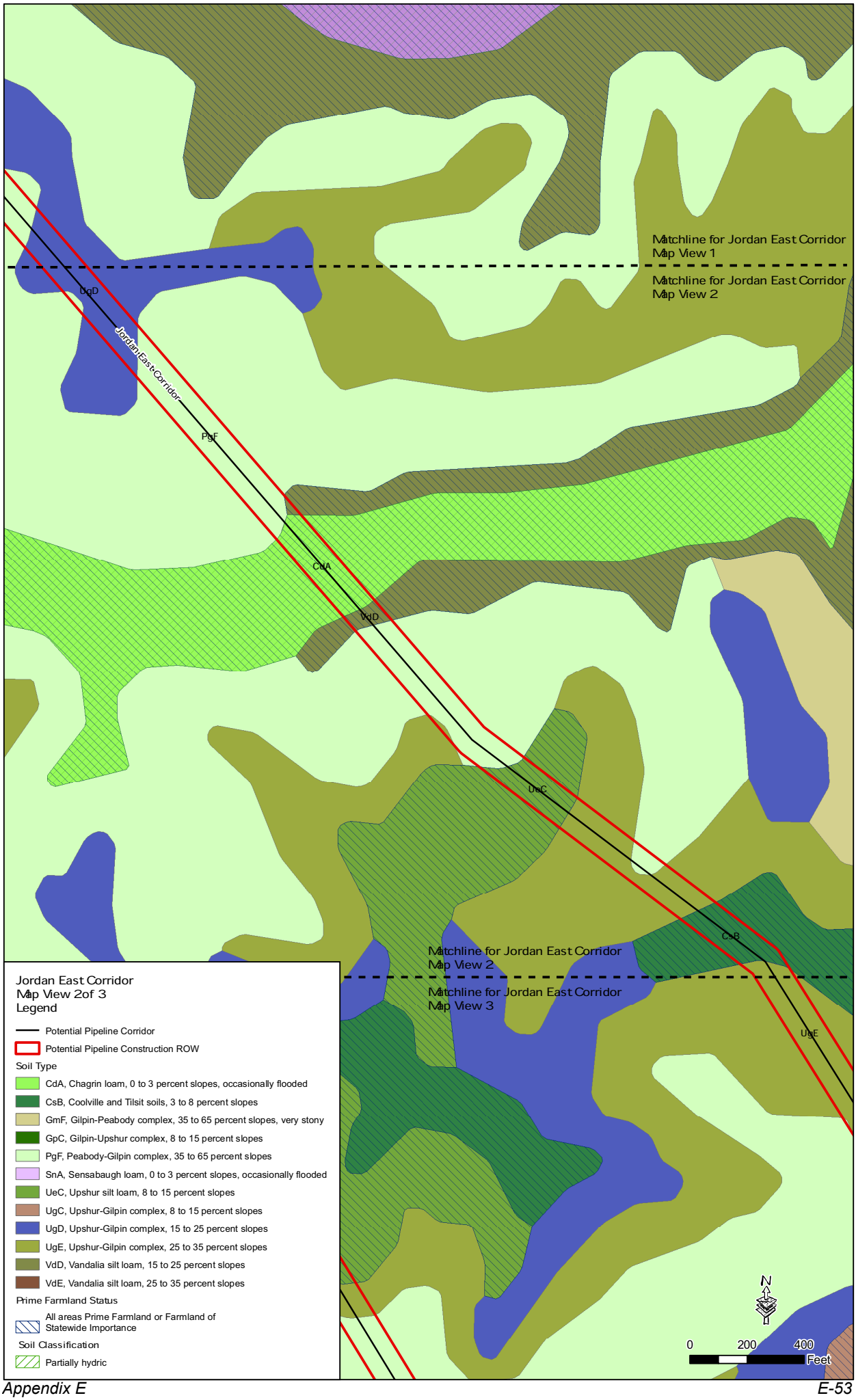

Blessing Road Corridor
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Potential Access Road
Soil Type
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
South Corridor Segment B
South Corridor Segment C
South Corridor Segment D
East Corridor A
East Corridor B
Blessing Road Corridor A
Blessing Road Corridor B
SnA
VdD
CsB
GmB
SnB
GpD
GpE
GpC
GmF
ES-1
ES-2
Eastern Sporn Tract
N
0 200 400
Feet

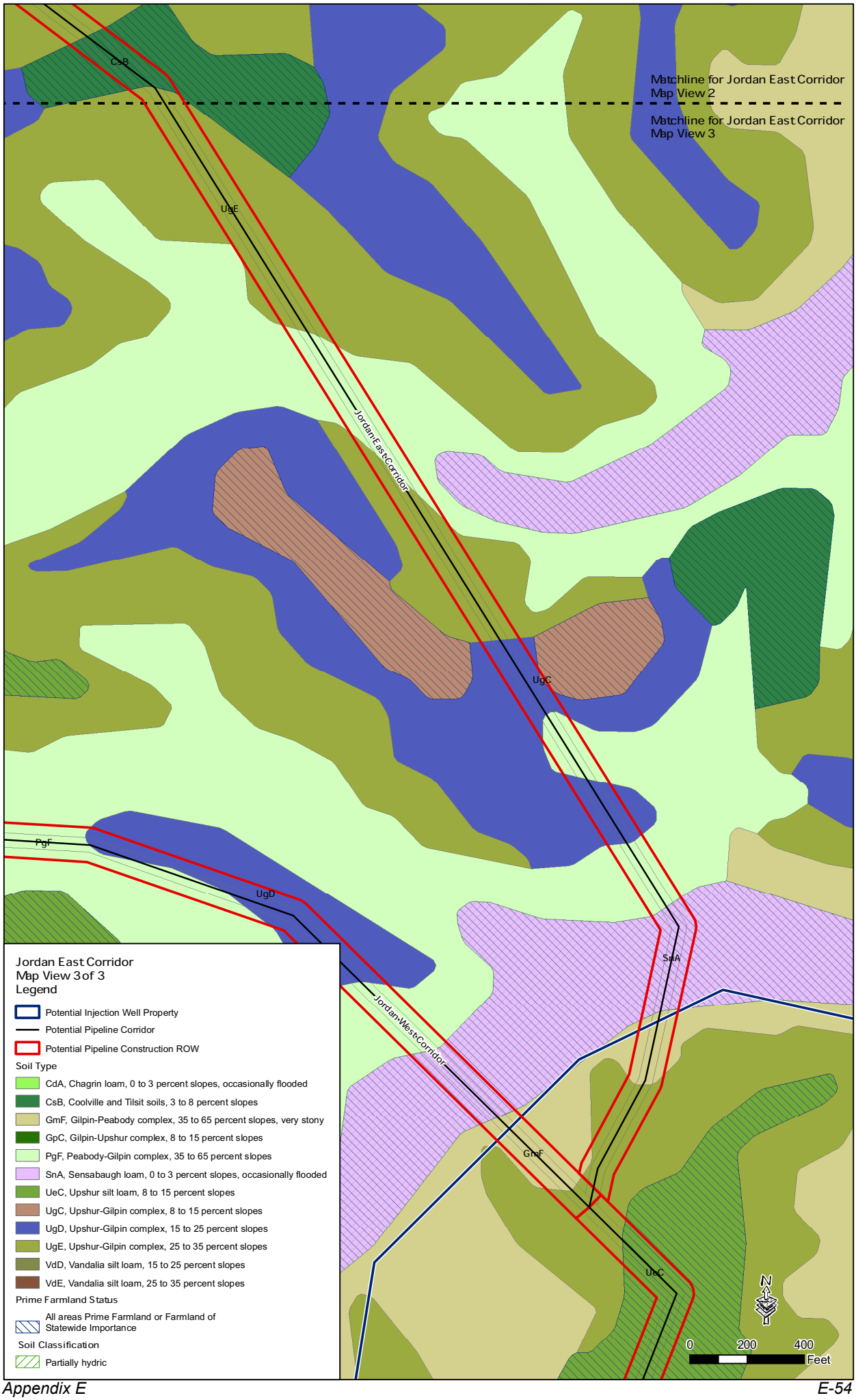

Eastern Sporn Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
M-W, Miscellaneous water
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
UeB, Upshur silt loam, 3 to 8 percent slopes
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Matchline for Eastern Sporn Corridor Map View 2
Matchline for Eastern Sporn Corridor Map View 1
UgE
UeC
PgF
GmF
UgD
UgC
VdD
GpE
CsB
Eastern Sporn Corridor
South Corridor Segment D
South Corridor Segment E
N
0
200
400
Feet

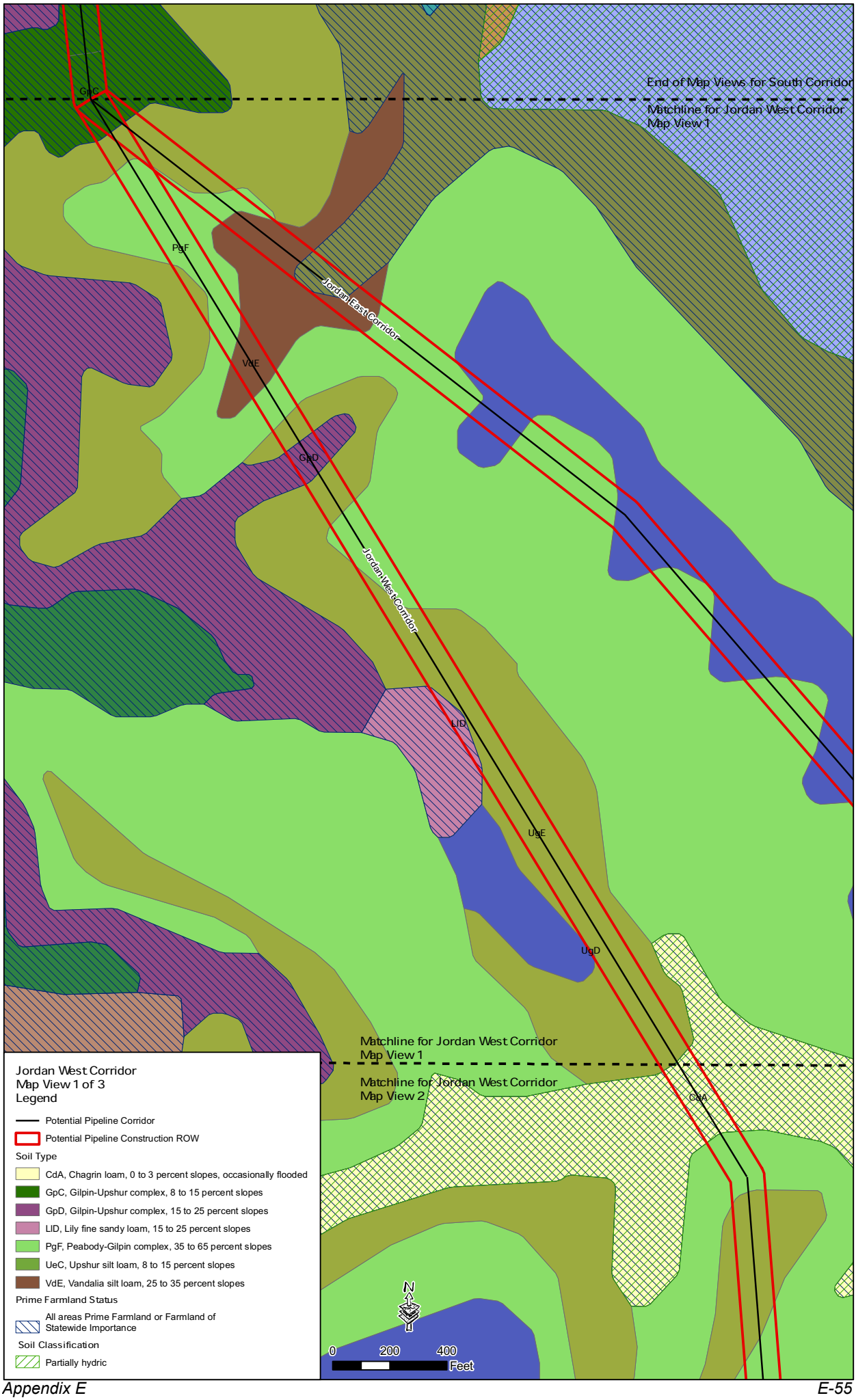

GpC
UgC
ES-3
UgD
End of Map Views for
Eastern Sporn Corridor
Matchline for Eastern Sporn Corridor
Map View 2
Eastern Sporn Tract
PgF
UgE
CsB
GmF
UeB
Matchline for Eastern Sporn Corridor
Map View 2
Matchline for Eastern Sporn Corridor
Map View 1
N
0
200
400
Feet
Eastern Sporn Corridor
Map View 2 of 2
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Potential Access Road
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
M-W, Miscellaneous water
OmB, Omulga silt loam, 3 to 8 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
SrB, Sensabaugh loam, 3 to 8 percent slopes, rarely flooded
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
UeB, Upshur silt loam, 3 to 8 percent slopes
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

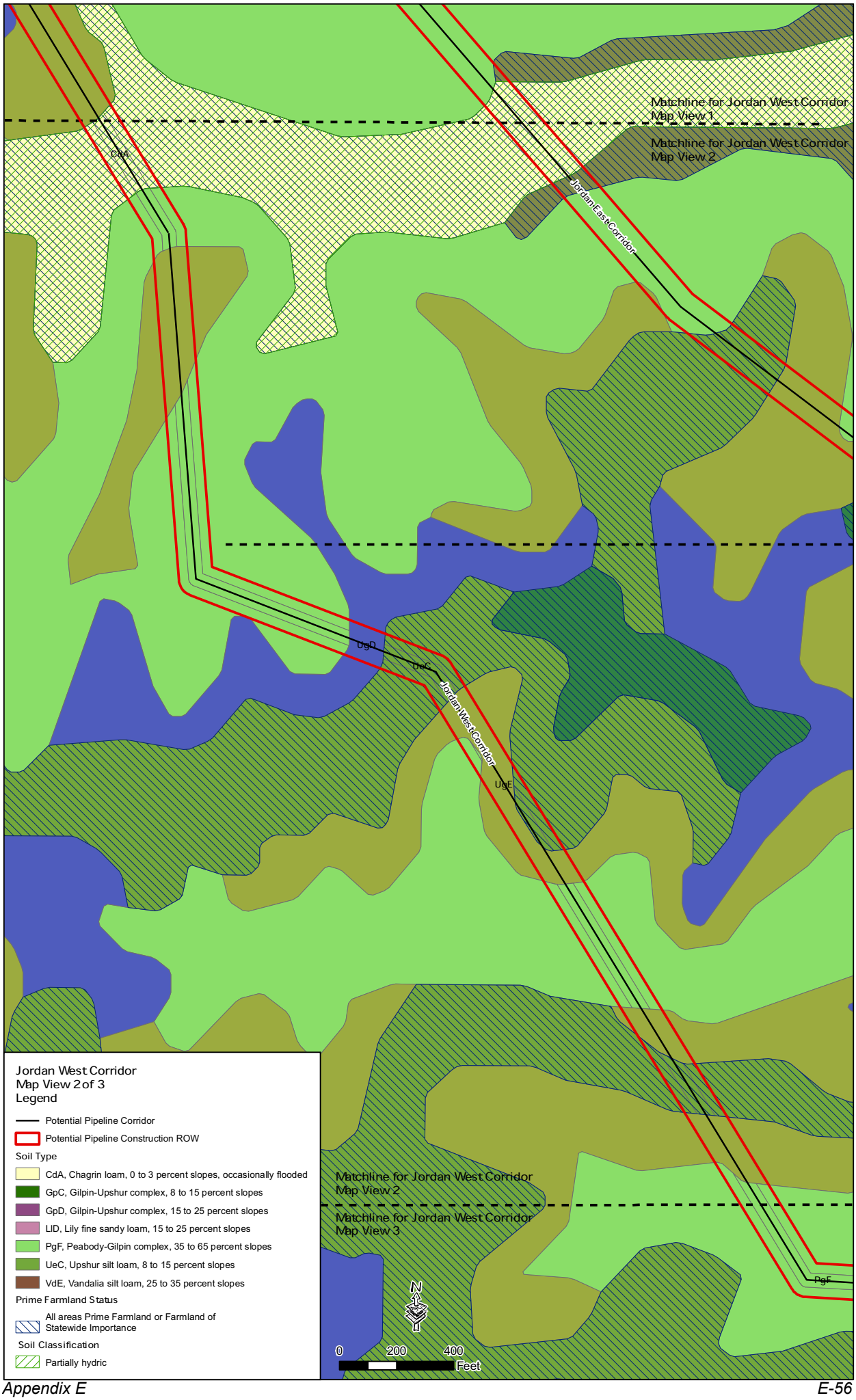

VdD
Blessing Road Corridor B
GmF
GpD
ES-1
GpE
ES-2
GpC
Eastern Sporn Tract
UgC
ES-3
UgD
Eastern Sporn Corridor
PgF
UgE
N
0
200
400
Feet
Eastern Sporn and Blessing Road Corridors
to ES-1, ES-2, and ES-3
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Potential Access Road
Soil Type
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

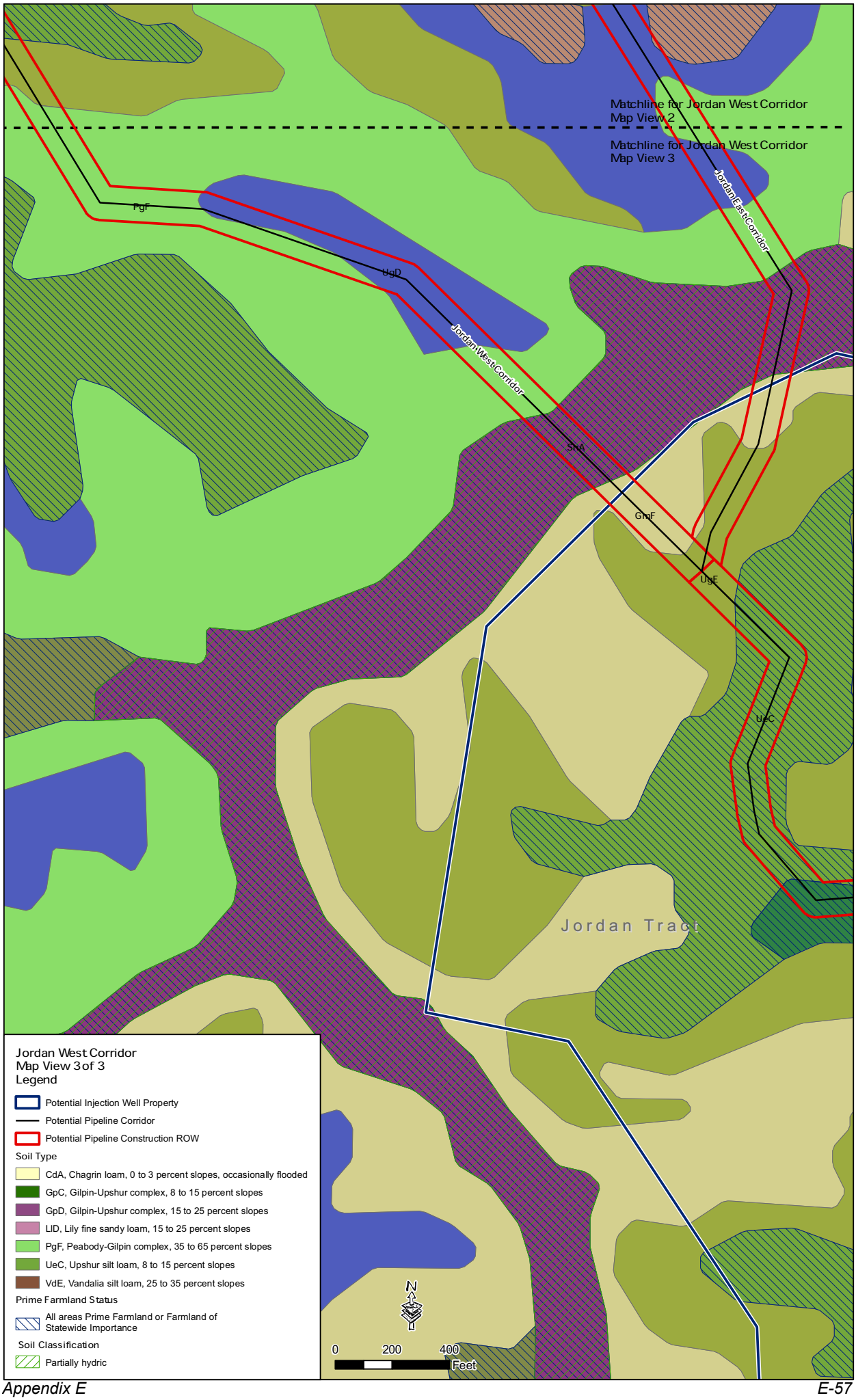

South Corridor Segment E
End of Map Views for
South Corridor
Matchline for Jordan East Corridor
Map View 1
GpC
UgE
VdE
VdD
PgF
Jordan East Corridor
UgD
Matchline for Jordan East Corridor
Map View 1
Matchline for Jordan East Corridor
Map View 2
Jordan West Corridor
Jordan East Corridor
Map View 1 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
N
0
200
400
Feet

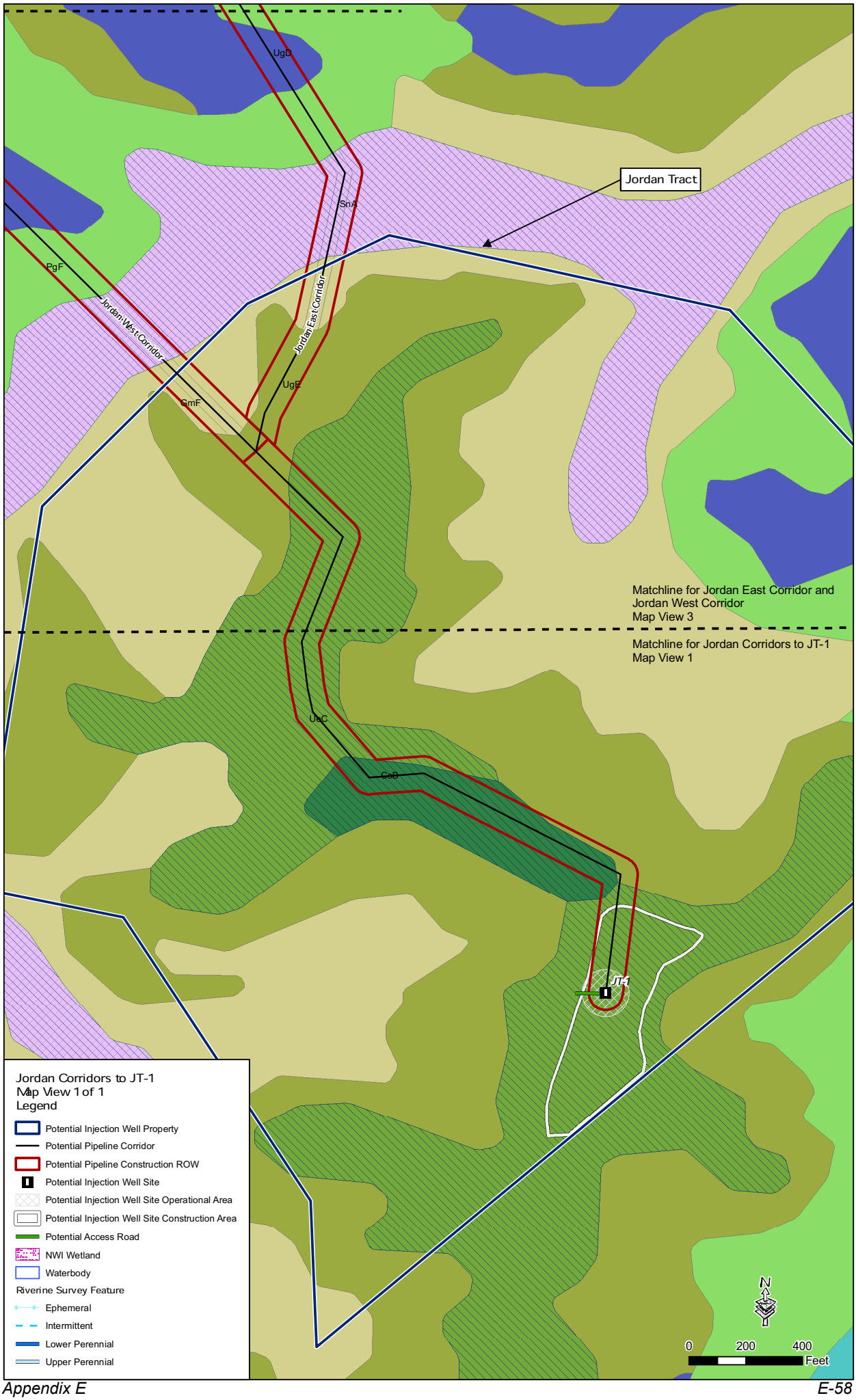

Matchline for Jordan East Corridor
Map View 1
Matchline for Jordan East Corridor
Map View 2
UgD
Jordan East Corridor
PgF
CdA
VdD
UeC
CsB
UgE
Matchline for Jordan East Corridor
Map View 2
Matchline for Jordan East Corridor
Map View 3
Jordan East Corridor
Map View 2of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
N
0
200
400
Feet

