

Large Filing Separator Sheet

Case Number: 17-638-EL-BTX

File Date: 10/9/2018

Section: 1

Number of Pages: 217

Description of Document: Exhibits for Transcript held on September 13, 2018 before Stacie Cathcart Administrative Law Judge, at the Office of the Ohio Power Siting Board, 180 E. Broad Street, Columbus, Ohio 43215

AEP Ohio Transco Exhibits No. 1-10

Staff Exhibits No. 1 and 2

Joint Exhibit No. 1

FILE

PUCO EXHIBIT FILING

Date of Hearing: 9/13/18

Case No. 17-638-FL-RTX

PUCO Case Caption: APP 05:10 Transmission

List of exhibits being filed:

REPLY - 1 through 10

STAFF EX - Land 2

Joint EX-1

Reporter's Signature: Michael O. Spence
Date Submitted: 10/2/18

PUCO

RECEIVED-SOCKETING DIV
2018 OCT -9 PM 2:14

8/16/01 Perseus Date Processed
SEARCHED TO EXHIBIT REPORT AND IN DEVELOPING THE
FILED ON 8/16/01 BY THE REPORTER AND THE REPORTER
AND THE REPORTER'S COURT AND THE REPORTER'S COURT
AND THE REPORTER'S COURT AND THE REPORTER'S COURT

BEFORE THE OHIO POWER SITING BOARD

- - -

In the Matter of the	:
Application of AEP Ohio	:
Transmission Company, Inc.	: Case No.
for a Certificate of	: 17-638-EL-BTX
Environmental Compatibility	:
and Public Need for the Ginger	:
Switch-Vigo 138 kV	:
Transmission Line Project.	:

- - -

PROCEEDINGS

Before Stacie Cathcart, Administrative Law
Judge, held at the offices of the Ohio Power
Siting Board, 180 East Broad Street, Hearing
Room 11-C, Columbus, Ohio, on Thursday,
September 13, 2018, at 10:00 A.M.

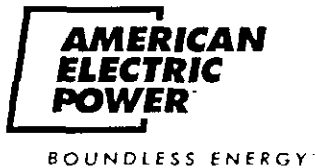
- - -

Armstrong & Okey, Inc.
222 East Town Street, 2nd Floor
Columbus, Ohio 43215
(614) 224-9481 - (800) 223-9481

- - -

**Adjudicatory Hearing
Exhibit List
17-0638-EL-BTX
Ginger Switch-Vigo 138 kV Transmission Line Project**

AEP Ohio Transco Exhibit No. 1:	Pre-Application Notification Letter filed on August 30, 2017
AEP Ohio Transco Exhibit No. 2:	Proofs of Publication filed September 13, 2017 and October 3, 2017
AEP Ohio Transco Exhibit No. 3:	Pre-Application Notification Letter filed on January 4, 2018
AEP Ohio Transco Exhibit No. 4:	Proofs of Publication filed January 11, 2018 and January 18, 2018
AEP Ohio Transco Exhibit No. 5:	Application filed March 15, 2018, and certified as completed by the Board on May 14, 2018
AEP Ohio Transco Exhibit No. 6:	Proof of Notification filed on June 5, 2018
AEP Ohio Transco Exhibit No. 7:	Proof of Notification filed on July 2, 2018
AEP Ohio Transco Exhibit No. 8:	Proof of Notification filed on August 9, 2018
AEP Ohio Transco Exhibit No. 9:	Proof of Publication and Notification filed on August 16, 2018
AEP Ohio Transco Exhibit No. 10:	Direct Testimony of Alicia M. Cross
Staff Exhibit No. 1:	Staff Report of Investigation filed on August 15, 2018.
Staff Exhibit No. 2:	Prefiled Testimony of Jonathan Pawley.
Joint Exhibit No. 1:	This Stipulation.