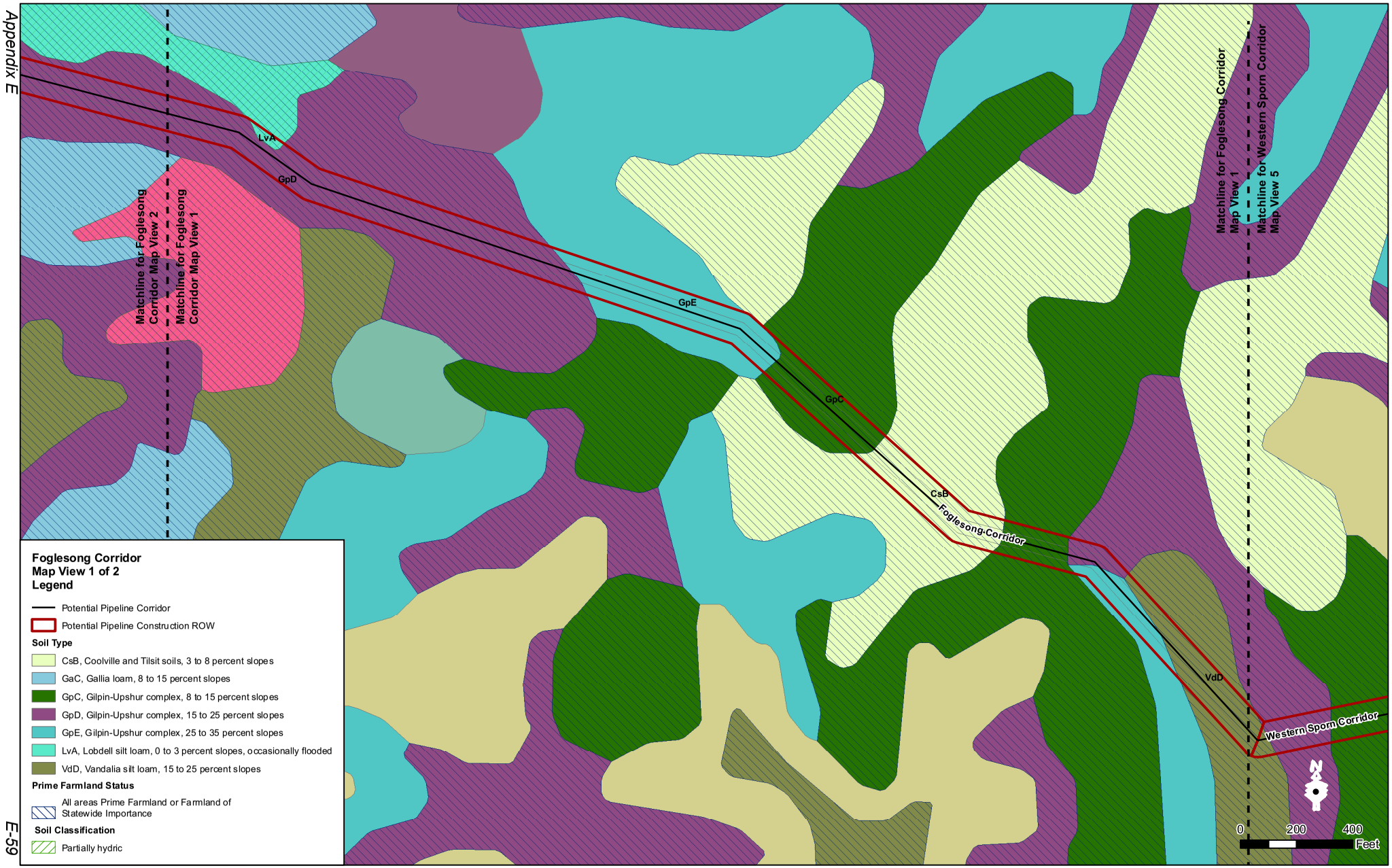

Matchline for Jordan East Corridor Map View 2
Matchline for Jordan East Corridor Map View 3
CsB
UgE
Jordan East Corridor
UgC
PgF
UgD
SnA
Jordan West Corridor
GmF
UeC
N
0
200
400
Feet
Jordan East Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
SnA, Sensabaugh loam, 0 to 3 percent slopes, occasionally flooded
UeC, Upshur silt loam, 8 to 15 percent slopes
UgC, Upshur-Gilpin complex, 8 to 15 percent slopes
UgD, Upshur-Gilpin complex, 15 to 25 percent slopes
UgE, Upshur-Gilpin complex, 25 to 35 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

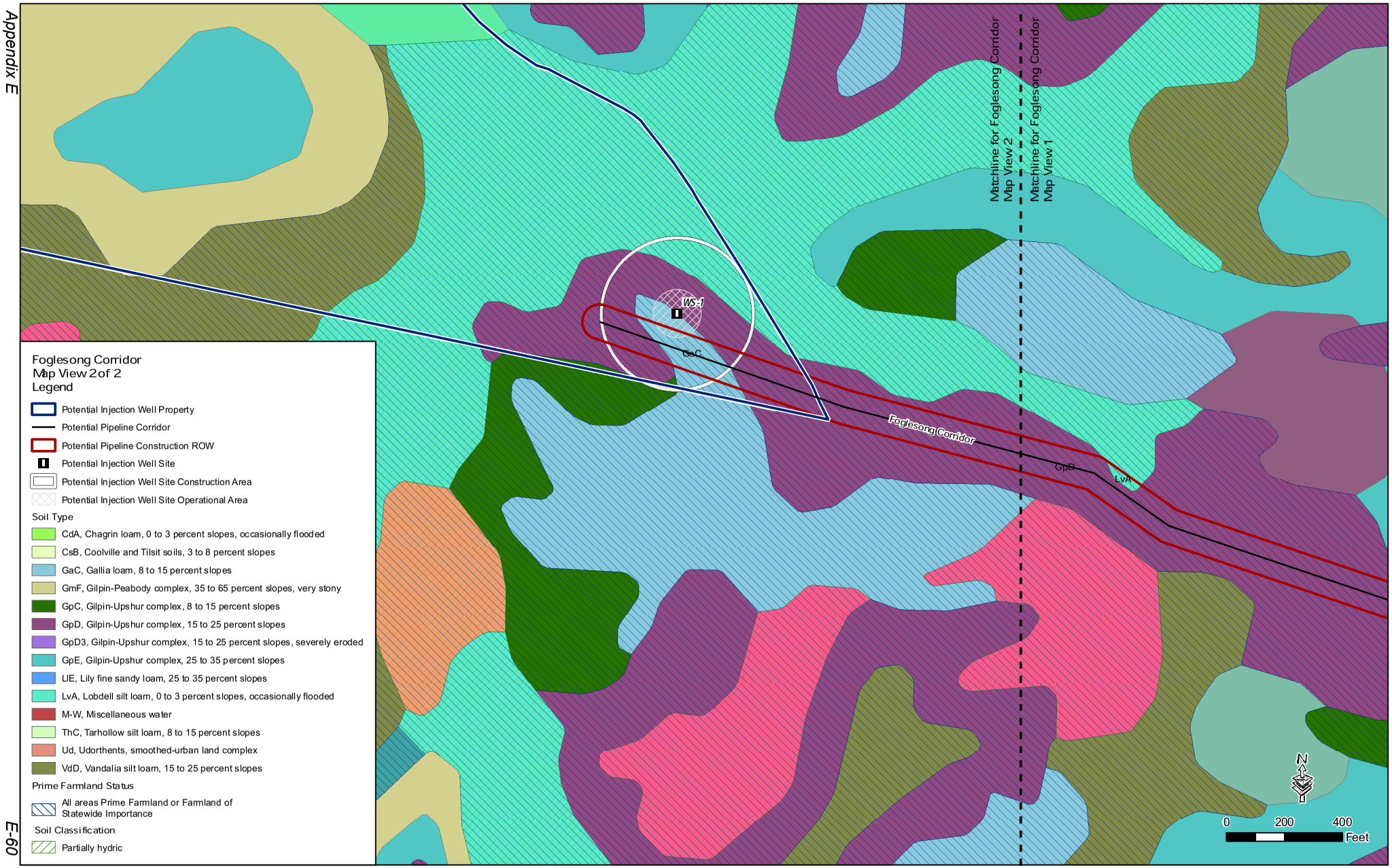

End of Map Views for South Corridor
Matchline for Jordan West Corridor
Map View 1
GpC
PgF
Jordan East Corridor
VdE
GpD
Jordan West Corridor
LID
UgE
UgD
CdA
Matchline for Jordan West Corridor
Map View 1
Matchline for Jordan West Corridor
Map View 2
Jordan West Corridor
Map View 1 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
LID, Lily fine sandy loam, 15 to 25 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
UeC, Upshur silt loam, 8 to 15 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
N
0
200
400
Feet

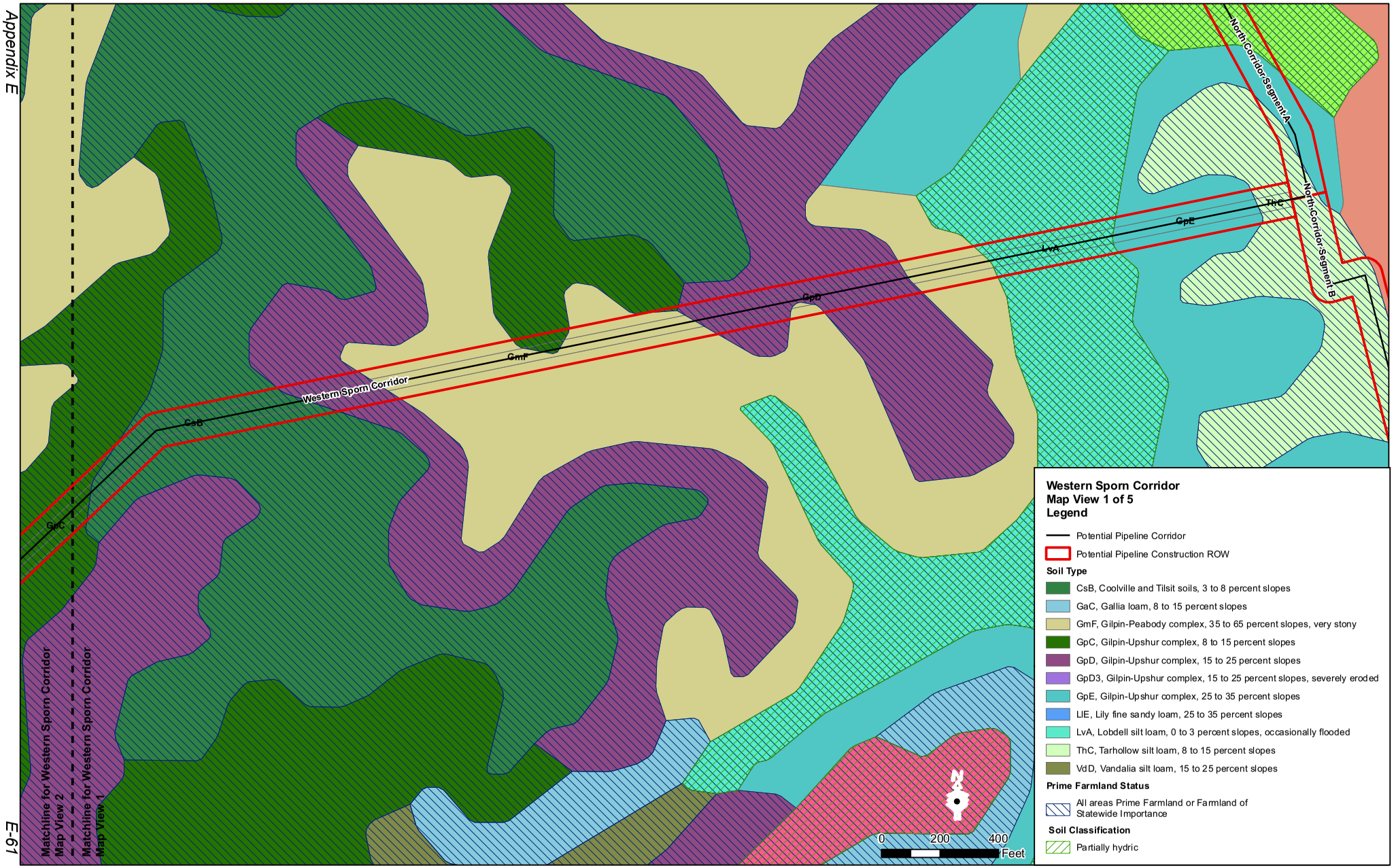

Matchline for Jordan West Corridor
Map View 1
Matchline for Jordan West Corridor
Map View 2
CdA
Jordan East Corridor
UgD
UeC
Jordan West Corridor
UgE
PgF
Jordan West Corridor
Map View 2 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
LID, Lily fine sandy loam, 15 to 25 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
UeC, Upshur silt loam, 8 to 15 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Matchline for Jordan West Corridor
Map View 2
Matchline for Jordan West Corridor
Map View 3
N
0
200
400
Feet

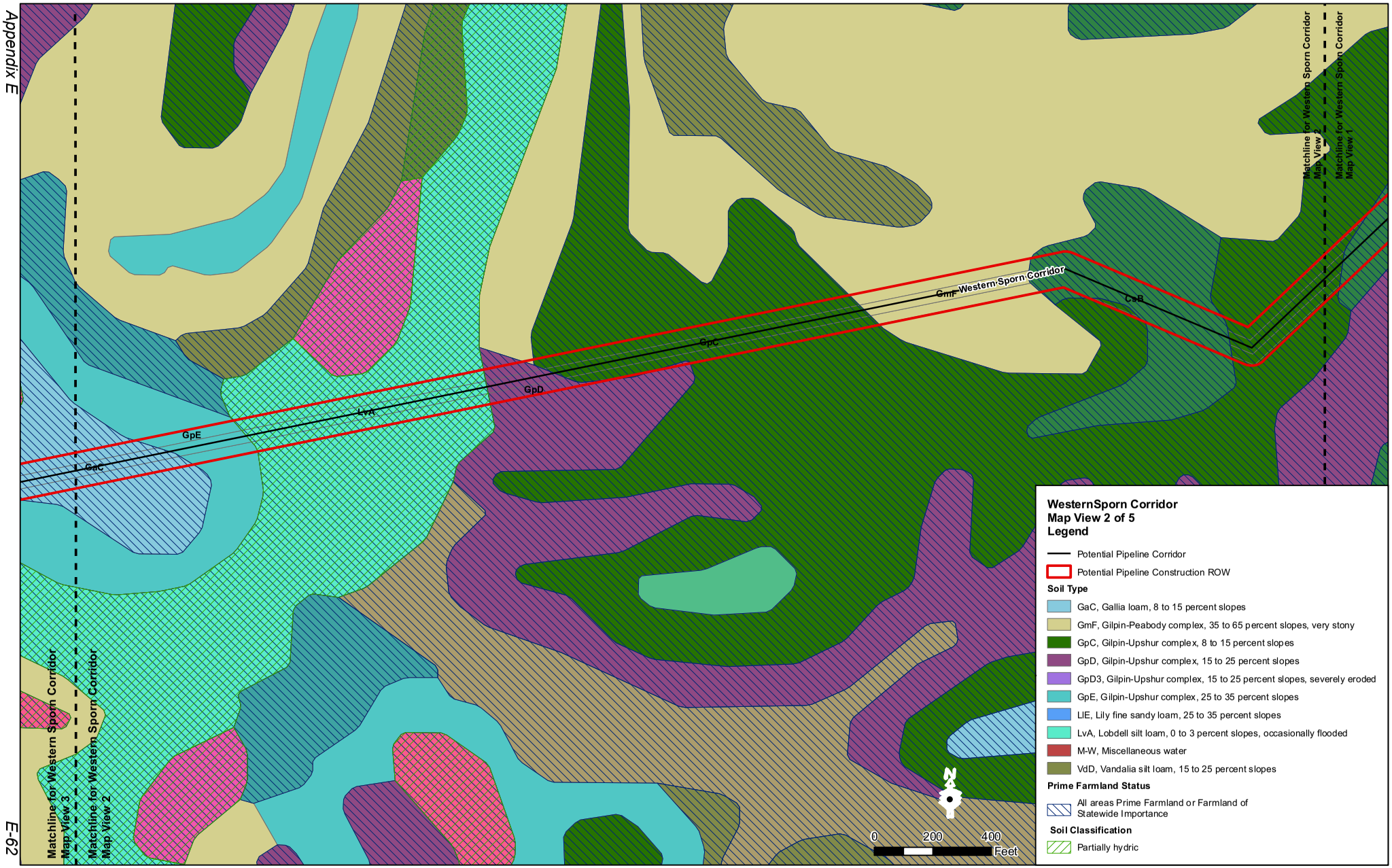

Matchline for Jordan West Corridor
Map View 2
Matchline for Jordan West Corridor
Map View 3
Jordan East Corridor
Jordan West Corridor
PgF
UgD
StrA
GnF
UgE
UeC
Jordan Tract
Jordan West Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
LID, Lily fine sandy loam, 15 to 25 percent slopes
PgF, Peabody-Gilpin complex, 35 to 65 percent slopes
UeC, Upshur silt loam, 8 to 15 percent slopes
VdE, Vandalia silt loam, 25 to 35 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
N
0
200
400
Feet

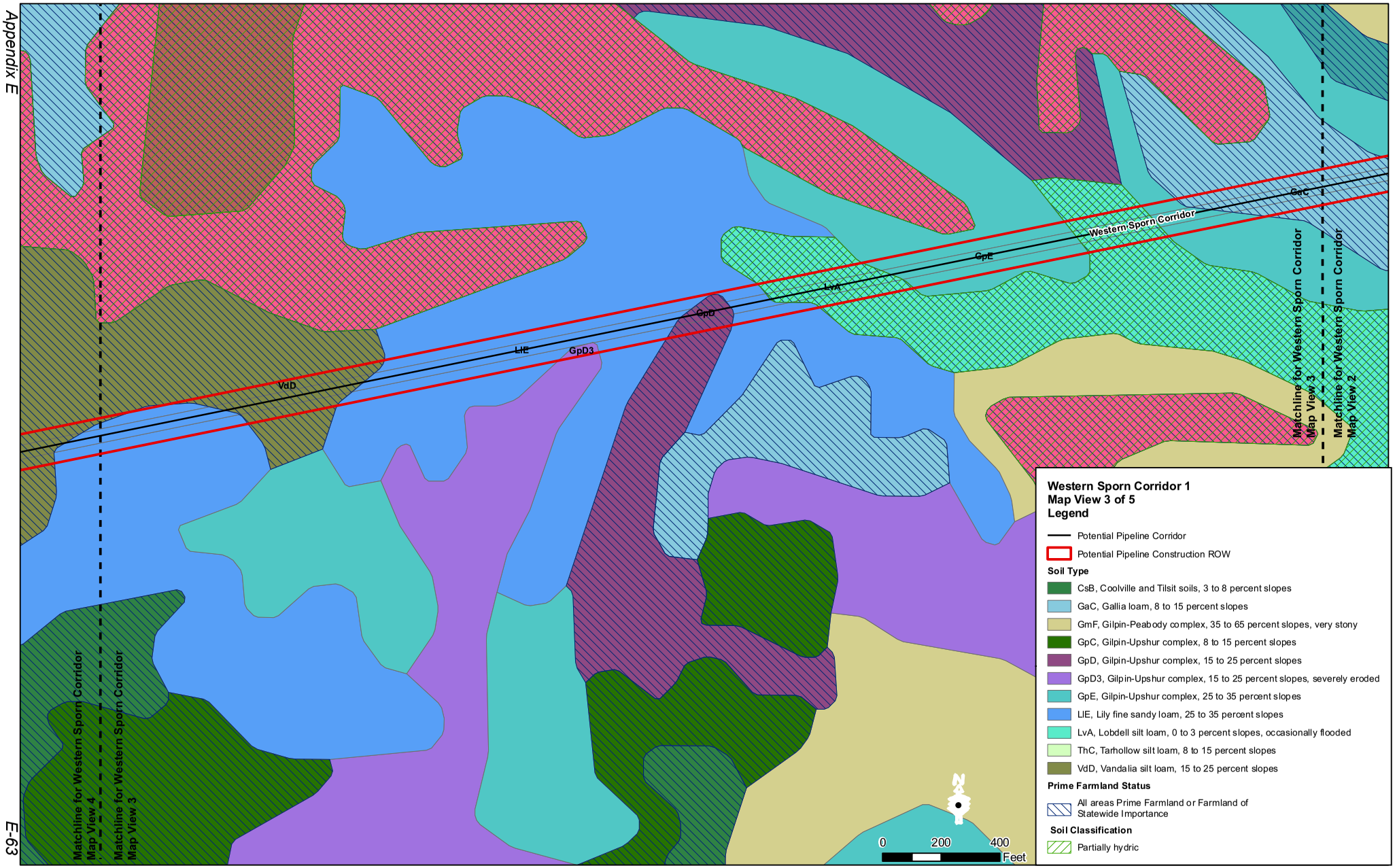

UgD
SnA
Jordan Tract
PgF
Jordan West Corridor
Jordan East Corridor
UgE
GmF
Matchline for Jordan East Corridor and
Jordan West Corridor
Map View 3
Matchline for Jordan Corridors to JT-1
Map View 1
UsC
CeB
JT-1
Jordan Corridors to JT-1
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Potential Access Road
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet

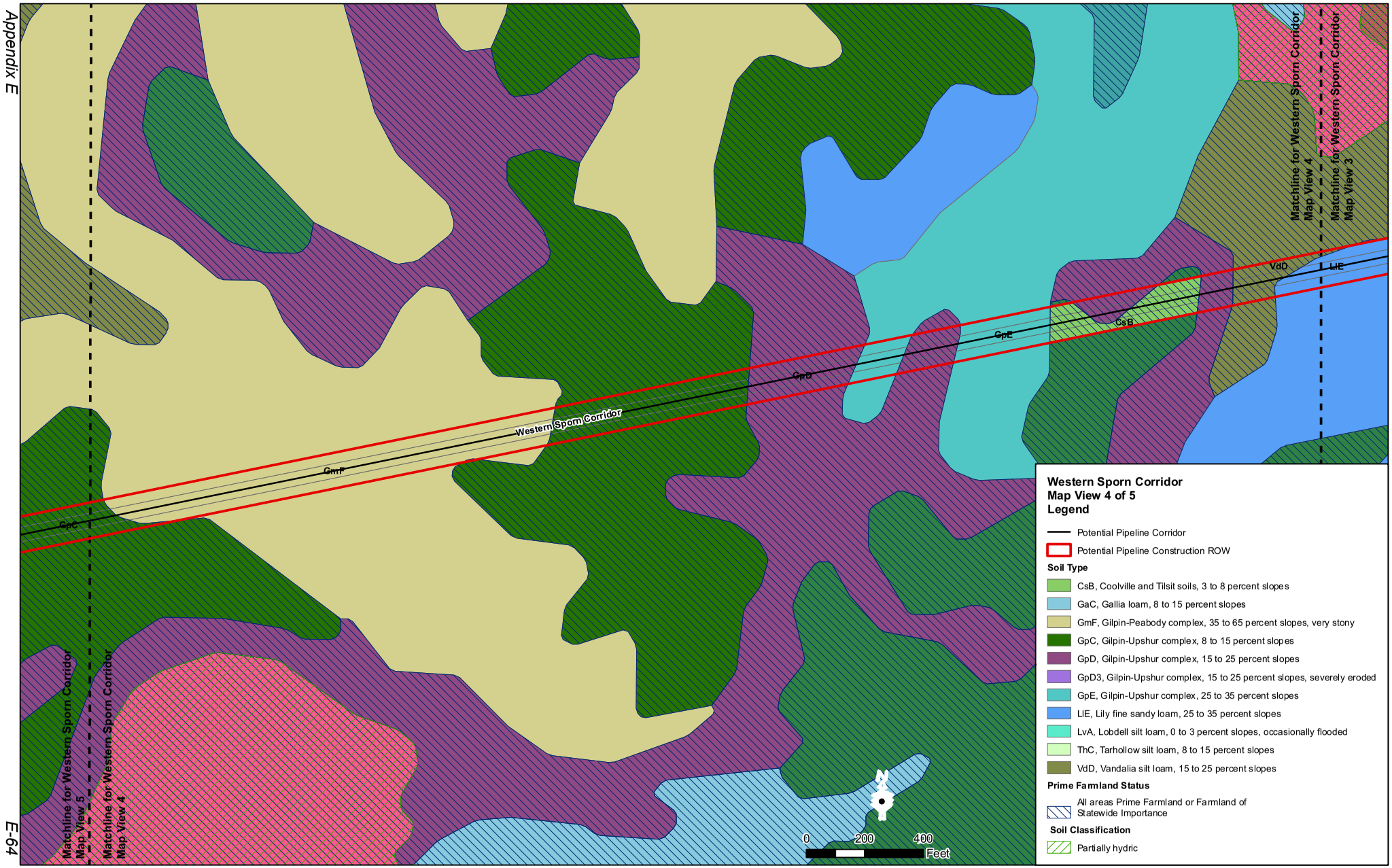

Foglesong Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Matchline for Foglesong Corridor Map View 2
Matchline for Foglesong Corridor Map View 1
Matchline for Foglesong Corridor Map View 1
Matchline for Western Sporn Corridor Map View 5
LvA
GpD
GpE
GpC
CsB
VdD
Foglesong Corridor
Western Sporn Corridor
0
200
400
Feet

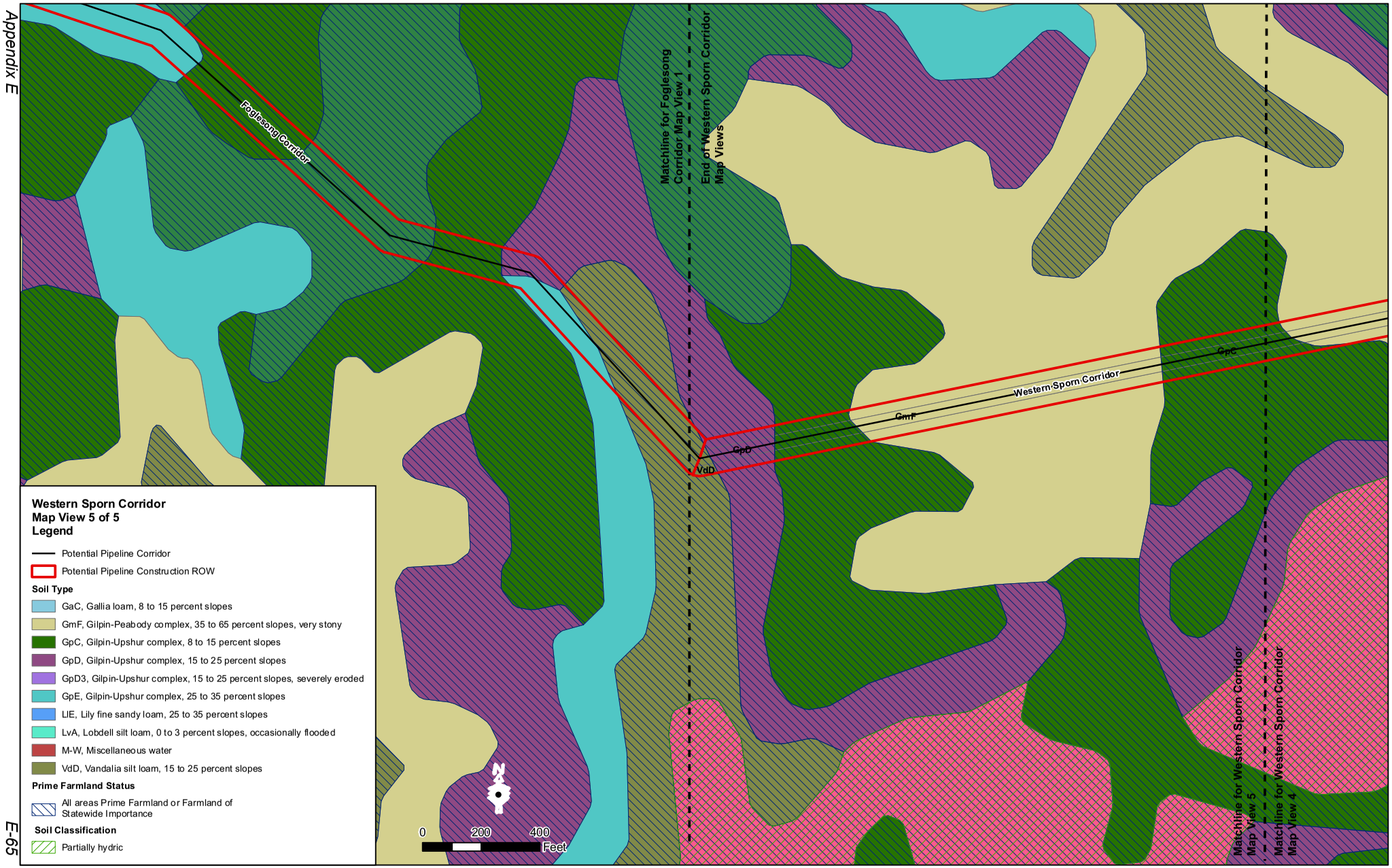

Foglesong Corridor
Map View 2 of 2
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
Soil Type
CdA, Chagrin loam, 0 to 3 percent slopes, occasionally flooded
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
M-W, Miscellaneous water
ThC, Tarhollow silt loam, 8 to 15 percent slopes
Ud, Udorthents, smoothed-urban land complex
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
WS-1
GaC
Foglesong Corridor
GpD
LvA
Matchline for Foglesong Corridor Map View 2
Matchline for Foglesong Corridor Map View 1
N
0
200
400
Feet


Western Sporn Corridor
Map View 1 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
ThC, Tarhollow silt loam, 8 to 15 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
0
200
400
Feet
N
Western Sporn Corridor
CsB
GmF
GpD
LvA
GpE
ThC
GaC
North Corridor Segment A
North Corridor Segment B
Matchline for Western Sporn Corridor Map View 2
Matchline for Western Sporn Corridor Map View 1


Western Sporn Corridor
GmF
CsB
GpC
GpD
LvA
GpE
GaC
Matchline for Western Sporn Corridor
Map View 1
Matchline for Western Sporn Corridor
Map View 3
Matchline for Western Sporn Corridor
Map View 2
0
200
400
Feet
N
WesternSporn Corridor
Map View 2 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
M-W, Miscellaneous water
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric


Western Sporn Corridor 1
Map View 3 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
ThC, Tarhollow silt loam, 8 to 15 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Western Sporn Corridor
GaC
GpE
LvA
GpD
GpD3
LlE
VdD
Matchline for Western Sporn Corridor Map View 3
Matchline for Western Sporn Corridor Map View 2
Matchline for Western Sporn Corridor Map View 4
Matchline for Western Sporn Corridor Map View 3
0
200
400
Feet


Western Sporn Corridor
Map View 4 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
CsB, Coolville and Tilsit soils, 3 to 8 percent slopes
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
ThC, Tarhollow silt loam, 8 to 15 percent slopes
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric
Western Sporn Corridor
GpC
GmF
GpD
GpE
CsB
VdD
LlE
Matchline for Western Sporn Corridor Map View 5
Matchline for Western Sporn Corridor Map View 4
Matchline for Western Sporn Corridor Map View 4
Matchline for Western Sporn Corridor Map View 3
N
0
200
400
Feet


Foglesong Corridor
Matchline for Foglesong Corridor Map View 1
End of Western Sporn Corridor Map Views
Western Sporn Corridor
GpC
GmF
GpD
VdD
Matchline for Western Sporn Corridor Map View 5
Matchline for Western Sporn Corridor Map View 4
N
0
200
400
Feet
Western Sporn Corridor
Map View 5 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Soil Type
GaC, Gallia loam, 8 to 15 percent slopes
GmF, Gilpin-Peabody complex, 35 to 65 percent slopes, very stony
GpC, Gilpin-Upshur complex, 8 to 15 percent slopes
GpD, Gilpin-Upshur complex, 15 to 25 percent slopes
GpD3, Gilpin-Upshur complex, 15 to 25 percent slopes, severely eroded
GpE, Gilpin-Upshur complex, 25 to 35 percent slopes
LlE, Lily fine sandy loam, 25 to 35 percent slopes
LvA, Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded
M-W, Miscellaneous water
VdD, Vandalia silt loam, 15 to 25 percent slopes
Prime Farmland Status
All areas Prime Farmland or Farmland of Statewide Importance
Soil Classification
Partially hydric

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Mountaineer CCS II Project
Wetland Survey

Attachment B
Wetlands and WOUS Figures

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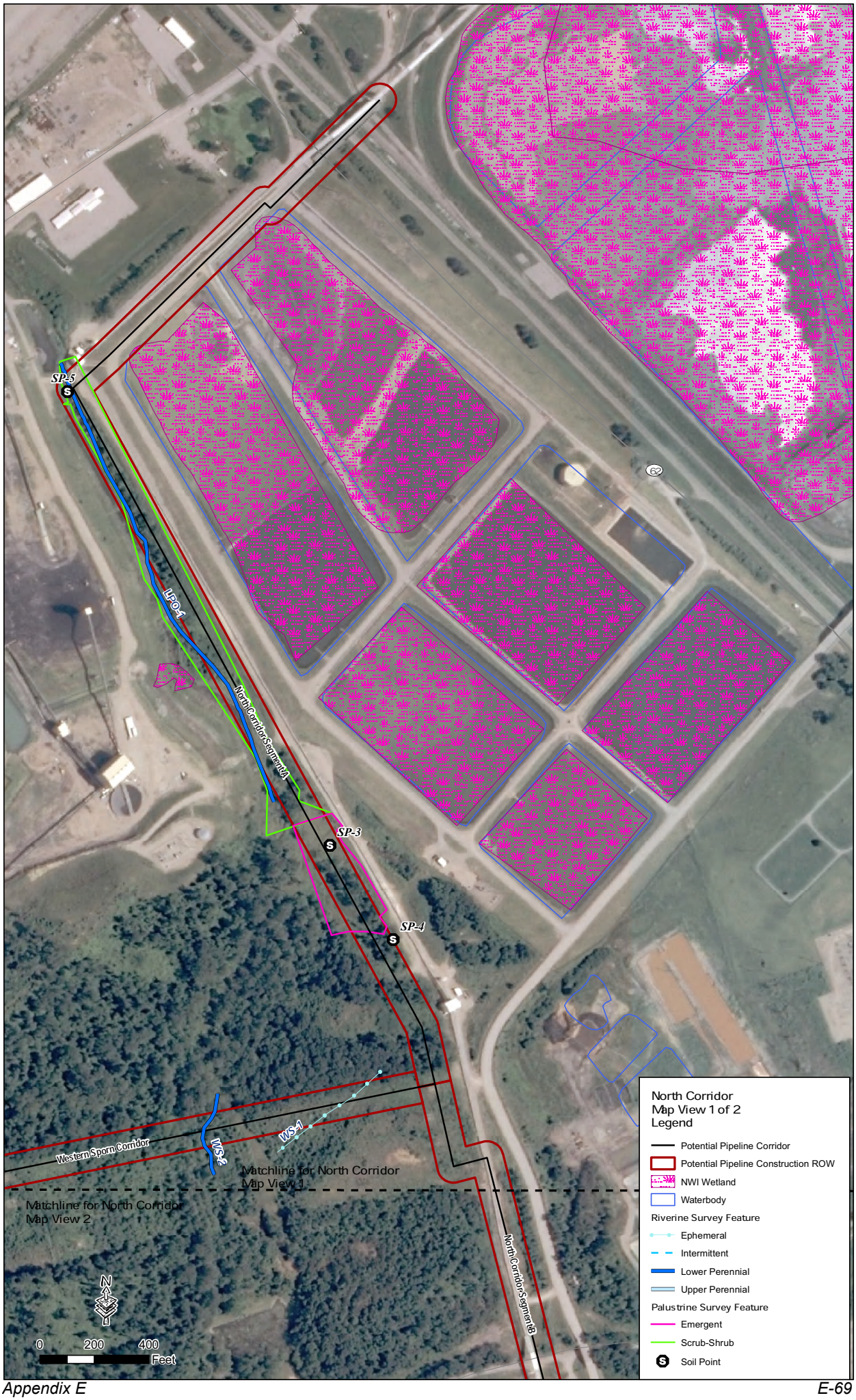
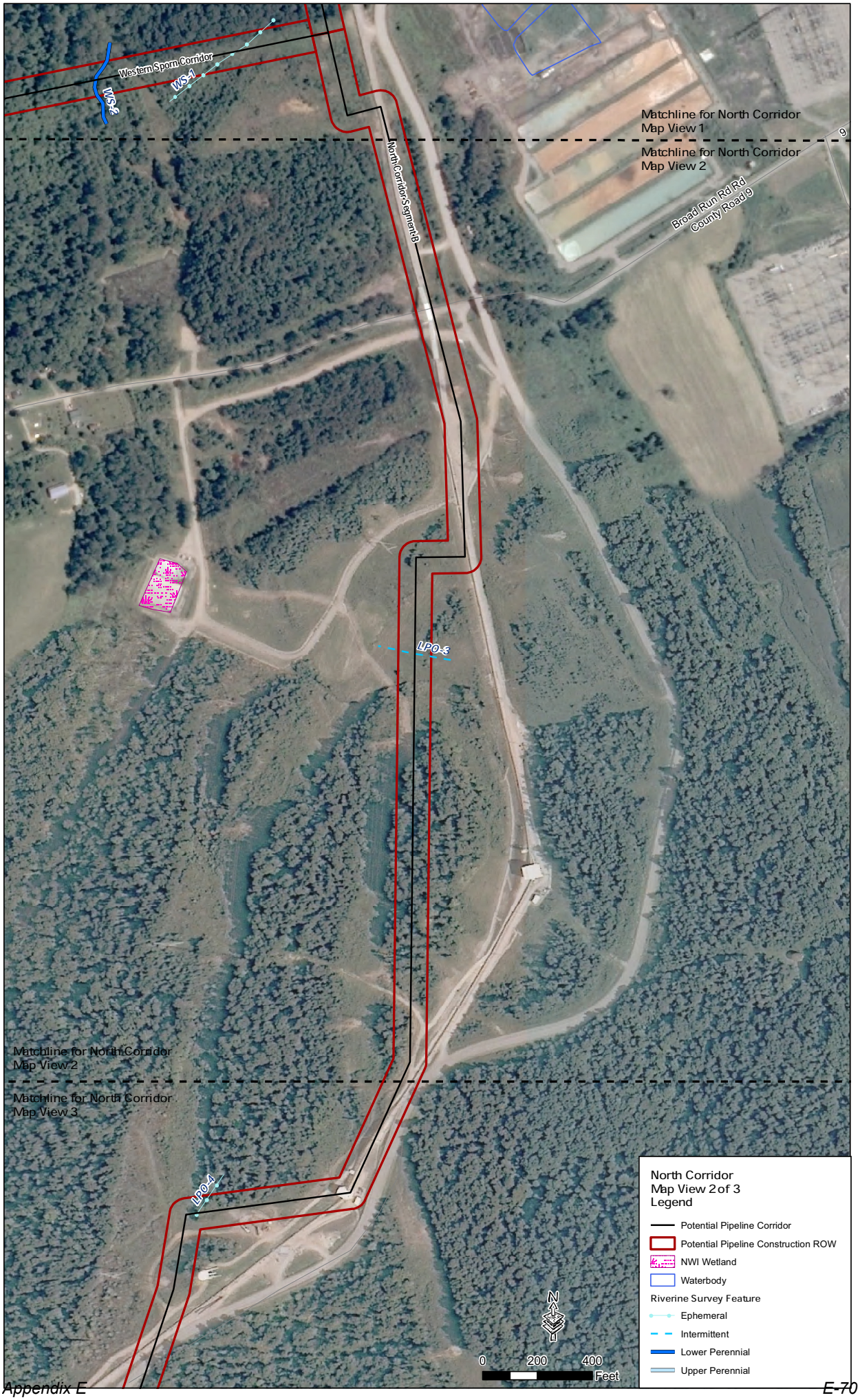
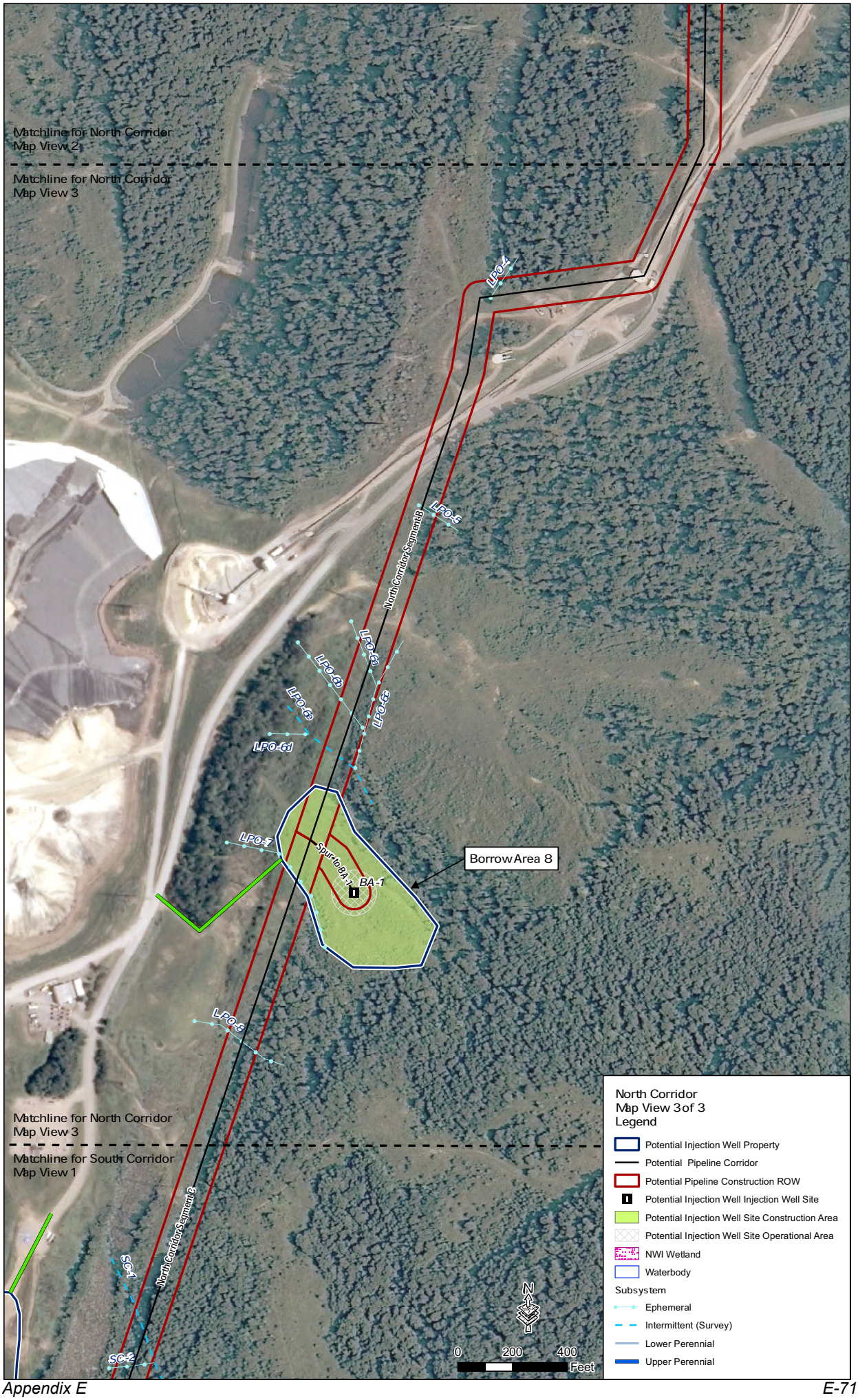
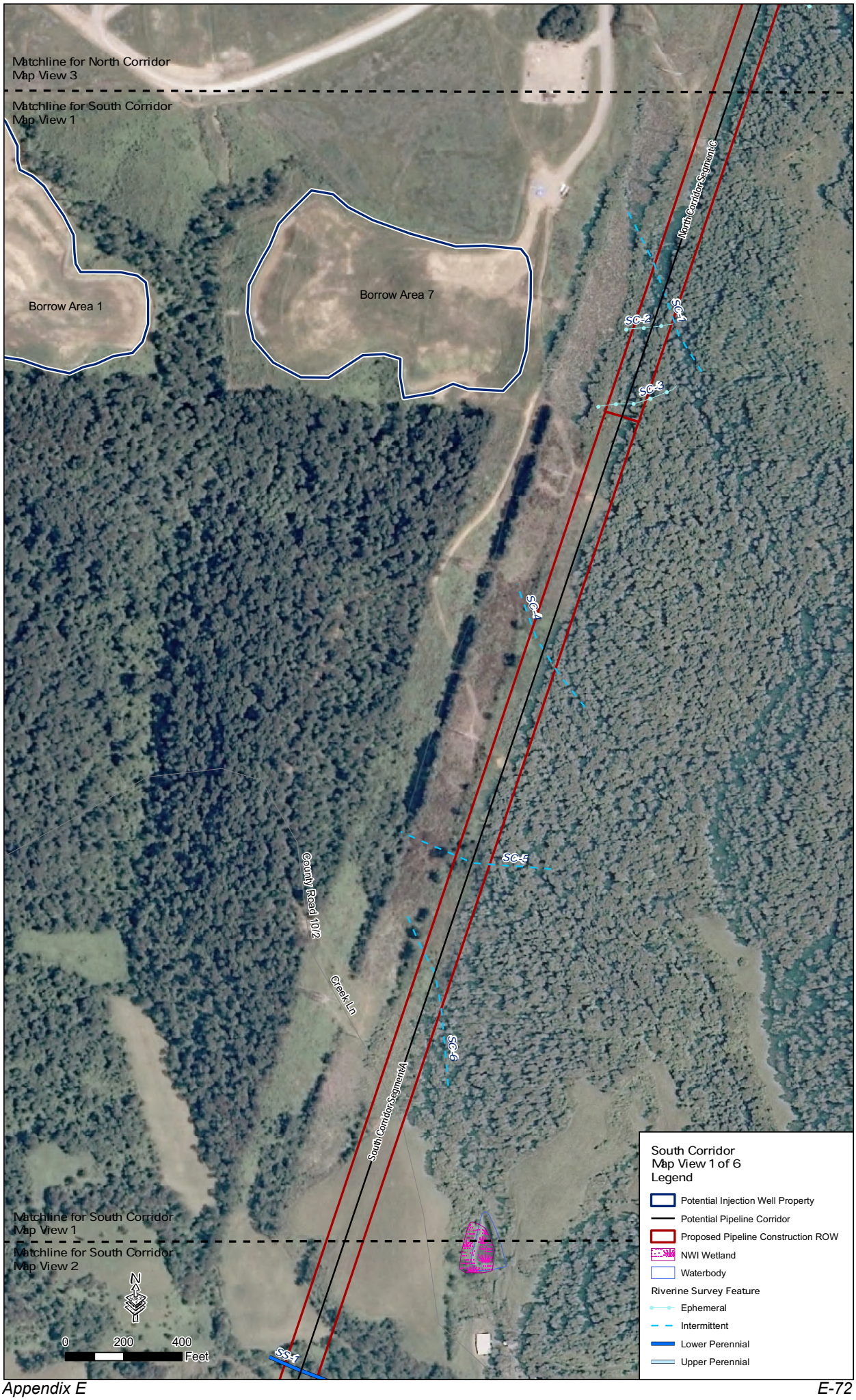
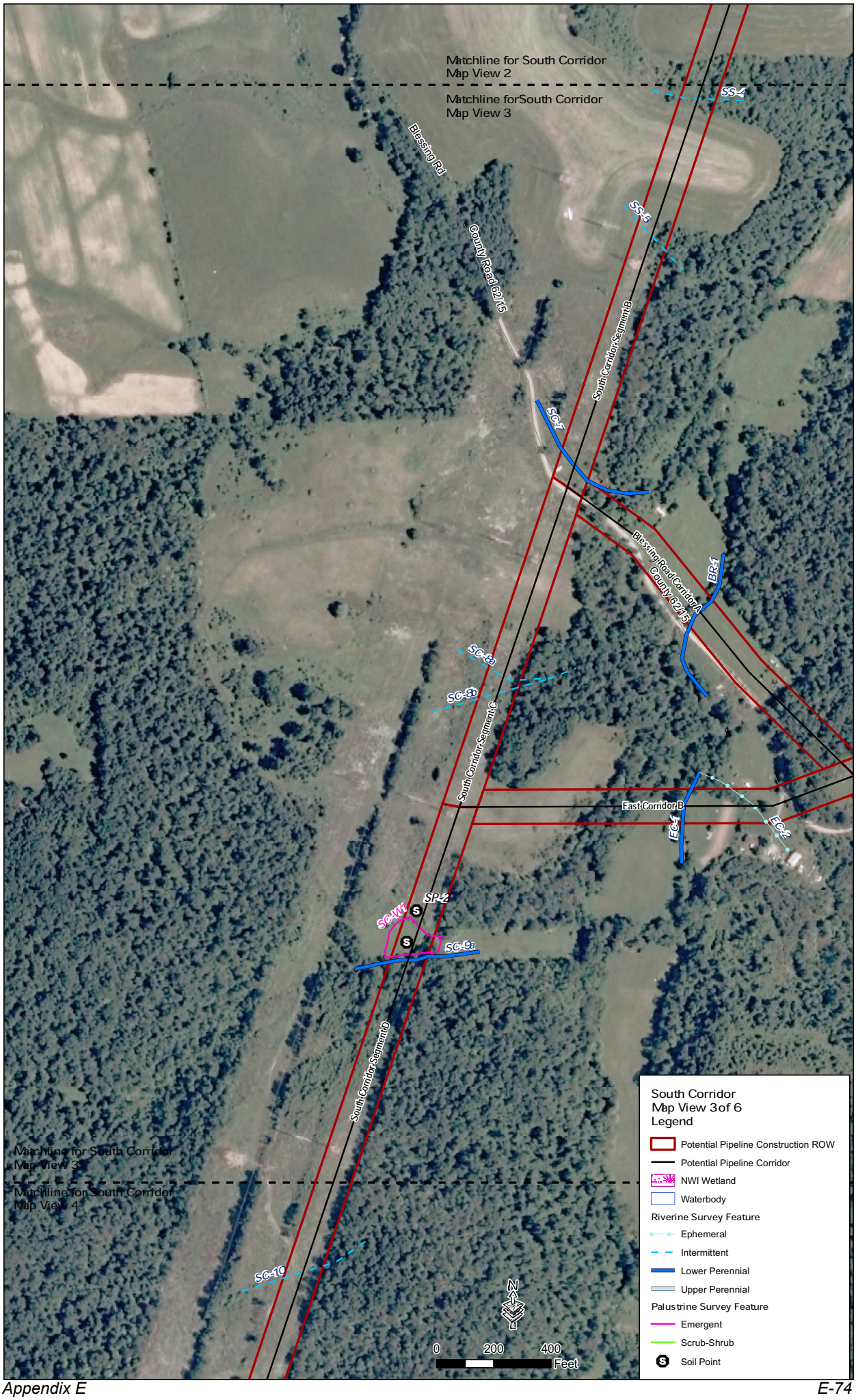

SP-5
SP-3
SP-4
LP-01
North Corridor Segment A
North Corridor Segment B
Western Spur Corridor
WS-1
WS-2
Matchline for North Corridor
Map View 1
Matchline for North Corridor
Map View 2
62
N
0
200
400
Feet
North Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
Soil Point


Western Sporn Corridor
WS-1
WS-2
Matchline for North Corridor
Map View 1
Matchline for North Corridor
Map View 2
North Corridor Segment B
Broad Run Rd Rd
County Road 9
LPO-5
Matchline for North Corridor
Map View 2
Matchline for North Corridor
Map View 3
LPO-4
North Corridor
Map View 2 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet


Matchline for North Corridor
Map View 2
Matchline for North Corridor
Map View 3
LPO-4
LPO-5
North Corridor Segment B
LPO-6a
LPO-6b
LPO-6c
LPO-6d
LPO-6e
LPO-7
Spur to BA-1
BA-1
Borrow Area 8
LPO-8
Matchline for North Corridor
Map View 3
Matchline for South Corridor
Map View 1
North Corridor Segment C
SC-1
SC-2
North Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
NWI Wetland
Waterbody
Subsystem
Ephemeral
Intermittent (Survey)
Lower Perennial
Upper Perennial
N
0
200
400
Feet


Matchline for North Corridor
Map View 3
Matchline for South Corridor
Map View 1
Borrow Area 1
Borrow Area 7
North Corridor Segment C
SC-1
SC-2
SC-3
SC-4
SC-5
SC-6
County Road 102
Creek Ln
South Corridor Segment A
SS-1
Matchline for South Corridor
Map View 1
Matchline for South Corridor
Map View 2
N
0
200
400
Feet
South Corridor
Map View 1 of 6
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Proposed Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

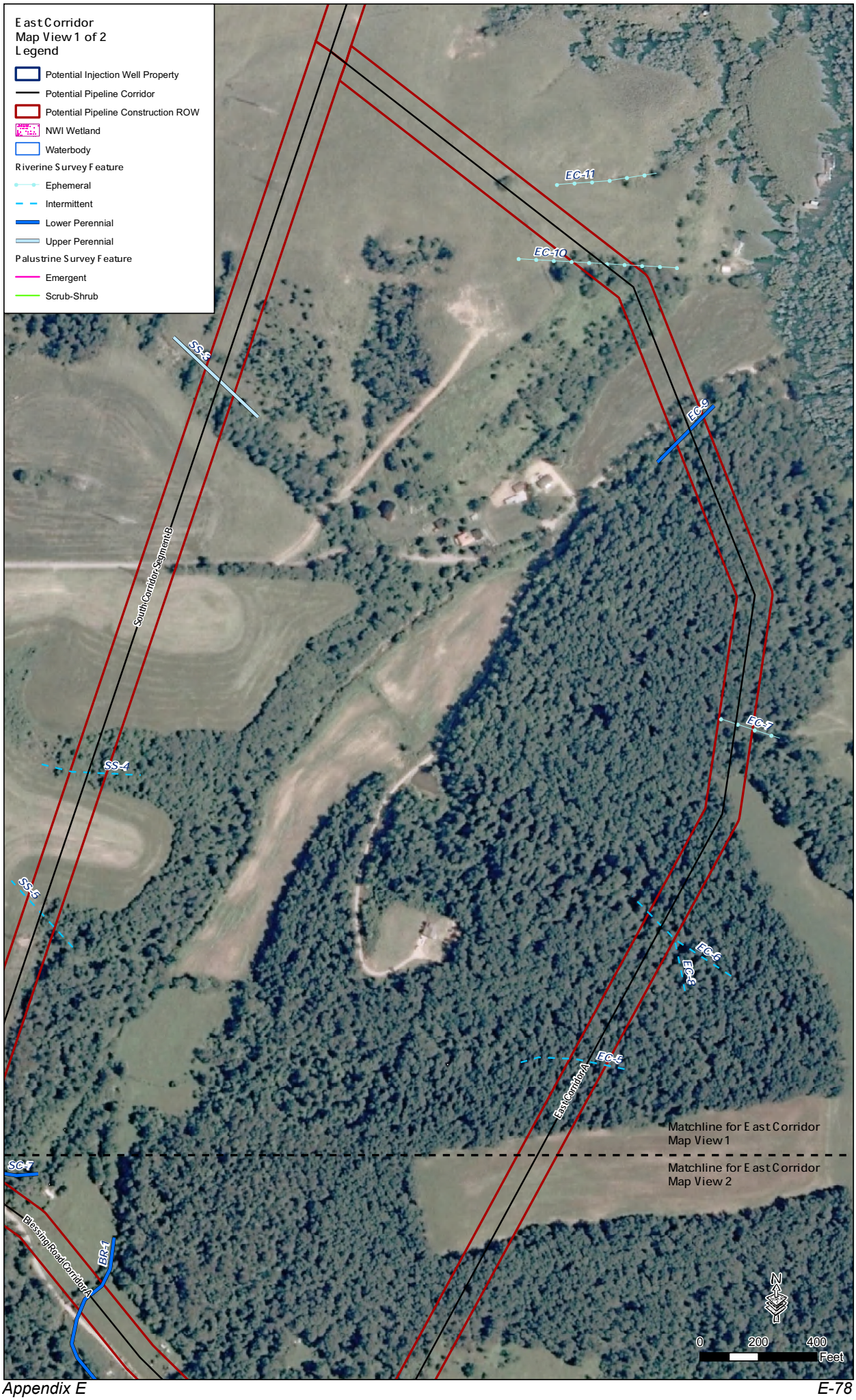
Matchline for South Corridor
Map View 1
Matchline for South Corridor
Map View 2
SS-1
SS-2
South Corridor Segment A
East Corridor A
EC-11
EC-10
SS-3
South Corridor Segment B
County Road 1/2 / Longdale Lernon
Matchline for South Corridor
Map View 2
Matchline for South Corridor
Map View 3
SS-4
County Road 92/15 / Blessing Rd
SS-5
N
0
200
400
Feet
South Corridor
Map View 2of 6
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

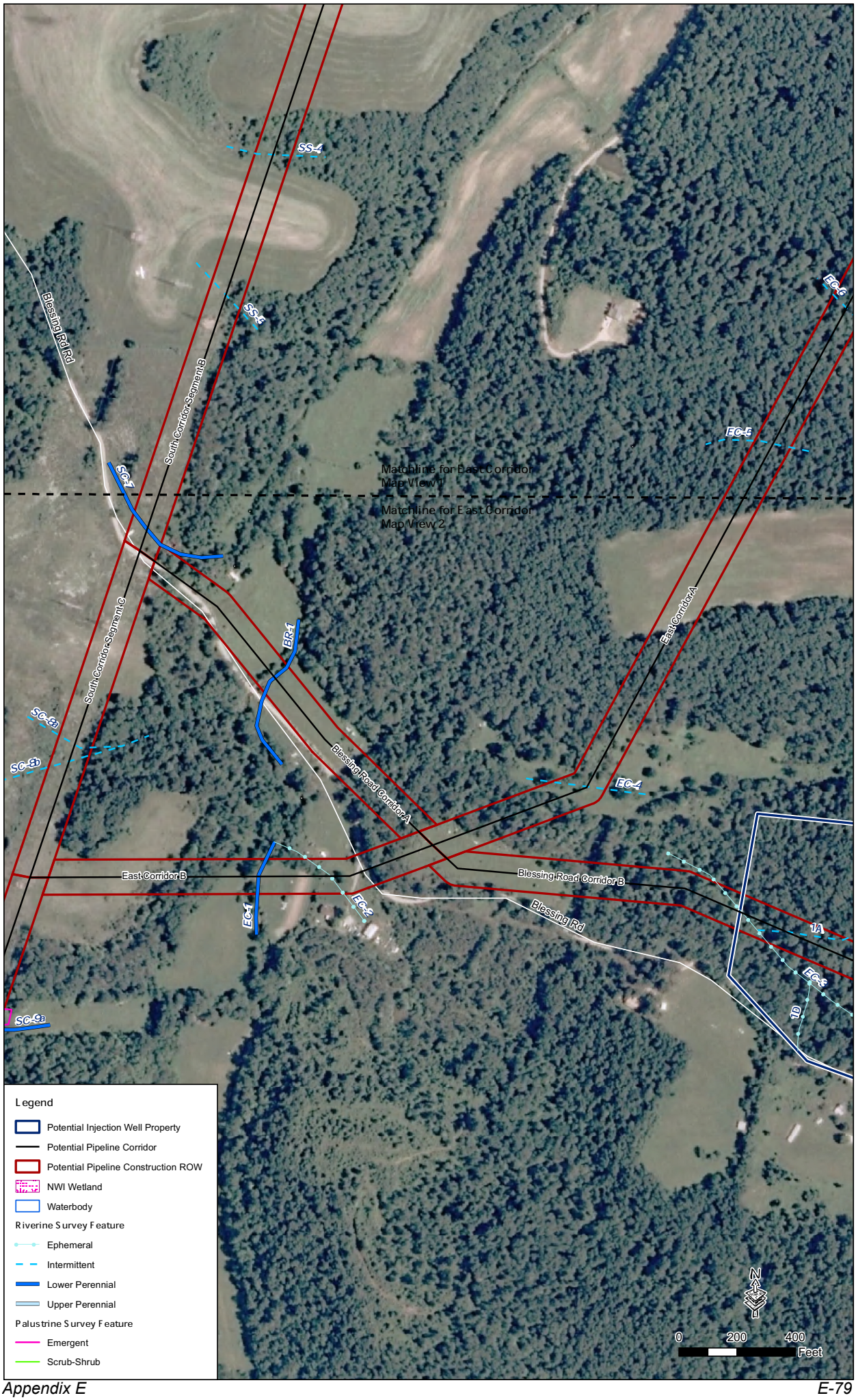

Matchline for South Corridor
Map View 2
Matchline forSouth Corridor
Map View 3
Blessing Rd
County Road 62/15
SS-4
SS-5
South Corridor Segment B
SC-7
Blessing Road Corridor A
County 62/15
BR-1
SC-8a
SC-8b
South Corridor Segment C
East Corridor B
EC-1
EC-2
SP-2
SC-WI
SC-9a
South Corridor Segment D
Matchline for South Corridor
Map View 3
Matchline for South Corridor
Map View 4
SC-10
N
0
200
400
Feet
South Corridor
Map View 3of 6
Legend
Potential Pipeline Construction ROW
Potential Pipeline Corridor
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
Soil Point

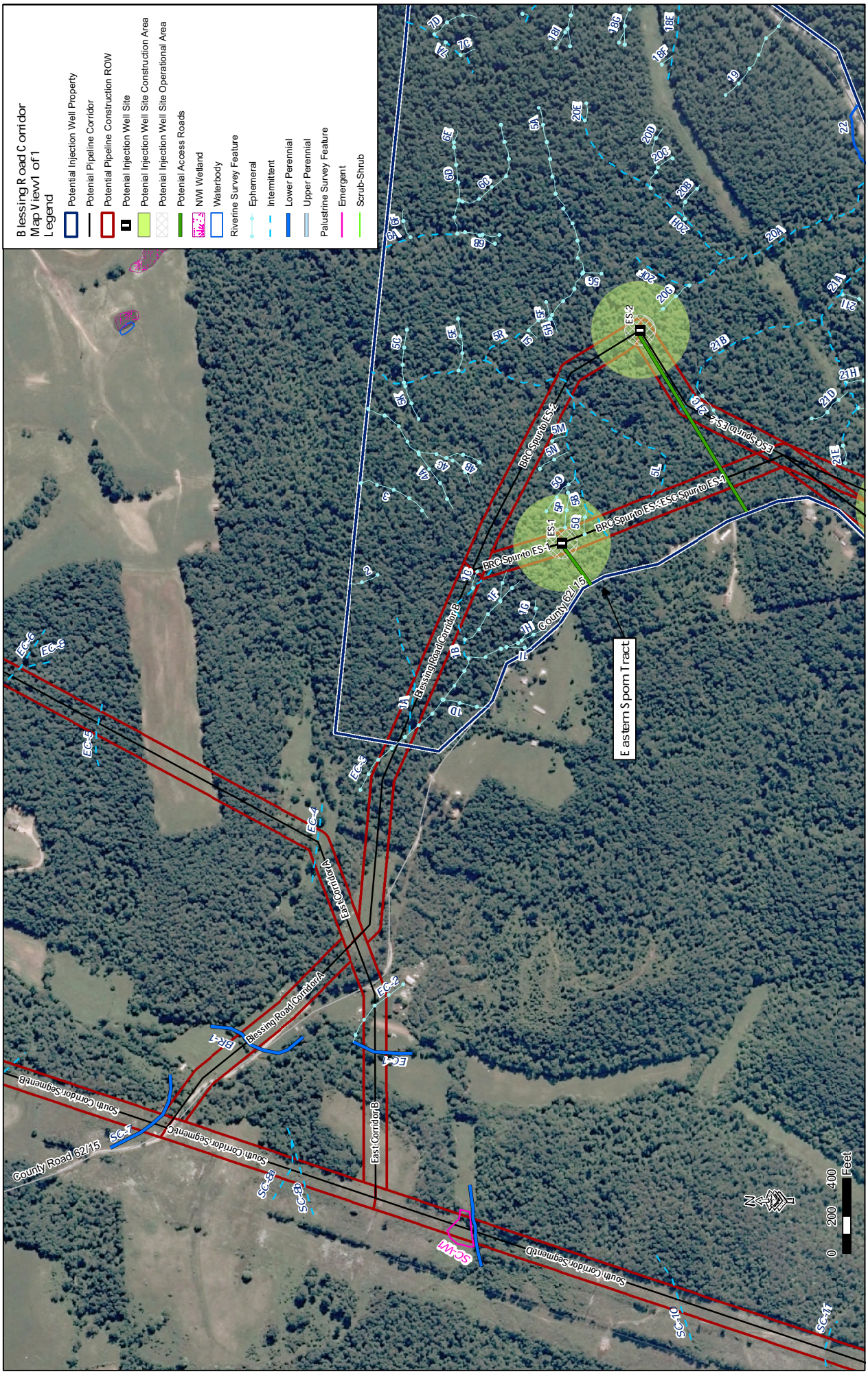
Matchline for South Corridor
Map View 3
Matchline for South Corridor
Map View 4
SC-10
SC-11
SC-12a
SC-12b
SC-13
SC-14
SC-15
County 12/8
Broad Ch
Matchline for South Corridor
Map View 4
Matchline for South Corridor
Map View 5
County 52/27
Blessing Rd
South Corridor Segment D
N
0
200
400
Feet
South Corridor
Map View 4 of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

Matchline forSouth Corridor
Map View 4
Matchline forSouth Corridor
Map View 5
Broad Ch
Blessing Rd
County 62/12A
County 12/B
SC-16a
SC-16b
SC-17
SC-18
SC-19
SC-20
South Corridor Segment D
SC-21
SC-22
Matchline for South Corridor
Map View 5
Matchline for South Corridor
Map View 6
South Corridor
Map View 5of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet

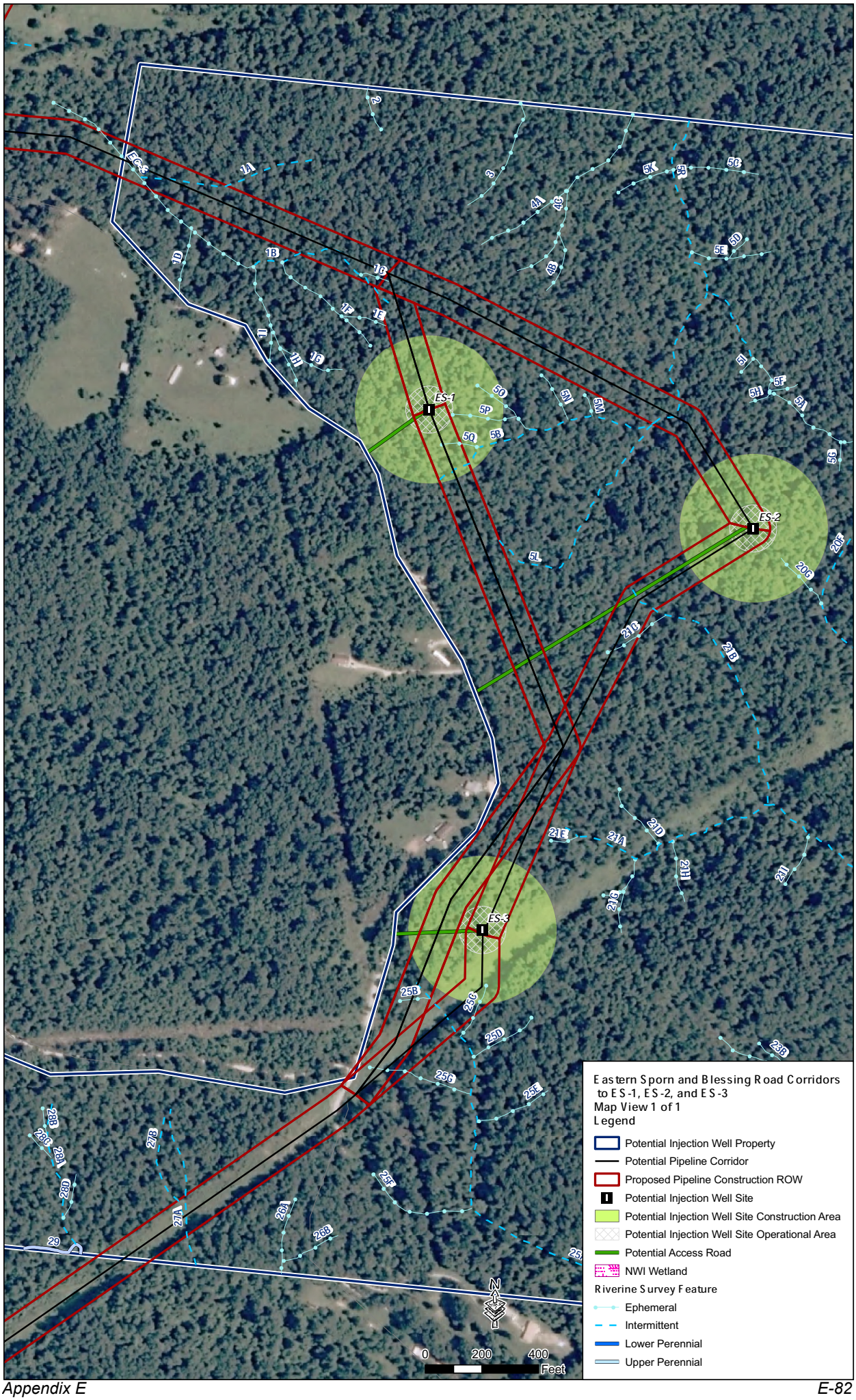
Matchline for South Corridor
Map View 5
Matchline for South Corridor
Map View 6
SC-21
South Corridor Segment D
ES-1a
ES-1
Eastern Spur Corridor
SC-21
South Corridor Segment E
County Road 15 / Sandhill Rd
SC-22
SC-23
County Road 20 / Gill Rd
County Road 20 / Gill Rd
End of Map Views
for South Corridor
Matchline for Jordan West Corridor
Map View 1
Jordan West Corridor
Jordan East Corridor
JE-1b
JE-1a
JE-1c
N
0
200
400
Feet
South Corridor
Map View 6of 6
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

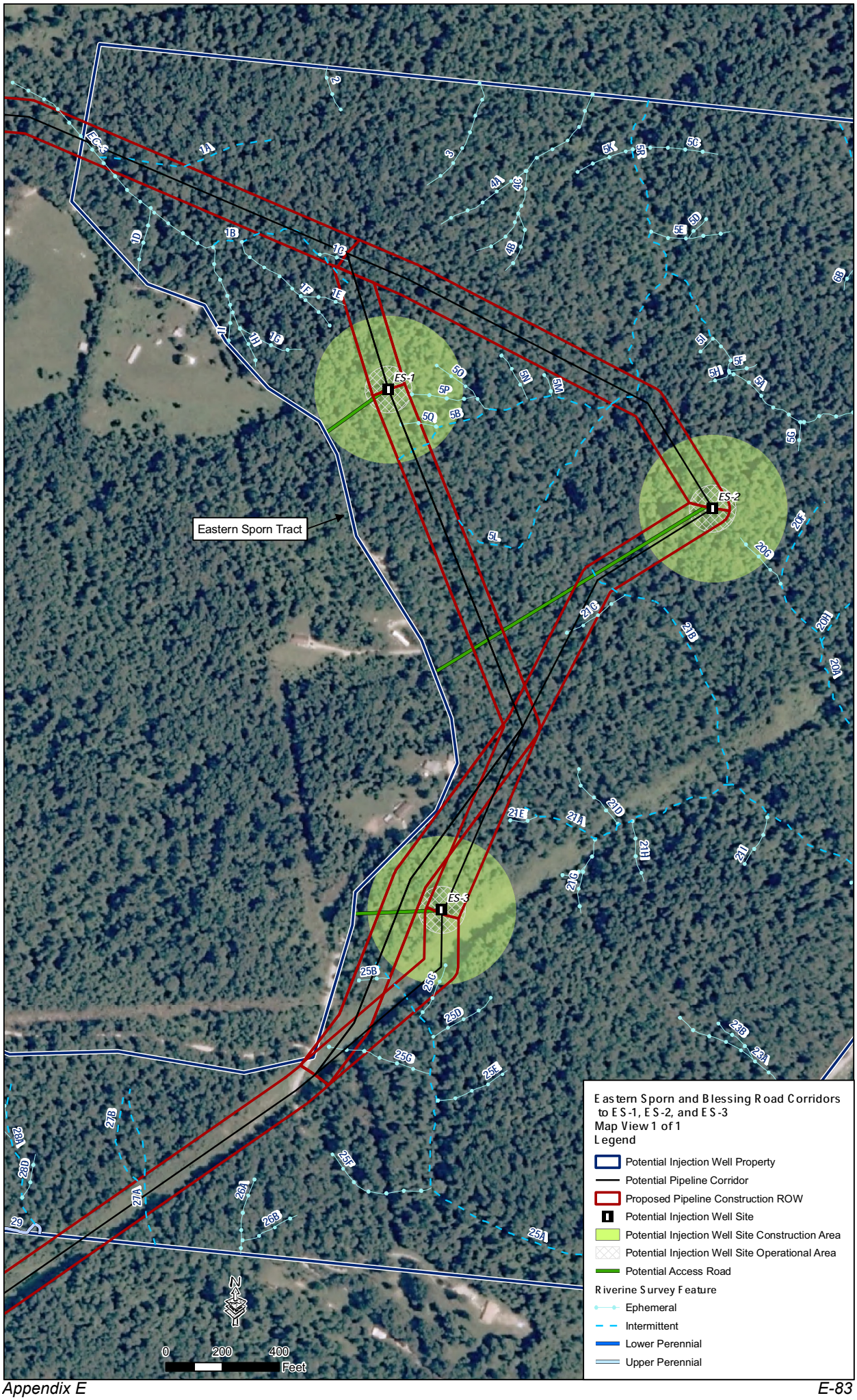

East Corridor
Map View 1 of 2
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
EC-11
EC-10
SS-6
EC-9
South Corridor Segment B
EC-7
SS-4
SS-5
EC-6
EC-8
EC-5
East Corridor A
Matchline for East Corridor
Map View 1
Matchline for East Corridor
Map View 2
SC-7
Blessing Road Corridor A
BR-1
N
0
200
400
Feet

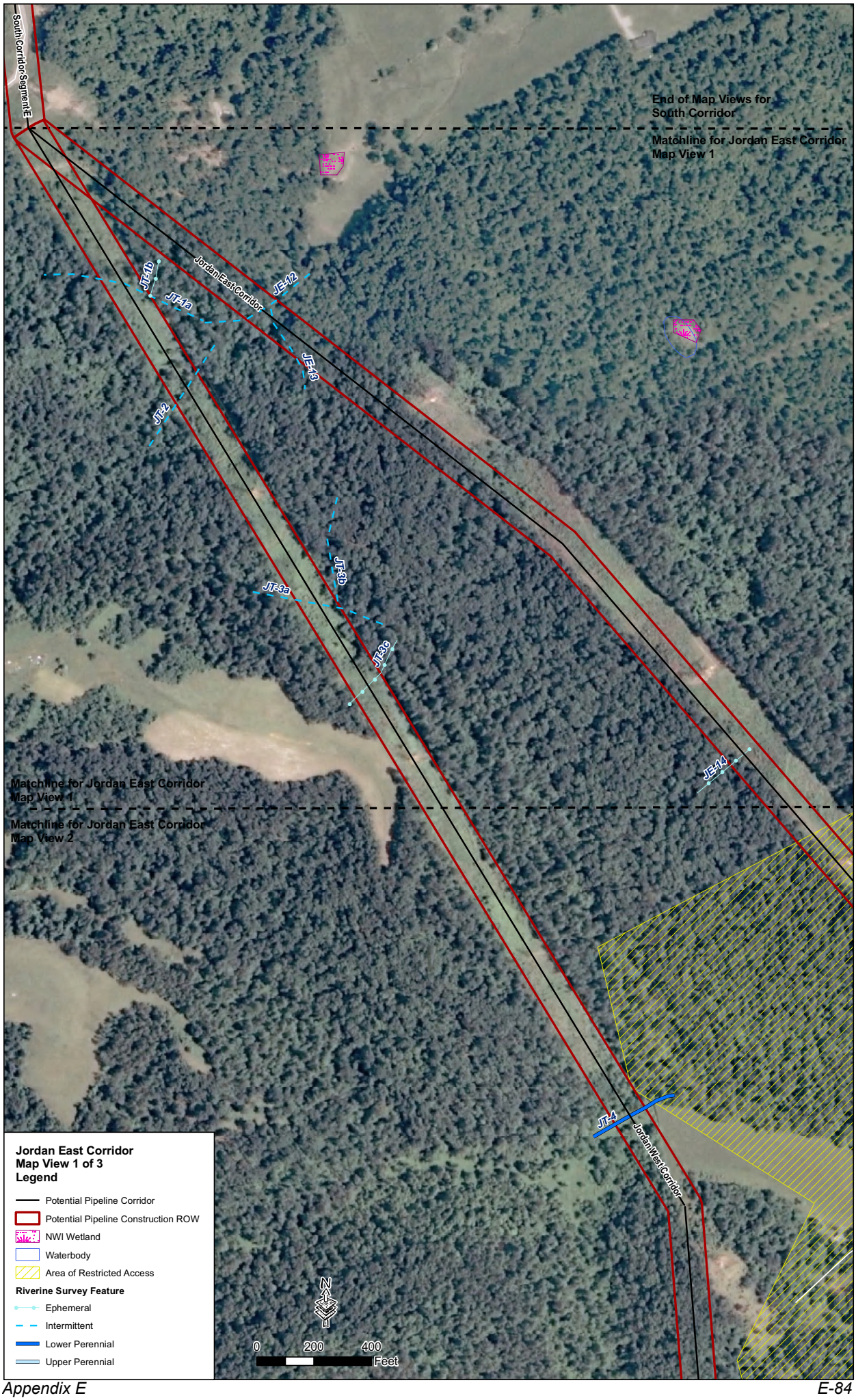

SS-4
SS-5
Blessing Rd Rd
South Corridor Segment B
SC-7
Matchline for East Corridor Map View 1
Matchline for East Corridor Map View 2
EC-6
EC-5
South Corridor Segment C
BR-1
East Corridor A
SC-8a
SC-8b
Blessing Road Corridor A
EC-4
East Corridor B
Blessing Road Corridor B
EC-1
EC-2
Blessing Rd
1A
EC-3
1B
SC-9a
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
N
0
200
400
Feet

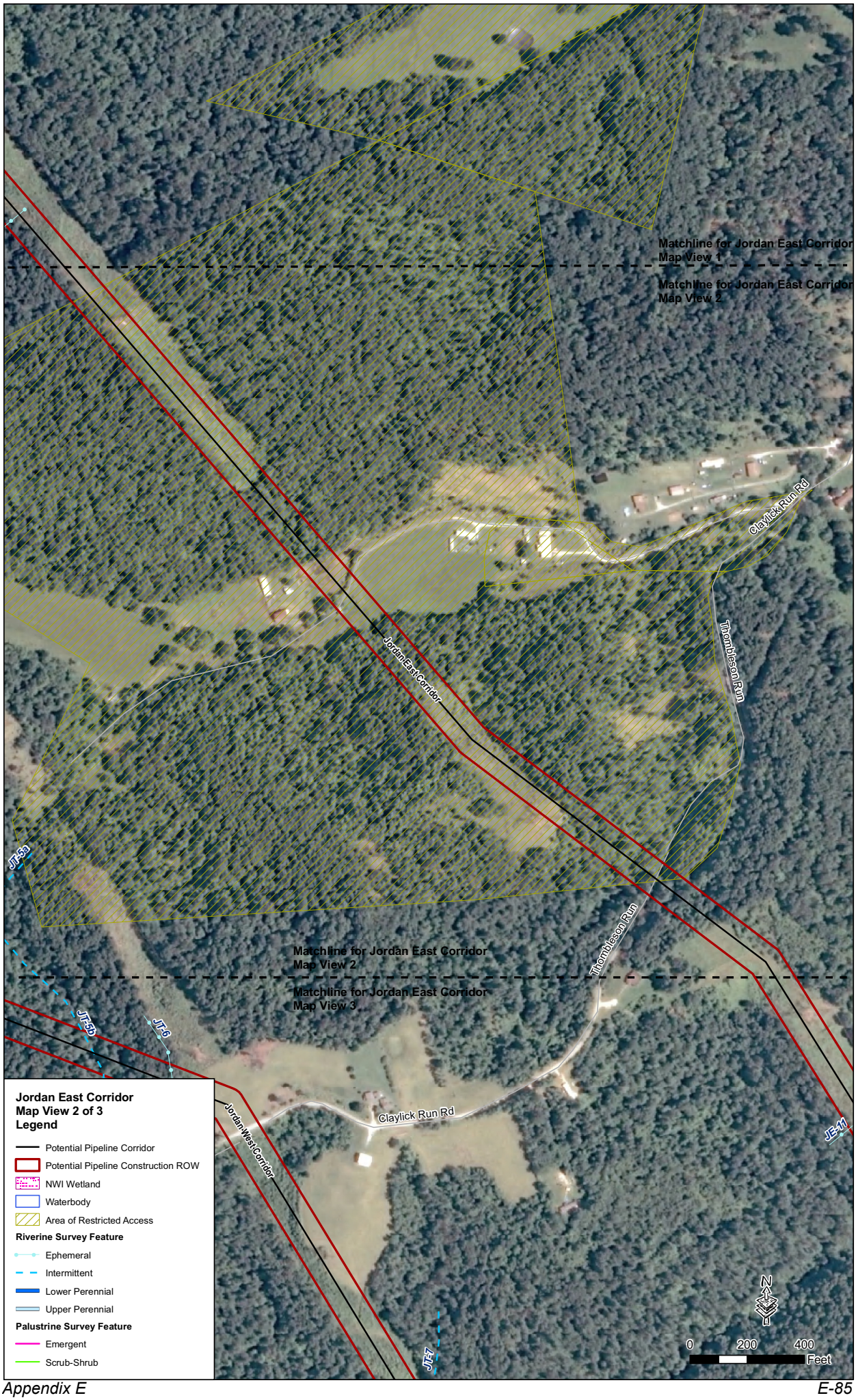

Blessing Road Corridor
Map View1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
Potential Access Roads
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
Eastern Spom Tract
Blessing Road Corridor B
Blessing Road Corridor A
East Corridor A
East Corridor B
BRC Spur to ES-1
BRC Spur to ES-2
ES-1 Spur to ES-2
ES-2 Spur to ES-1
ES-1
ES-2
County Road 62/15
South Corridor Segment A
South Corridor Segment B
South Corridor Segment C
South Corridor Segment D
SC-1
SC-2
SC-3
SC-4
SC-5
SC-10
SC-11
SC-WI
EC-1
EC-2
EC-3
EC-4
EC-5
EC-6
EC-7
EC-8
ER-1
ER-2
ER-3
0
200
400
Feet
N

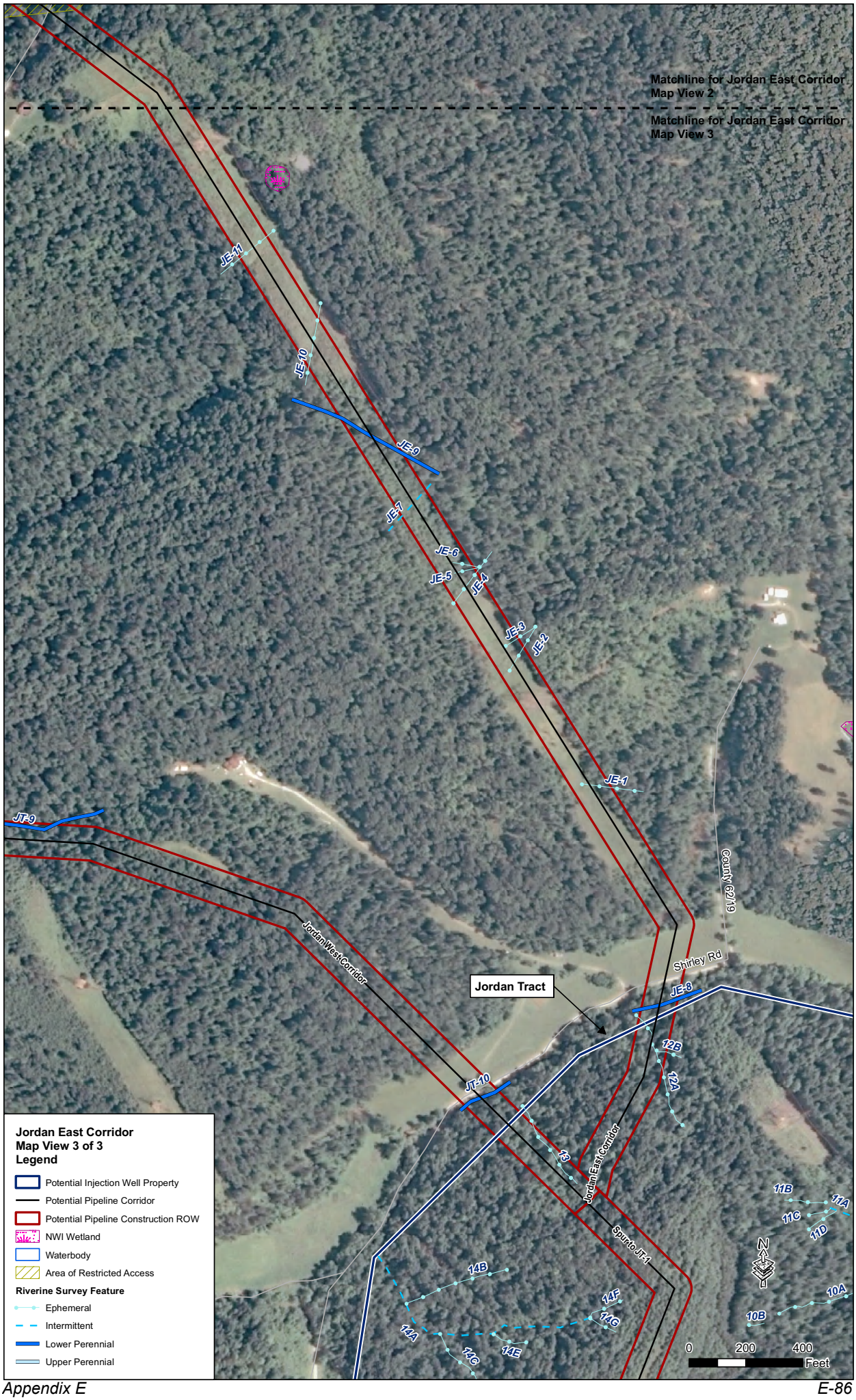
Matchline for Eastern Sporn Corridor
Map View 2
Matchline for Eastern Sporn Corridor
Map View 1
Broad Ch
ES-5
ES-5a
ES-6
ES-4
ES-4a
ES-3
SC-1E
SC-1C
SC-2I
SC-2I
ES-2
ES-2a
Eastern Sporn Corridor
SC-2J
South Corridor Segment D
ES-1a
ES-1
SC-2K
South Corridor Segment E
Sandhill Rd Rd
Start of Map Views for
Eastern Sporn Corridor 1
N
0
200
400
Feet
Eastern Sporn Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

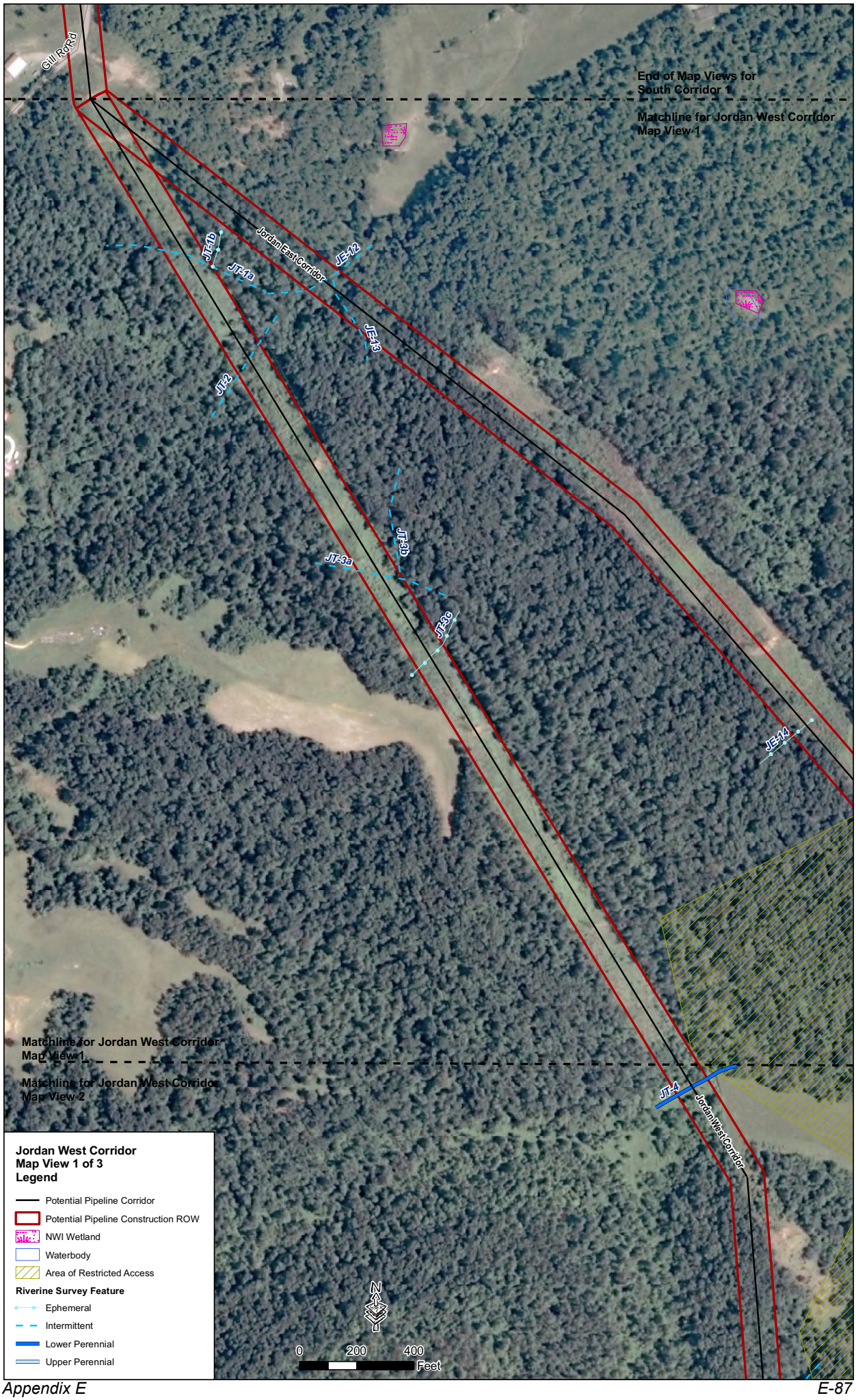

ES-1
ES-2
ES-3
ECS
1A
1B
1C
1D
1E
1F
1G
1H
1I
2
3
4A
4B
4C
5A
5B
5C
5D
5E
5F
5G
5H
5I
5J
5K
5L
5M
5N
5O
5P
5Q
20F
20G
21A
21B
21C
21D
21E
21F
21G
21H
21I
25B
25C
25D
25E
25F
25G
26A
26B
26C
26D
26E
27A
27B
28B
29
N
0
200
400
Feet
Eastern Sporn and Blessing Road Corridors
to ES-1, ES-2, and ES-3
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Proposed Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
Potential Access Road
NWI Wetland
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

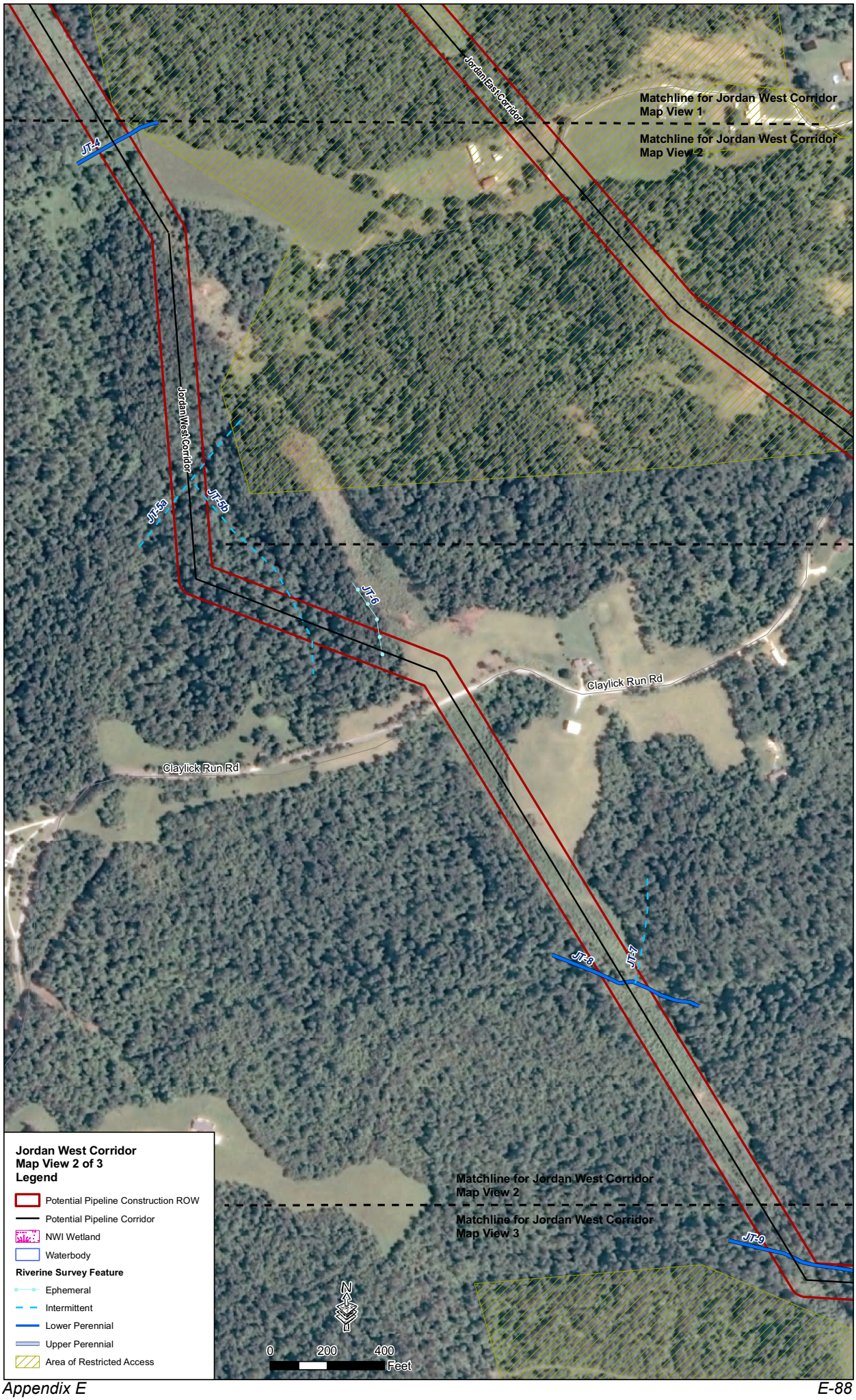

Eastern Sporn and Blessing Road Corridors
to ES-1, ES-2, and ES-3
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Proposed Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
Potential Access Road
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Eastern Sporn Tract
ES-1
ES-2
ES-3
0
200
400
Feet
N

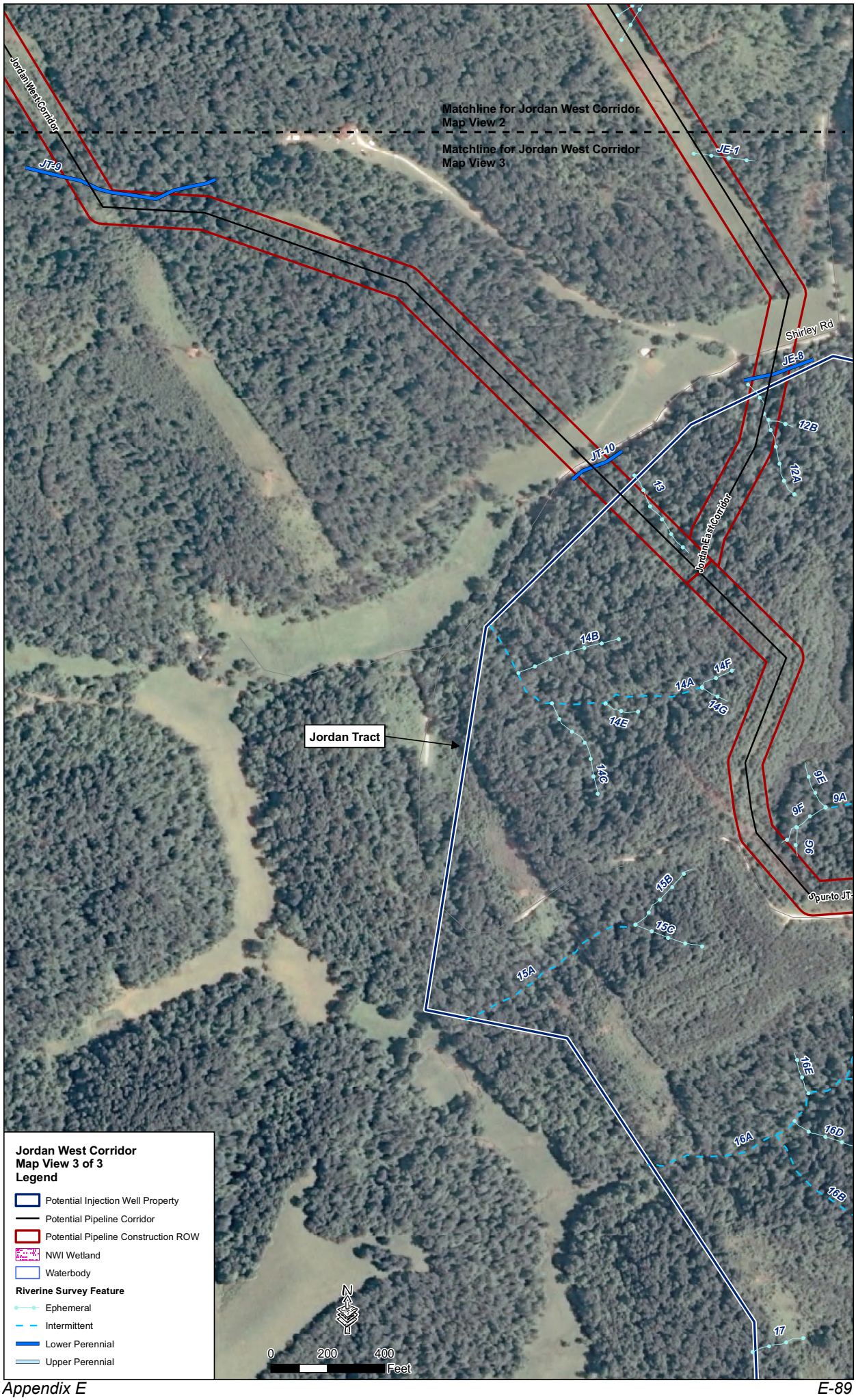

South Corridor Segment E
End of Map Views for
South Corridor
Matchline for Jordan East Corridor
Map View 1
Jordan East Corridor
JE-12
JE-13
JT-1b
JT-1a
JT-2
JT-3b
JT-3a
JT-3c
JE-14
Matchline for Jordan East Corridor
Map View 1
Matchline for Jordan East Corridor
Map View 2
JT-4
Jordan West Corridor
Jordan East Corridor
Map View 1 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Area of Restricted Access
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet

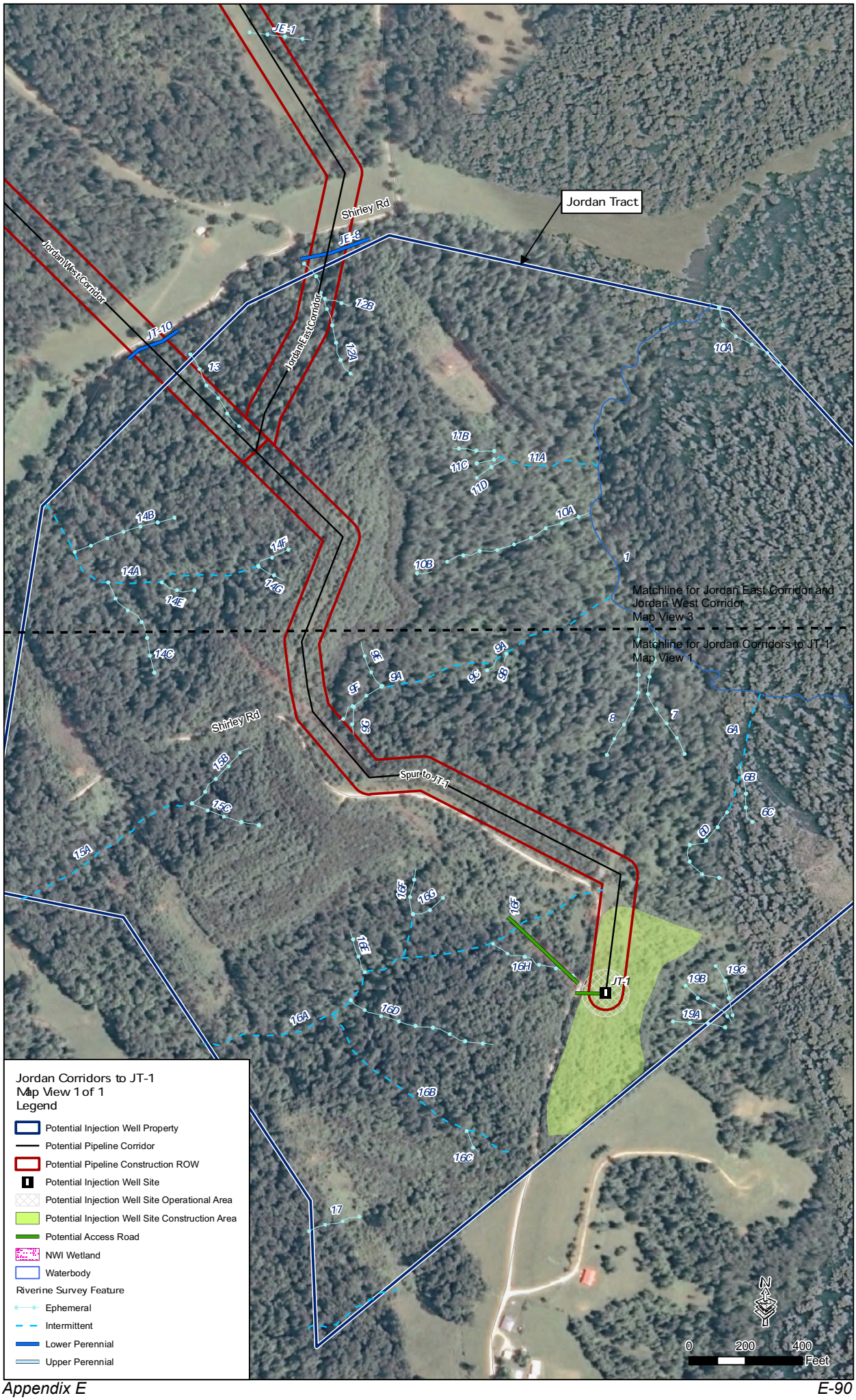

Matchline for Jordan East Corridor
Map View 1
Matchline for Jordan East Corridor
Map View 2
Claylick Run Rd
Jordan East Corridor
Thompleson Run
JT-5a
Matchline for Jordan East Corridor
Map View 2
Matchline for Jordan East Corridor
Map View 3
Thompleson Run
JT-5b
JT-6
Claylick Run Rd
Jordan West Corridor
JE-11
JT-7
N
0
200
400
Feet
Jordan East Corridor
Map View 2 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Area of Restricted Access
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub

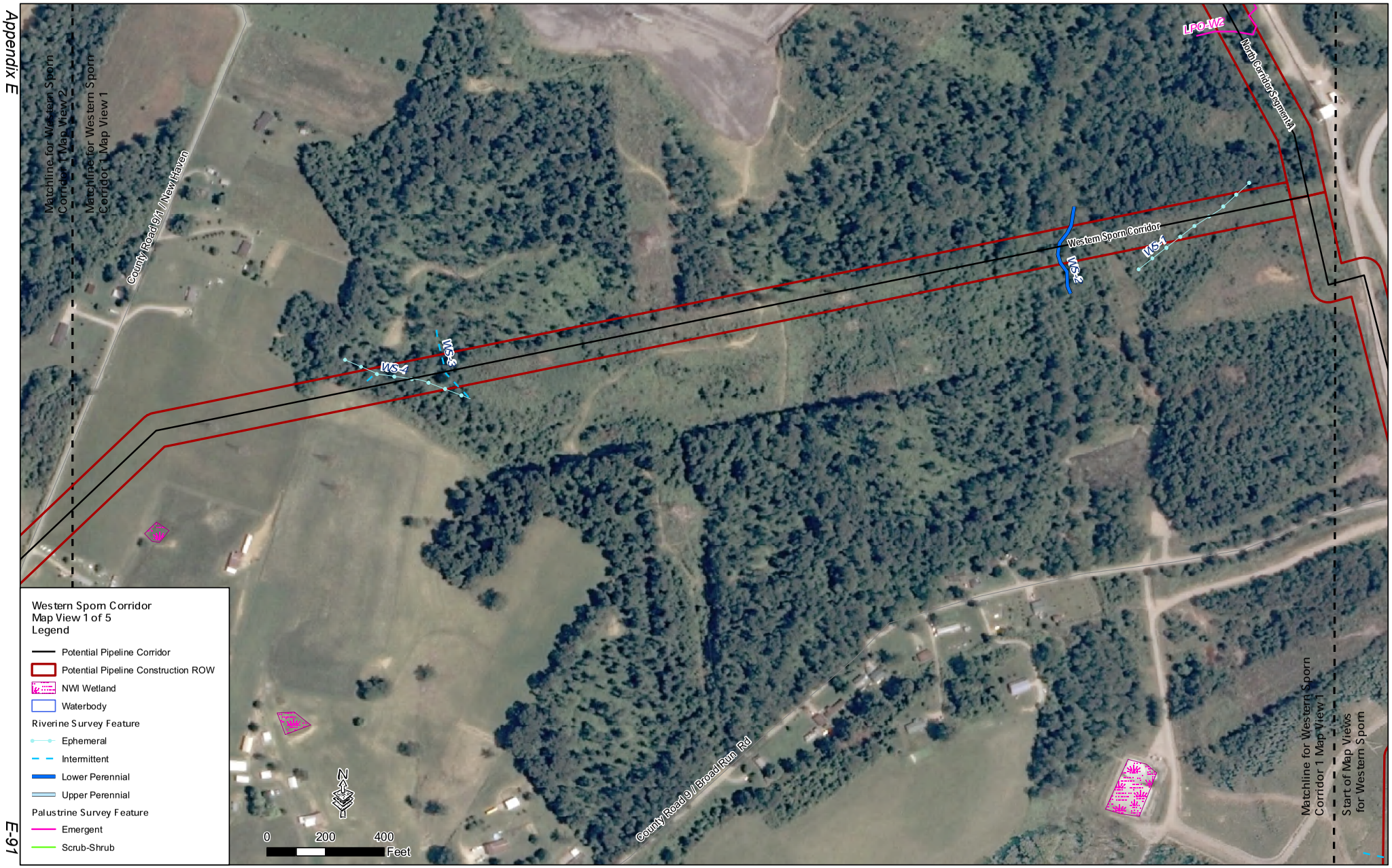

Matchline for Jordan East Corridor Map View 2
Matchline for Jordan East Corridor Map View 3
JE-11
JE-10
JE-9
JE-7
JE-6
JE-5
JE-4
JE-3
JE-2
JE-1
JT-9
Jordan West Corridor
County 62/19
Shirley Rd
Jordan Tract
JE-8
12B
12A
JT-10
13
Jordan East Corridor
Spur to JT-1
11B
11A
11C
11D
N
14B
14F
14G
14A
14C
14E
10A
10B
0
200
400
Feet
Jordan East Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Area of Restricted Access
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

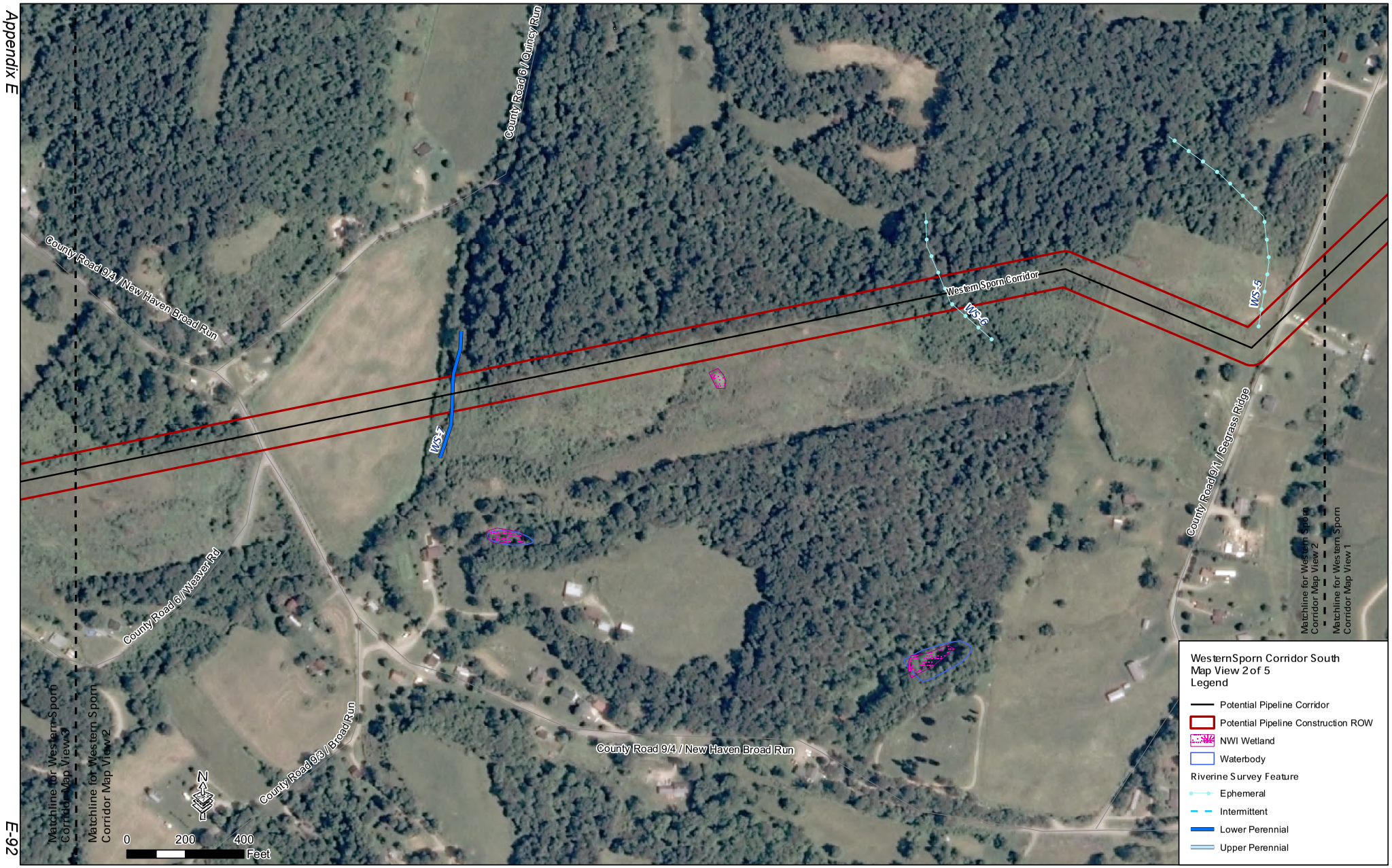

Gill Rd/Rd
End of Map Views for
South Corridor 1
Matchline for Jordan West Corridor
Map View 1
Jordan East Corridor
JT-1b
JT-1a
JE-12
JE-13
JT-2
JT-3b
JT-3a
JT-3c
JE-14
Matchline for Jordan West Corridor
Map View 1
Matchline for Jordan West Corridor
Map View 2
JT-4
Jordan West Corridor
Jordan West Corridor
Map View 1 of 3
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Area of Restricted Access
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet

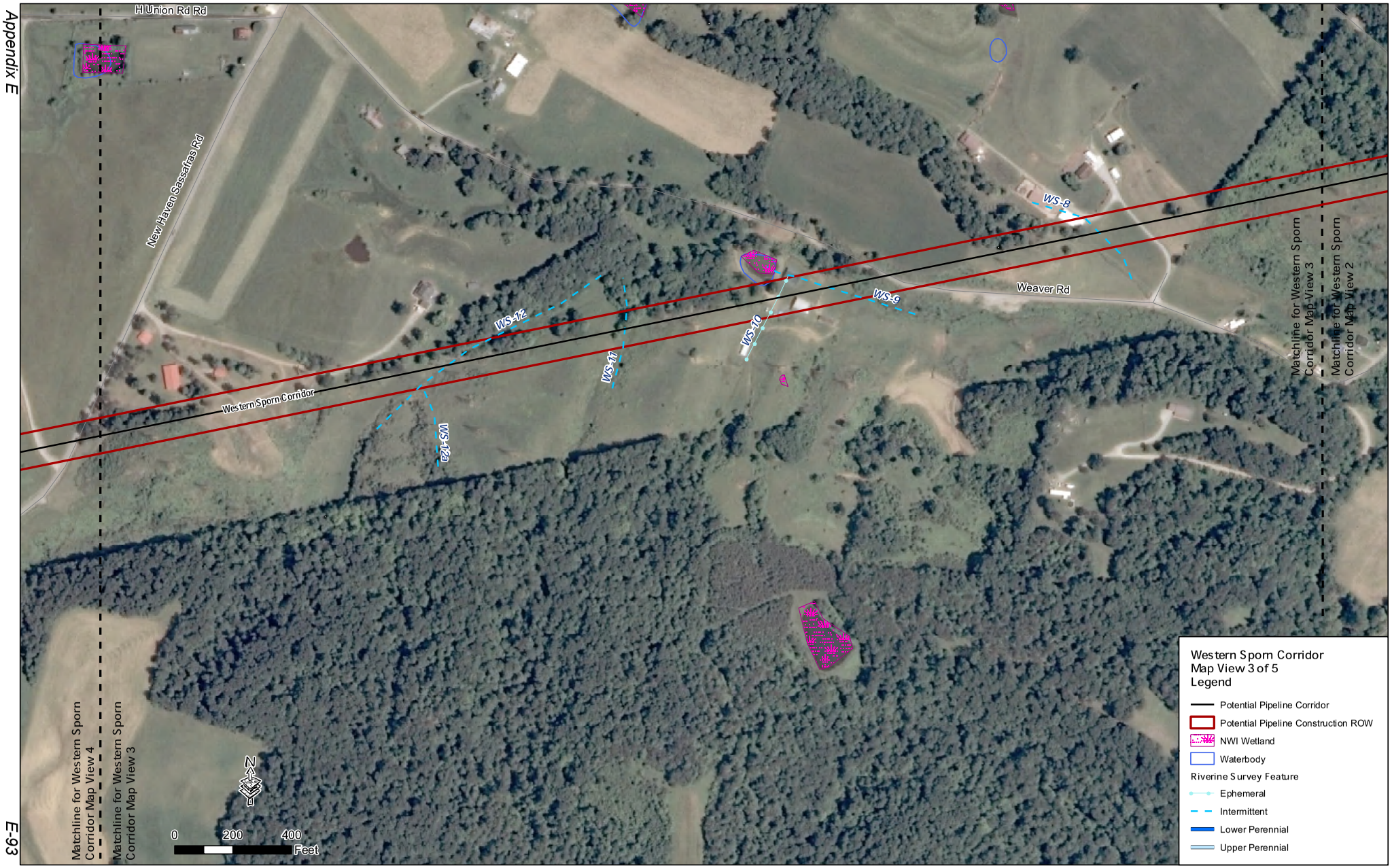

Jordan East Corridor
Matchline for Jordan West Corridor
Map View 1
Matchline for Jordan West Corridor
Map View 2
JT-4
Jordan West Corridor
JT-5a
JT-5b
JT-6
Claylick Run Rd
Claylick Run Rd
JT-8
JT-7
Matchline for Jordan West Corridor
Map View 2
Matchline for Jordan West Corridor
Map View 3
JT-9
Jordan West Corridor
Map View 2 of 3
Legend
Potential Pipeline Construction ROW
Potential Pipeline Corridor
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Area of Restricted Access
N
0
200
400
Feet

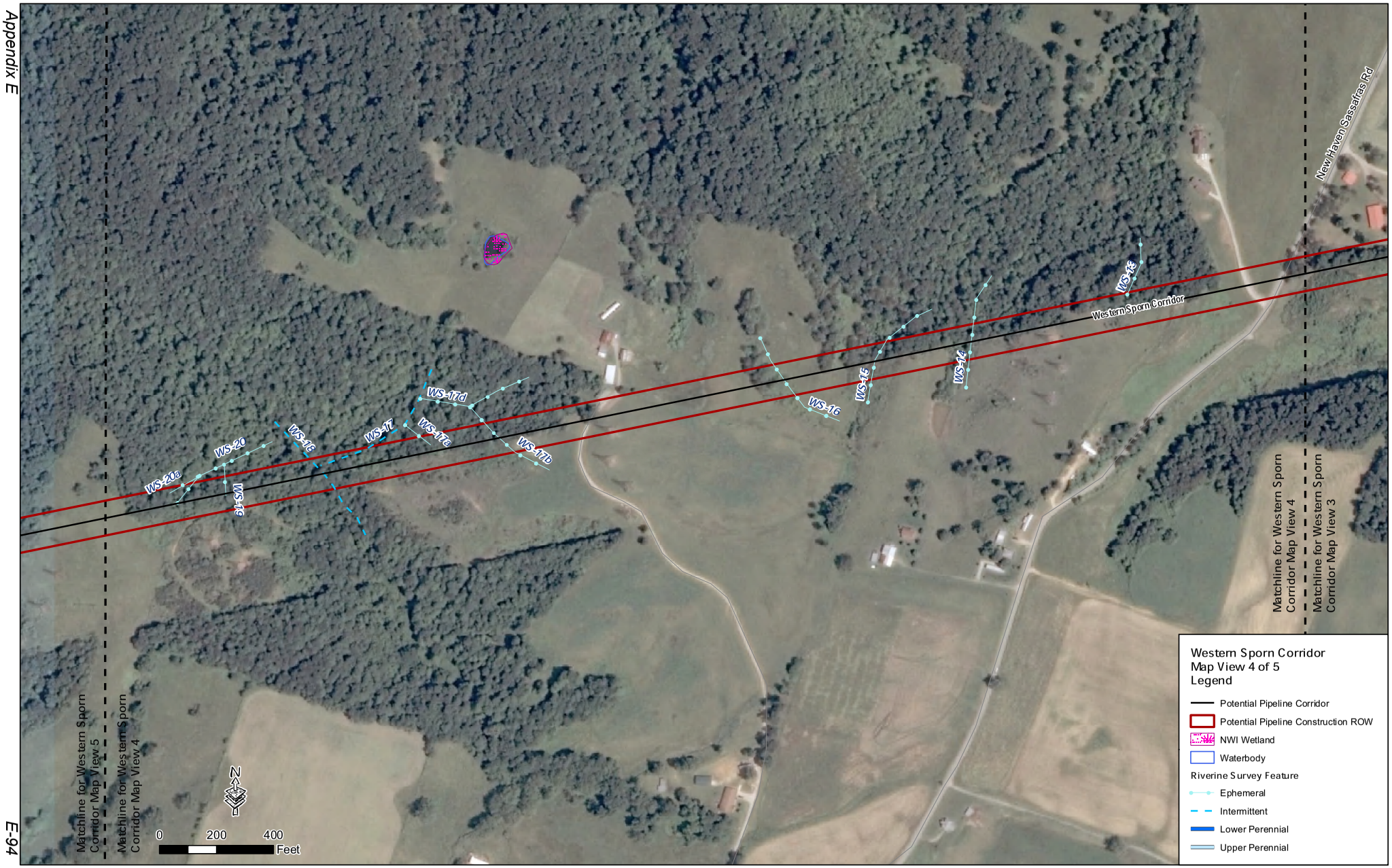

Jordan West Corridor
Matchline for Jordan West Corridor
Map View 2
Matchline for Jordan West Corridor
Map View 3
JT-9
JE-1
Shirley Rd
JE-8
12B
12A
JT-10
13
Jordan East Corridor
14B
14F
14A
14G
14E
14C
Jordan Tract
9E
9A
9F
9C
Spur to JT-
13B
15C
15A
16E
16A
16D
16B
17
Jordan West Corridor
Map View 3 of 3
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet

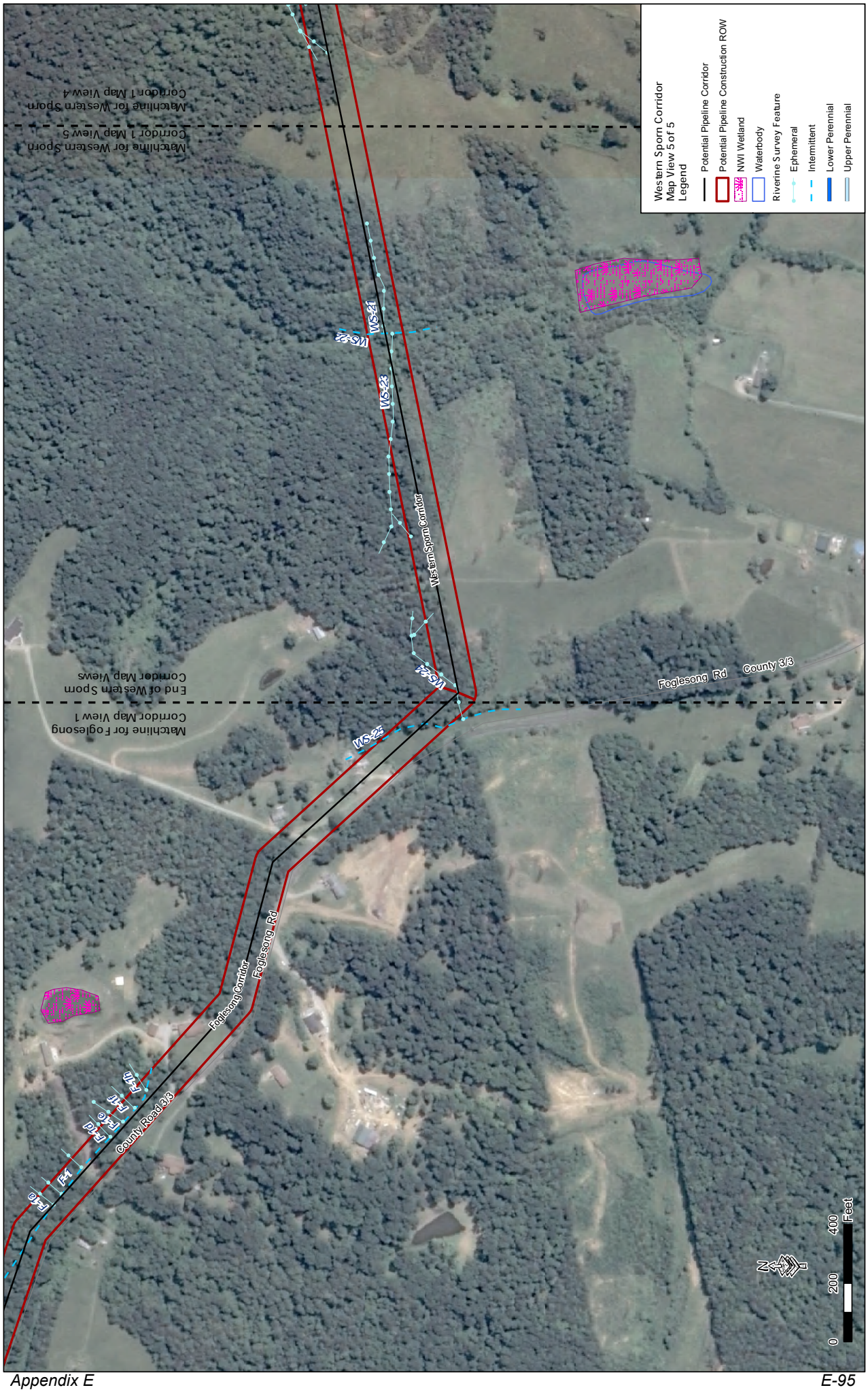

Jordan Tract
Shirley Rd
Jordan West Corridor
Jordan East Corridor
JE-1
JE-6
JT-10
JT-1
Spur to JT-1
Matchline for Jordan East Corridor and Jordan West Corridor Map View 3
Matchline for Jordan Corridors to JT-1 Map View 1
Jordan Corridors to JT-1
Map View 1 of 1
Legend
Potential Injection Well Property
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Operational Area
Potential Injection Well Site Construction Area
Potential Access Road
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
0
200
400
Feet
N


Western Spom Corridor
Map View 1 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Emergent
Scrub-Shrub
Matchline for Western Spom Corridor 1 Map View 2
Matchline for Western Spom Corridor 1 Map View 1
County Road 9/1 / New Haven
County Road 9 / Broad Run Rd
Western Spom Corridor
North Corridor Segment A
LPO-W2
WS-1
WS-2
WS-3
Matchline for Western Spom Corridor 1 Map View 1
Start of Map Views for Western Spom
N
0
200
400
Feet

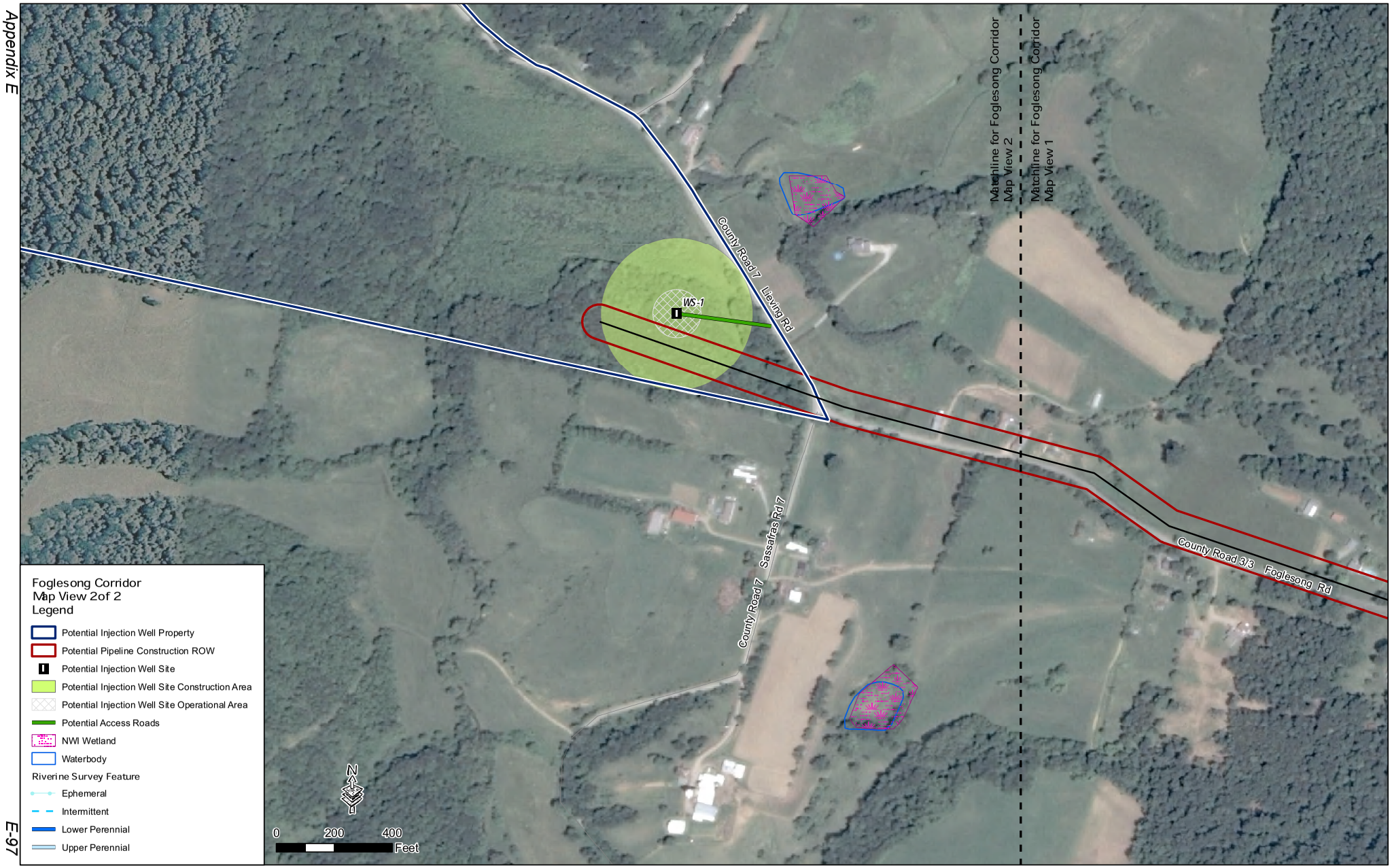

County Road 6 / Quincy Run
County Road 9/4 / New Haven Broad Run
Western Sporn Corridor
WS-5
WS-6
WS-7
County Road 9/1 / Segrass Ridge
County Road 6 / Weaver Rd
County Road 9/3 / Broad Run
County Road 9/4 / New Haven Broad Run
Matchline for Western Sporn Corridor Map View 3
Matchline for Western Sporn Corridor Map View 2
Matchline for Western Sporn Corridor Map View 2
Matchline for Western Sporn Corridor Map View 1
N
0 200 400 Feet
WesternSporn Corridor South
Map View 2 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

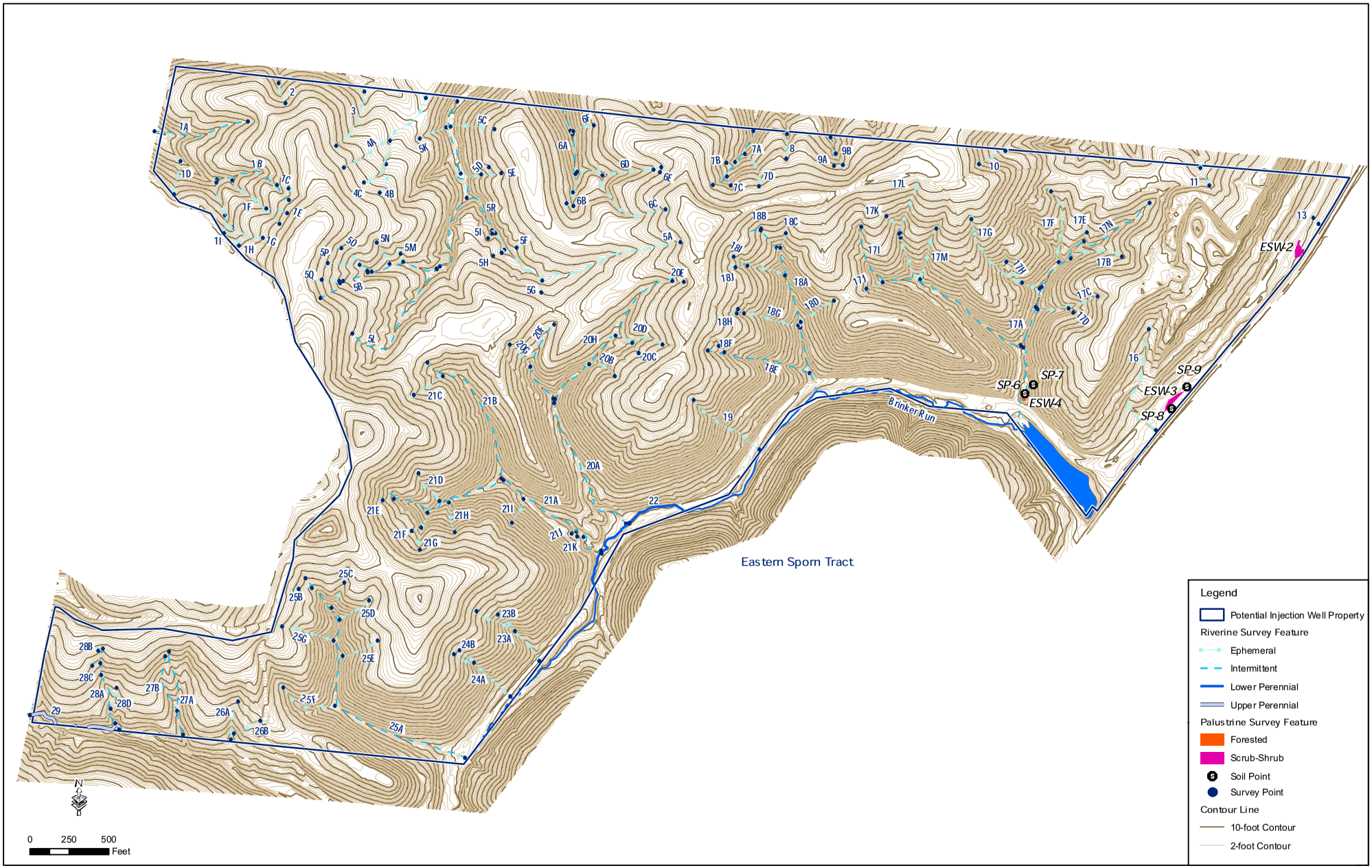

H Union Rd Rd
New Haven Sassafras Rd
Western Sporn Corridor
WS-12
WS-12a
WS-11
WS-10
WS-9
WS-8
Weaver Rd
Matchline for Western Sporn Corridor Map View 4
Matchline for Western Sporn Corridor Map View 3
Matchline for Western Sporn Corridor Map View 3
Matchline for Western Sporn Corridor Map View 2
N
0
200
400
Feet
Western Sporn Corridor
Map View 3 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial

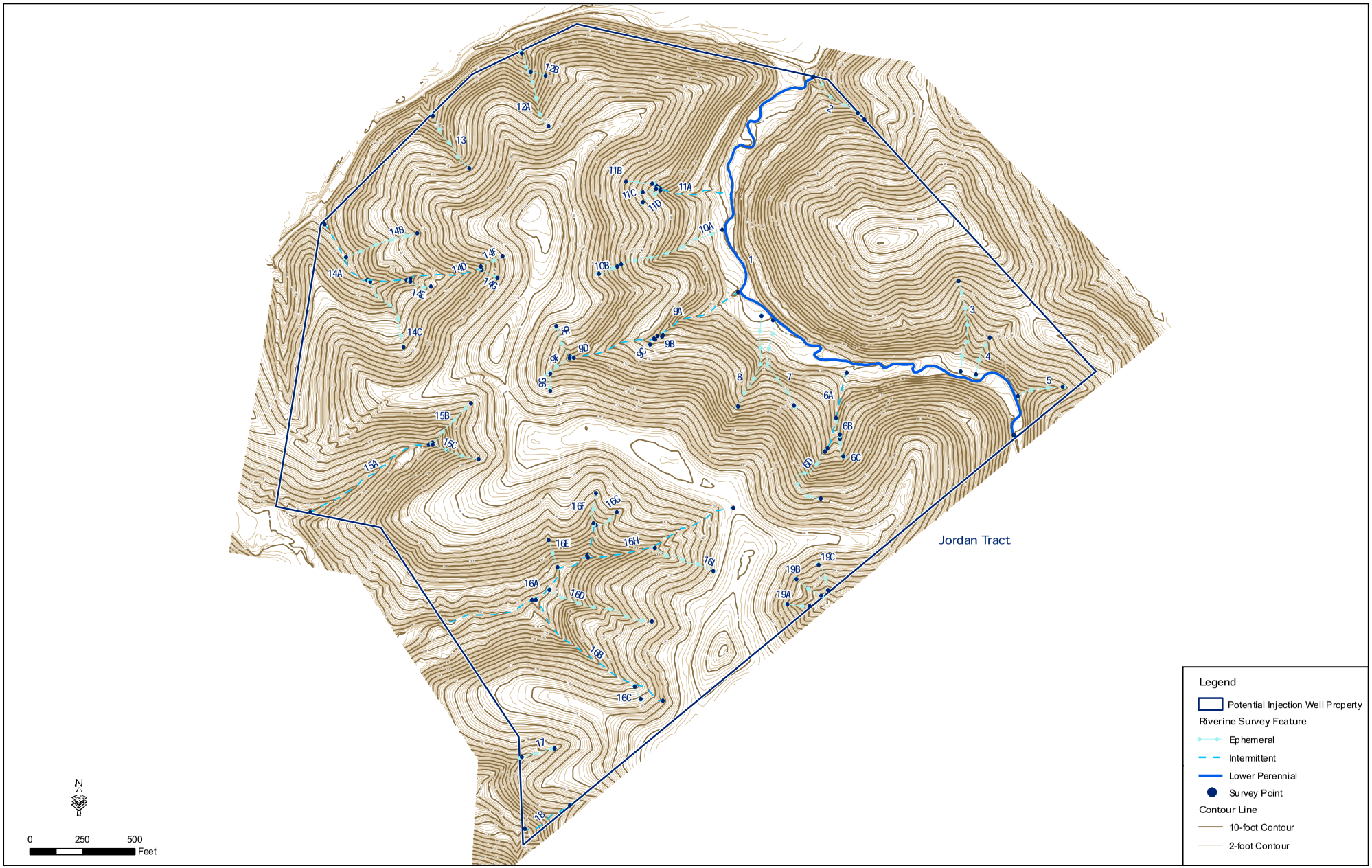

Western Sporn Corridor
Map View 4 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Matchline for Western Sporn Corridor Map View 3
Matchline for Western Sporn Corridor Map View 4
Matchline for Western Sporn Corridor Map View 5
New Haven Sassafras Rd
Western Sporn Corridor
WS-13
WS-14
WS-15
WS-16
WS-17b
WS-17d
WS-17e
WS-17f
WS-18
WS-19
WS-20
WS-20a
0
200
400
Feet
N

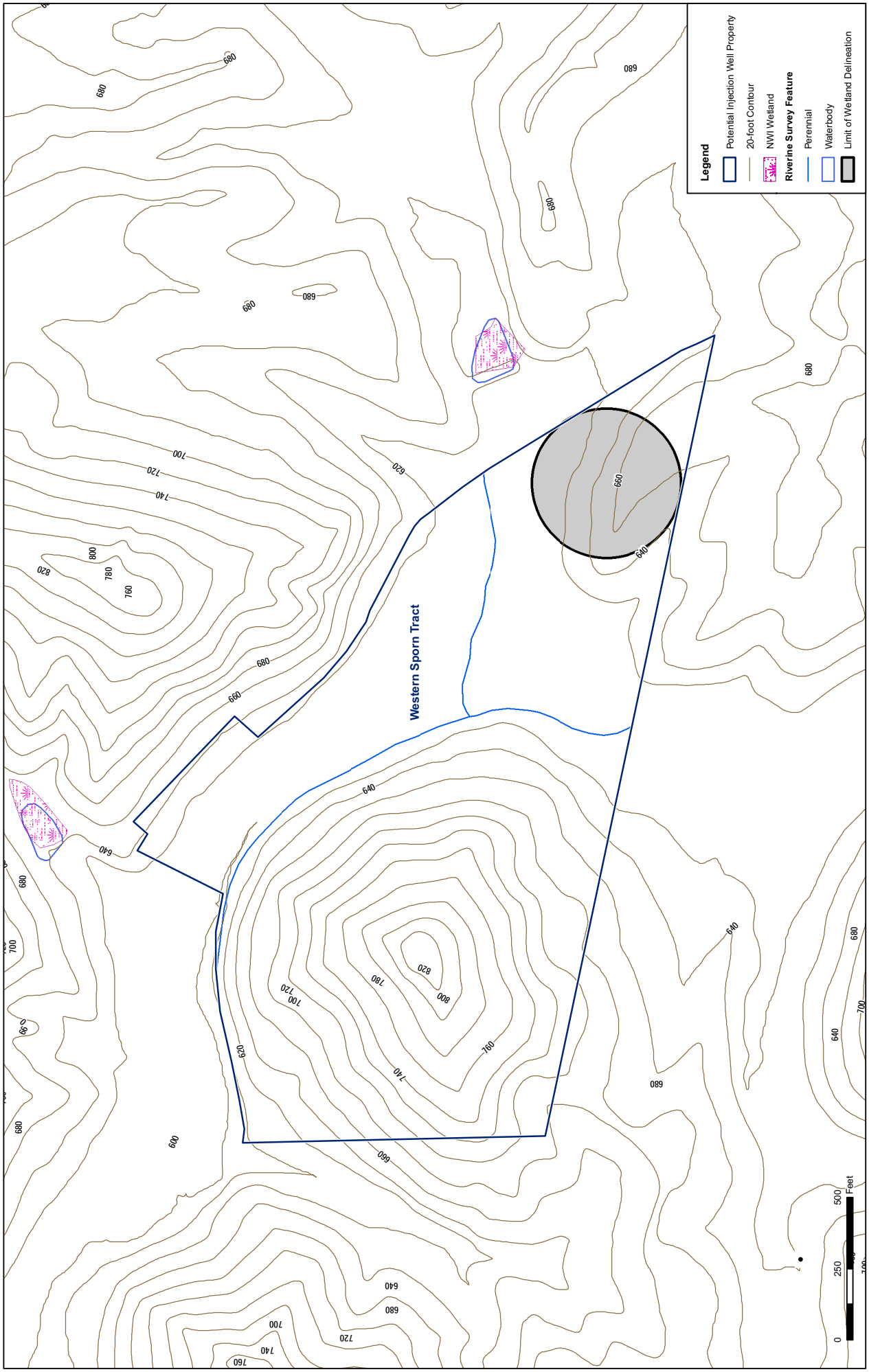

Western Sporn Corridor
Map View 5 of 5
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Matchline for Western Sporn Corridor 1 Map View 5
Matchline for Western Sporn Corridor 1 Map View 4
End of Western Sporn Corridor Map Views
Matchline for Foglesong Corridor Map View 1
Foglesong Rd
County 3/3
Western Sporn Corridor
WS-21
WS-22
WS-23
WS-24
WS-25
Foglesong Corridor
Foglesong Rd
County Road 3/3
F-4a
F-4
F-4d
F-4e
F-4f
F-4h
N
0
200
400
Feet

Foglesong Corridor
Map View 1 of 2
Legend
Potential Pipeline Corridor
Potential Pipeline Construction ROW
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Matchline for Foglesong Corridor Map View 2
Matchline for Foglesong Corridor Map View 1
Foglesong Corridor
F-1
F-1a
F-1c
F-1b
F-1d
F-1e
F-1f
F-1h
Matchline for Foglesong Corridor Map View 1
Matchline for Western Sporn Corridor Map View 5
VS-23
VS-24
VS-24a
Western Sporn Corridor
N
0
200
400
Feet


Foglesong Corridor
Map View 2of 2
Legend
Potential Injection Well Property
Potential Pipeline Construction ROW
Potential Injection Well Site
Potential Injection Well Site Construction Area
Potential Injection Well Site Operational Area
Potential Access Roads
NWI Wetland
Waterbody
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
N
0
200
400
Feet
WS-1
County Road 7
Lieving Rd
County Road 7
Sassafras Rd 7
County Road 3/3
Foglesong Rd
Matchline for Foglesong Corridor
Map View 2
Matchline for Foglesong Corridor
Map View 1


Eastern Sporn Tract
Brinker Run
ESW-2
ESW-3
ESW-4
SP-6
SP-7
SP-8
SP-9
Legend
Potential Injection Well Property
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Upper Perennial
Palustrine Survey Feature
Forested
Scrub-Shrub
Soil Point
Survey Point
Contour Line
10-foot Contour
2-foot Contour
N
0 250 500
Feet


Jordan Tract
Legend
Potential Injection Well Property
Riverine Survey Feature
Ephemeral
Intermittent
Lower Perennial
Survey Point
Contour Line
10-foot Contour
2-foot Contour
N
0
250
500
Feet


Western Sporn Tract
Legend
Potential Injection Well Property
20-foot Contour
NWI Wetland
Riverine Survey Feature
Perennial
Waterbody
Limit of Wetland Delineation
0
250
500
Feet

Mountaineer CCS II Project
Wetland Survey

Attachment C
Wetland Data Sheets

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DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/South Corridor			**Date** August 2010
Applicant / Owner AEP			**County** Mason
Investigator Christopher Rua			**State** West Virginia
Do Normal Circumstances exist on the site?	**YES**	✓ **NO**	**Community ID** SC-W1/Wetland
Is the site significantly disturbed (Atypical Situation)?	✓ **YES**	**NO**	**Transect ID** South Corridor
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-1

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus effusus	H	FACW+	9	9		
2	Onoclea sensibilis	H	FACW	10	10		
3	Unidentified grasses	H	ID	11	11		
4				12	12		
5				13	13		
6				14	14		
7				15	15		
8				16	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	8 (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☒ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☒ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☒ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		10YR 4/3	10 YR 3/2	Few, coarse, distinct	Silt loam
8-18+		10 YR 3/2			Silt loam

HYDRIC SOIL INDICATORS:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [X] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [X] Concretions
- [ ] High Organic Content in Surface Layer in Sand Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

Iron concretions throughout

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓ YES	NO	Is this Sampling Point Within a Wetland?	✓ YES	NO
Wetland Hydrology Present?	✓ YES	NO			
Hydric Soils Present?	✓ YES	NO			

Remarks:

This wetland data point was located within SC-W1 located in the South Corridor.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/North Corridor			**Date** August 2010
Applicant / Owner AEP			**County** Mason
Investigator Christopher Rua			**State** West Virginia
Do Normal Circumstances exist on the site?	**YES**	✓ **NO**	**Community ID** SC-W1/Upland
Is the site significantly disturbed (Atypical Situation)?	✓ **YES**	**NO**	**Transect ID** North Corridor
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-2

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus effuses	H	FACW+	9	9		
2	Solidago canadensis	H	FACU	10	10		
3	Daucus carota	H	NL	11	11		
4	Unidentified grasses	H	ID	12	12		
5				13	13		
6				14	14		
7				15	15		
8				16	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 50%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	N/A (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☐ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):				Drainage Class:	
Taxonomy (Subgroup)			Field Observations Confirm Mapped Type:	YES	NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/3			Silt loam
12-20+		10YR 3/4			Loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sand Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES	✓ NO	Is this Sampling Point Within a Wetland?	YES	✓ NO
Wetland Hydrology Present?	YES	✓ NO			
Hydric Soils Present?	YES	✓ NO			

Remarks:

This upland data point was located adjacent to, but outside of, SC-W1 located in the North Corridor.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/North Corridor			**Date** August 2010
Applicant / Owner AEP			**County** Mason
Investigator Christopher Rua			**State** West Virginia
Do Normal Circumstances exist on the site?	**YES**	✓ **NO**	**Community ID** LPO-W2/Wetland
Is the site significantly disturbed (Atypical Situation)?	✓ **YES**	**NO**	**Transect ID** North Corridor
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-3

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus effuses	H	FACW+	9	9		
2	Solidago canadensis	H	FACU	10	10		
3	Typha angustifolia	H	OBL	11	11		
4	Panicum clandestinum	H	FAC+	12	12		
5	Ambrosia artemisifolia	H	FACU	13	13		
6	Asclepias syriaca	H	FACU-	14	14		
7				15	15		
8				16	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 50%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	N/A (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☐ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☒ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☒ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☒ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):				Drainage Class:	
Taxonomy (Subgroup)			Field Observations Confirm Mapped Type:	YES	NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-18+		10YR 5/1			Silt loam
			10 YR 6/2	Few, medium, faint	Silt loam
			10 YR 5/8	Many, coarse, distinct	Sandy loam

HYDRIC SOIL INDICATORS:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sand Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓ YES	NO	Is this Sampling Point Within a Wetland?	✓ YES	NO
Wetland Hydrology Present?	✓ YES	NO			
Hydric Soils Present?	✓ YES	NO			

Remarks:

This wetland data point was located in LPO-W2 located in the North Corridor.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/North Corridor			**Date** August 2010
Applicant / Owner AEP			**County** Mason
Investigator Christopher Rua			**State** West Virginia
Do Normal Circumstances exist on the site?	**YES**	✓ **NO**	**Community ID** LPO-W2/Upland
Is the site significantly disturbed (Atypical Situation)?	✓ **YES**	**NO**	**Transect ID** North Corridor
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-4

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus effuses	H	FACW+	9	9		
2	Solidago canadensis	H	FACU	10	10		
3	Panicum clandestinum	H	FAC+	11	11		
4	Ambrosia artemisifolia	H	FACU	12	12		
5	Asclepias syriaca	H	FACU-	13	13		
6				14	14		
7				15	15		
8				16	16		

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 40%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	N/A (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☐ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 4/3			Sand loam, little gravel
4-12		10YR 4/4			Sand loam with gravel

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sand Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

Gravel increases with depth; auger refusal @ 12 inches due to gravel

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES	✓ NO	Is this Sampling Point Within a Wetland?	YES	✓ NO
Wetland Hydrology Present?	YES	✓ NO			
Hydric Soils Present?	YES	✓ NO			

Remarks:

This upland data point was located adjacent to, but outside of, LPO-W2 located in the North Corridor.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/North Corridor			**Date** August 2010
Applicant / Owner AEP			**County** Mason
Investigator Christopher Rua			**State** West Virginia
Do Normal Circumstances exist on the site?	**YES**	✓ **NO**	**Community ID** LPO-W1/Wetland
Is the site significantly disturbed (Atypical Situation)?	✓ **YES**	**NO**	**Transect ID** North Corridor
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-5

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Juncus effuses	H	FACW+	9	Acer rubrum	Sap.	FAC
2	Solidago canadensis	H	FACU	10			
3	Typha angustifolia	H	OBL	11			
4	Panicum clandestinum	H	FAC+	12			
5	Ambrosia artemisifolia	H	FACU	13			
6	Asclepias syriaca	H	FACU-	14			
7	Cephalanthus occidentalis	H	OBL	15			
8	Mentha spicata	H	FACW+	16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 67%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	10 (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☒ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☒ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☒ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☒ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		10YR 3/2	10 YR 4/6	Few, medium, distinct	Clay loam
6-24+		10YR 3/2	10 YR 4/6	Many, medium, distinct	Sandy clay loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sand Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓ YES	NO	Is this Sampling Point Within a Wetland?	✓ YES	NO
Wetland Hydrology Present?	✓ YES	NO			
Hydric Soils Present?	✓ YES	NO			

Remarks:

This wetland data point was located in LPO-W1 located in the North Corridor.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/Eastern Sporn Site			**Date** June 2010
Applicant / Owner AEP			**County** Mason
Investigator Hepburn/Fusco			**State** West Virginia
Do Normal Circumstances exist on the site?	✓ **YES**	**NO**	**Community ID** ESW-4/Wetland
Is the site significantly disturbed (Atypical Situation)?	**YES**	✓ **NO**	**Transect ID** Eastern Sporn Site
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-6

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Plantanus occidentalis	T	FACW-	9			
2	Acer negundo	Sap.	FAC+	10			
3	Rosa multiflora	Shr.	FACU-	11			
4	Allium vineale	H	FACU-	12			
5	Impatiens capensis	H	FACW	13			
6	Boehmeria cylindrica	H	FACW+	14			
7	Galium aparine	H	FACU	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 57%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	15 (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☒ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☒ Sediment Deposits
☒ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches
☒ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):				Drainage Class:	
Taxonomy (Subgroup)			Field Observations Confirm Mapped Type:	YES	NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3		10YR 2/2			Silt loam
3-12		10YR 3/3			Silt loam
12-21+		10YR 3/2	10YR 4/4	Few, medium, distinct	Silt loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sand Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓ YES	NO	Is this Sampling Point Within a Wetland?	✓ YES	NO
Wetland Hydrology Present?	✓ YES	NO			
Hydric Soils Present?	✓ YES	NO			

Remarks:

This wetland data point is located within ESW-4 located on the Eastern Sporn Site.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/Eastern Sporn Site			**Date** June 2010
Applicant / Owner AEP			**County** Mason
Investigator Hepburn/Fusco			**State** West Virginia
Do Normal Circumstances exist on the site?	✓ **YES**	**NO**	**Community ID** ESW-4/Upland
Is the site significantly disturbed (Atypical Situation)?	**YES**	✓ **NO**	**Transect ID** Eastern Sporn Site
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-7

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Aesculus glabra	Sap.	FACU+	9			
2	Plantanus occidentalis	T	FACW-	10			
3	Acer negundo	Sap.	FAC+	11			
4	Parthenocissus quinquefolia	H	FACU	12			
5	Allium vineale	H	FACU-	13			
6	Ipomoea coccinea	H	FACU	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 33%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	N/A (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2		10YR 2/2			Silt loam
2-18+		10YR 5/4			Sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sand Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES	✓ NO	Is this Sampling Point Within a Wetland?	YES	✓ NO
Wetland Hydrology Present?	YES	✓ NO			
Hydric Soils Present?	YES	✓ NO			

Remarks:

This upland data point is located near ESW-4 located on the Eastern Sporn Site.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/Eastern Sporn Site			**Date** June 2010
Applicant / Owner AEP			**County** Mason
Investigator Fusco/Fielding			**State** West Virginia
Do Normal Circumstances exist on the site?	✓ **YES**	**NO**	**Community ID** ESW-3/Wetland
Is the site significantly disturbed (Atypical Situation)?	**YES**	✓ **NO**	**Transect ID** Eastern Sporn Site
Is the area a potential Problem Area? (If needed, explain on reverse)	✓ **YES***	**NO**	**Plot ID** SP-8

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Acer negundo	T	FAC+	9	Eupatorium purpureum	H	FAC
2	Robinia pseudoacacia	Sap.	FACU-	10	Scirpus validus	H	OBL
3	Sambucus sp.	Shr.	ID	11	Alisma sp.	H	ID
4	Impatiens capensis	H	FACW	12			
5	Leersia oryzoides	H	OBL	13			
6	Boehmeria cylindrica	H	FACU	14			
7	Typha latifolia	H	OBL	15			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 60%

Remarks:
*Data point is located along a tributary to the Ohio River. Locks in the Ohio River are open and closed at times, subjecting this data point to periodic flooding.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	1 (in)
Depth to Saturated Soil	Surface (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☒ Water Marks
- ☒ Drift Lines
- ☒ Sediment Deposits
- ☒ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☒ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		5YR 2.5/1			Silt
6-18+		10YR 2/1			Sandy loam

HYDRIC SOIL INDICATORS:

- [ ] Histosol
- [ ] Histic Epipedon
- [X] Sulfidic Odor
- [X] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sand Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	✓ YES	NO	Is this Sampling Point Within a Wetland?	✓ YES	NO
Wetland Hydrology Present?	✓ YES	NO			
Hydric Soils Present?	✓ YES	NO			

Remarks:

This wetland data point is located within ESW-3 located on the Eastern Sporn Site.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site AEP/Eastern Sporn Site			**Date** June 2010
Applicant / Owner AEP			**County** Mason
Investigator Fusco/Fielding			**State** West Virginia
Do Normal Circumstances exist on the site?	✓ **YES**	**NO**	**Community ID** ESW-3/Upland
Is the site significantly disturbed (Atypical Situation)?	**YES**	✓ **NO**	**Transect ID** Eastern Sporn Site
Is the area a potential Problem Area? (If needed, explain on reverse)	**YES**	✓ **NO**	**Plot ID** SP-9

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	Acer negundo	T	FAC+	9			
2	Fraxinus sp.	T	ID	10			
3	Toxicodendron radicans	H	FAC	11			
4	Solidago canadensis	H	FACU	12			
5	Lolium perenne	H	FACU-	13			
6				14			
7				15			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 20%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other

☒ No Recorded Data Available

FIELD OBSERVATIONS

Depth of Surface Water	N/A (in)
Depth of Free Water in Pit	N/A (in)
Depth to Saturated Soil	N/A (in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated
☐ Saturated in Upper 12 Inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches
☐ Water-Stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup)	Field Observations Confirm Mapped Type: YES NO

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		10YR 3/4			Sand

HYDRIC SOIL INDICATORS:

- [ ] Histosol
- [ ] Histic Epipedon
- [X] Sulfidic Odor
- [X] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sand Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

Refusal at 6 inches (rock)

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES	✓ NO	Is this Sampling Point Within a Wetland?	YES	✓ NO
Wetland Hydrology Present?	YES	✓ NO			
Hydric Soils Present?	YES	✓ NO			

Remarks:

This upland data point is located near ESW-3 located on the Eastern Sporn Site.

Mountaineer CCS II Project
Wetland Survey

Attachment D
Site Photographs

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Photo 1: Jordan West Corridor at Blessing Road, looking north.

Photo 2: Jordan West Corridor at Blessing Road, looking south.

Photo 3: Jordan West Corridor at Thombleson Run Road, looking north.

Photo 4: Typical view of existing corridor on Eastern Sporn injection property, looking east.

Photo 5: Typical forested community near center of Eastern Sporn injection property.

Photo 6: Typical view of Brinker Run, perennial stream on Eastern Sporn injection property.

Photo 7: Palustrine Emergent (PEM) wetland area (LPO-W2) on AEP property along North Corridor.

Photo 8: Perennial Stream tributary to West Creek (SC-7), located on the north side of Blessing Road within the South Corridor.

Photo 9: View of Little Broad Run (WS-27) at the eastern end of the Western Sporn corridor on AEP property.

Photo 10: View of Borrow Area #7, looking west.

Photo 11: View of Borrow Area #1, looking east.

Photo 12: View of a typical intermittent stream, located on the Jordan Tract injection property.

Photo 13: View of a typical ephemeral stream, located on the Jordan Tract injection property.

Photo 14: Typical forested vegetative community on Jordan Tract injection property.

Photo 15: Typical view of Thombleson Run, looking west near the northern property boundary.

Photo 16: Typical view of Thombleson Run, looking east.

Photo 17: Typical view of Borrow Area #8.

Photo 18: Typical view of Borrow Area #8 at former access road.

Photo 19: View of West Creek (EC-1), a perennial stream located within the East and Blessing Road Corridors.

Photo 20: View of EC-5, an intermittent stream located within the East Corridor.

Photo 21: View of West Creek (EC-9) at its second crossing of the East Corridor.

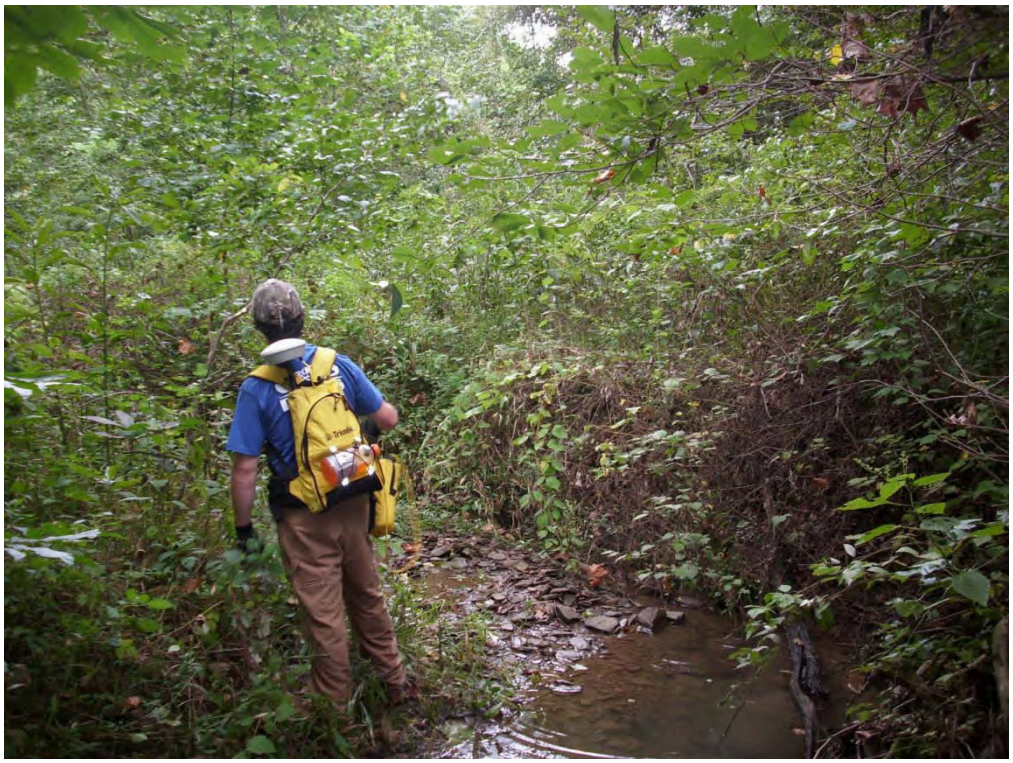

Photo 22: View of an unnamed tributary to Thombleson Run (JE-9), located in the Jordan East Corridor.

Photo 23: View of JE-10, an ephemeral stream with bedrock-lined streambed, located in the Jordan east Corridor.

Photo 24: View of JE-12, a typical intermittent stream located within the Jordan East Corridor.

Photo 25: of JE-13, a typical intermittent stream located within the Jordan East Corridor.

Photo 26: Typical view of Jordan East Corridor, looking south from in between JE-1 and JE-2.

Photo 27: Typical view of the South Corridor, looking south from in between SS-4 and SS-5.

Photo 28: View of an unnamed tributary to West Creek (SS-1) located within the South Corridor.

Photo 29: View of another unnamed tributary to West Creek (SS-3), located within the South Corridor.

Photo 30: Typical view of vegetation located within the floodplain area of the Western Sporn property.

Photo 31: Typical view of the forested area of the Western Sporn property.

Photo 32: Typical view of vegetation within a disturbed area of the Western Sporn property. This is the result of an existing utility corridor on that property.

Photo 33: View of WS-9, an intermittent stream located within the Western Sporn Corridor.

Photo 34: View of WS-8, an intermittent stream located within the Western Sporn Corridor.

Mountaineer CCS II Project
Wetland Survey

Attachment E
Qualifications of Preparers

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A. Brook Crossan, Ph.D., P.E.

Project Manager/Environmental Engineer

EDUCATION

Rutgers University, Ph.D., Geophysical Fluid Dynamics, 1974
(This included graduate coursework in biology, ecology, hydrology, geology, limnology, aquatic chemistry and environmental sciences.)
Rutgers University, M.S., Mechanical Engineering, 1971
University of Pennsylvania, B.S., Mechanical Engineering, 1969

PROFESSIONAL CERTIFICATIONS

Professional Engineer - New Jersey, Pennsylvania, New York, Georgia
Professional Planner - New Jersey

EMPLOYMENT HISTORY

1988 - present	Potomac-Hudson Engineering, Inc.
1984 - 1988	The Hudson Partnership, Inc.
1975 - 1984	Louis Berger and Associates, Inc.
1973 - 1975	EcolSciences, Inc.

PROFESSIONAL EXPERIENCE

Dr. Crossan has more than 38 years experience in conducting environmental permitting, environmental impact statements, water resource projects and wetland delineations in over 30 states.

WETLAND DELINEATION AND PERMITTING

- Dr. Crossan has been performing wetland delineations, permitting, and mitigation plans for freshwater and tidal wetlands for over 35 years. He has performed delineations in New Jersey, New York, Pennsylvania, Delaware, Maryland, West Virginia, Tennessee, and Georgia for:

  - property owners;
  - developers;
  - municipalities;
  - counties;
  - state agencies; and,
  - federal agencies.

- He has delineated wetland lines, reviewed other consultants' lines, and performed joint field reviews with USACE, US Fish and Wildlife, NYSDEC, NJDEP, and numerous local and county agencies. He has testified as a wetlands expert before SEQRA administrative law judges in NYS, NJ State Superior Court and Condemnation Commissioners in New Jersey, as well as numerous zoning and planning boards in NY and NJ.
- He has prepared applications for and obtained Jurisdictional Determinations, Nationwide Permits and Individual Permits on numerous projects.

Christopher Rua

Environmental Scientist

EDUCATION

Rutgers University, B.S., Environmental Planning & Design, 2001
University of Maryland, M.A., Environmental Management (in progress)

PROFESSIONAL/SPECIALIZED/SKILL TRAINING/ADDITIONAL COURSEWORK

Environmental Audits and Site Assessments, Rutgers University, Cook College, February 2001, 2004
Hydric Soils, Rutgers University, June 2001
Coastal Project Review Workshop, Rutgers University, April 2004
AutoCAD Fundamental, NAPCO, 2004

PROFESSIONAL CERTIFICATIONS

NJDEP Underground Storage Tank Program, Subsurface Evaluator Certification, 2009
OSHA HAZWOPER 40-Hr Course, 29 CFR 1910.120(e), June 2001 – present
AHERA Building Inspector, NAETI, May 2004 – present
OSHA 10-hour Construction Safety & Health, NAETI, August 2004

EMPLOYMENT HISTORY

2001 - Present Potomac-Hudson Engineering, Inc.

PROFESSIONAL EXPERIENCE

Mr. Rua has 9 years of experience in fieldwork related to soil and groundwater investigations; wetland delineation; and Global Positioning System (GPS) data collection, among others. In the office, Mr. Rua has assisted with mapping and reports in support of Jurisdictional Determinations and Nationwide Permits.

Mr. has participated as a member and lead of wetland delineations on thousands of acres of sites in New Jersey, Pennsylvania, New York, Delaware, West Virginia, and Georgia. Select projects are described below.

WETLAND EXPERIENCE/PROJECT HISTORY

Department of Energy, Proposed Western Greenbrier Co-generation Plant. Contributed with desktop research, site inspections, and report text for an EIS for a proposed waste coal power plant in West Virginia. Assisted with field surveys to assess the vegetative communities and wildlife habitat present on the site of the proposed plant as well as at the off-site location from which the waste coal would be obtained. Evaluated information regarding threatened and endangered species known from the area. Also assisted with an extensive wetland delineation at the proposed site and coordinated with the project surveyor.

Foggia Landfill Remedial Investigation. Assisted with logging and sampling of over 60 test pits excavated at former landfill site to categorize extent and type of fill and trash material. Mr. Rua was responsible for field planning support, sampling, and data compilation, and assisted with report

preparation. Also compiled historical data required for wetland permit considerations. Site is to be used for residential development.

Dover Air Force Base (DAFB), DE. Assisted with wetlands delineation and verification and GIS database at DAFB in Dover, DE.

Precision Rolled Products, Inc., Florham Park, NJ. Assisted with wetlands remediation and restoration activities at contaminated site in Morris County, NJ. Conducted vegetation health/survival inventory, assisted with replanting activities, assessed hydric soil presence, and prepared wetland monitoring reports for the site. Additional monitoring reports will be prepared over the next four years.

Centers for Disease Control and Prevention (CDC). Conducted field visit and assisted with wetland delineation for the CDC in Chamblee, GA. Also responsible for locating the points using GPS and generating maps for use in the JD application and by the project engineer.

Little Silver Cleaners, Little Silver, NJ. Mr. Rua conducted a wetland delineation on a 2.5-acre site in Central New Jersey. Investigated soil and hydrology characteristics on site, as well as assisted identifying dominant tree and other plant species as part of wetland delineation in accordance with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989). Also prepared permit application for submittal to NJDEP.

Proposed residential subdivision, Fieldsboro, NJ. Mr. Rua conducted a wetland delineation at an approximately 10-acre site in Fieldboro, Burlington County. Mr. Rua independently conducted all fieldwork activities and application preparation and submittal for this project.

Deborah Shinkle

GIS Analyst/Environmental Scientist

EDUCATION

B.A. Environmental Studies, University of Pittsburgh, PA, 2002

PROFESSIONAL REGISTRATIONS

Society of American Military Engineers, 2009-present

PROFESSIONAL CERTIFICATIONS

Hazardous Waste and Used Oil Management and Auditing, EHS Associates, Inc. (2008)
ACOE Wetlands Delineation Certification, Richard Chinn Environmental, Inc. (2004)

EMPLOYMENT HISTORY

2006-Present Potomac-Hudson Engineering, Inc.
2004-2006 BAE Systems ADR
2004-2004 GAI Consultants, Inc.
2002-2004 BAE Systems ADR

PROFESSIONAL EXPERIENCE

Ms. Shinkle has 8 years experience in the Geographic Information Systems (GIS) and over 4 years experience in the environmental industry supporting NEPA documentation. She has supported NEPA Documentation Reports (EIS-Environmental Impact Statements, EA-Environmental Assessments, and reference documents such as wetland delineation reports) for DOE and GSA and provided GIS quality assurance support on contracts with the Marine Corps, National Geospatial-Intelligence Agency, and other DoD agencies. Her duties have included delineation of wetlands, Phase I report preparation, field work, data analysis, data management, figure production, and report generation. Ms. Shinkle She has also supported remediation work through the incorporation of data and spatial relationships, thus adding a spatial component to the analysis and interpretation of lab data. Ms. Shinkle is capable of providing geospatial and quantitative analysis of existing environmental conditions as well as modeling for proposed development plans.

Ms. Shinkle's GIS experience also includes feature database creation, photogrammetrical map creation utilizing imagery analysis for geodatabase production, maintaining network connectivity among features within the geodatabases, verification of data integrity and attribution of data based on the National Geospatial-Intelligence Agency standards. She has been on several quality assurance teams validating data consistency and has been a proactive force in developing methods to increase productivity and software testing. Additionally, she has provided research and development assistance for hybrid database conversion for the U.S. Navy, contributed GIS support for local government transportation plans, and Federal Energy and Regulatory Commission (FERC) Environmental Reports. Ms.Shinkle's FERC Environmental Report experience includes performing ecological field work along transmission corridors and GIS support such as providing maps for both field work and FERC Environmental Report for corridor approval involving energy companies.

She has performed complex wetland mapping and impact calculations using GIS for many large projects throughout the U.S. including:

Mesaba Energy Project Environmental Impact Statement, U.S. Department of Energy, Taconite and Hoyt Lakes, Minnesota. Ms. Shinkle served as the GIS Analyst on the Mesaba Energy Project EIS that PHE prepared as sole contractor for the U.S. Department of Energy (DOE). The project involved a coal-based Integrated Gasification Combined Cycle (IGCC) power plant to be constructed in the Iron Range of northeastern Minnesota with DOE support under the Clean Coal Power Initiative. The project would represent the first phase of a proposed two-phase generating station, each phase of which would nominally generate 600 megawatts of electricity. The project sponsor considered two alternative sites (1,700 and 1,300 acres) located 70 miles apart, both with hundreds of acres of wetlands. Principal issues on the EIS included potential impacts on air quality, wetlands, public health and water resources.

Yucca Mountain Rail Line Environmental Impact Statement, U.S. Department of Energy, Nevada. Ms. Shinkle served as the GIS Analyst for the Land Use and Ownership resource section for the for the Department of Energy's (DOE's) Office of Civilian Radioactive Waste Management (OCRWM) on the preparation of an EIS and supporting studies for a high-profile and controversial Federal waste transportation proposal. DOE's proposed action includes the construction and operation of a railroad in the State of Nevada, used to transport high level radioactive waste and spent nuclear fuel (from generator sites nationwide) between existing rail connection points and a proposed geologic repository at Yucca Mountain, Nevada. Her mapping also supported the analysis of the impacts of filling numerous draws and intermittent streams under the jurisdiction of the USACE>

FutureGen Project Environmental Impact Statement, U. S. Department of Energy, Texas and Illinois. Ms. Shinkle served as a GIS Analyst for the Department of Energy's (DOE's) FutureGen Project EIS; a $1 billion, 10-year demonstration project for the world's first coal-based, near-zero-emissions electricity and hydrogen power plant. The EIS presents the analysis and evaluation of the potential environmental impacts resulting from constructing and operating the power plant to achieve near-zero-emissions by sequestrating CO_2 underground in deep geological reservoirs. Two sites in Illinois and two sites in Texas are being evaluated in the EIS. This very aggressive one-year EIS is in response to the FutureGen Initiative announced by President Bush in February 2003.
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