American Electric Power
1 Riverside Plaza
Columbus, OH 43260-1310
614.466.6000

August 30, 2017

Docketing Division Chief
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215-3793

Hector Garcia
Senior Counsel –
Regulatory Services
(614) 716-3410 (P)
(614) 716-2014 (F)
hgarcia1@aep.com

**RE: Pre-Application Notification Letter
In the matter of the application of AEP Ohio Transmission Company
for a Certificate of Environmental Compatibility and Public Need for
the Ginger Switch - Vigo 138kV Transmission Line Project
in PUCO Case No. 17-0638-EL-BTX**

Dear Ms. McNeal:

AEP Ohio Transmission Company, Inc. ("AEP Ohio Transco") files this pre-application notification letter in accordance with Rule 4906-3-03 Ohio Administrative Code (O.A.C.). According to this provision, a prospective applicant must hold a public informational meeting and provide this notice to the Ohio Power Siting Board (OPSB). Specifically, 4906-3-03 O.A.C. requires:

- (1) A basic description of the project that shall include information about the anticipated function, equipment size, approximate aerial extent, general location, and purpose of the project.**

The Ginger Switch - Vigo 138-kilovolt (kV) Transmission Line Project (the "Project") is part of the overall Ross-Jackson Area Improvements Project where AEP Ohio Transco plans to improve the reliability of the electric transmission grid in Ross and Jackson County by updating aging infrastructure to improve its condition and address performance issues.

A portion of the existing Berlin-Ross 69 kV line will be rebuilt to a 138 kV transmission line that connects Ginger Switch to Vigo Substation in Ross County.

The project will be approximately 7 miles long. The line will run through Springfield, Liberty, and Jefferson Township in Ross County. AEP Ohio Transco anticipates building the new transmission line using several structure types, including steel H-frame and monopoles.

AEP Ohio Transco estimates that the Project will cost approximately \$10 million.

AEP Ohio Transco expects to file the application for a Certificate of Environmental Compatibility and Public Need for the Ginger Switch – Vigo 138 kV Transmission Line Project with the state of Ohio Power Siting Board in late 2017.

The new transmission line will have the following major equipment:

- Steel monopoles or H-frame structures
- Conductor
- Shield Wire
- Associated Hardware

(2) The date, time, and location of the public informational meeting to be held pursuant to paragraph (B) of this rule.

AEP Ohio Transco plans to hold the Public Information Meeting on Monday, September 18 from 5:30-7:30 p.m. at God's Community Outreach, 27307 Old US RT 35, Chillicothe, OH 45601. If there is any change to the meeting date, time or place, the OPSB Staff will be notified.

(3) A list of any anticipated waivers of the board's rules that the applicant will be requesting for the project.

At this time, AEP Ohio Transco does not anticipate filing any waivers.

Cordially,

/s/ Hector Garcia

Hector Garcia

Counsel for AEP Ohio Transmission Company, Inc.

cc: John Jones, Counsel OPSB Staff
Jon Pawley, OPSB Staff



American Electric Power
1 Riverside Plaza
Columbus, OH 43215-2773
AEP.com

September 13, 2017

Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Hector Garcia
Senior Counsel –
Regulatory Services
(614) 716-3410 (P)
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hgarcia1@aep.com

**Re: Proof of Publication
PUCO Case No. 17-0638-EL-BTX
Ginger Switch - Vigo 138kV Transmission Line Project
aka The Liberty 138kV Transmission Line Rebuild Project**

Dear Chairman Haque,

Attached please find the proof of publication of public notice concerning the proposed major utility facility in the above-referenced case, which was published August 28, 2017. The notice was published in substantial compliance with and pursuant to Rule 4906-3-03, Ohio Administrative Code.

Please note the attached newspaper publication contains an inadvertent typographical error (i.e., the digits 368 instead of 638 listed in the case number). Although the published public notice provided accurately the time and location of the informational meeting concerning the project, the map of the area where the project will be located, and other pertinent data, the Applicant will make an additional publication with the corrected assigned case number.

Thank you for your attention to this matter. Please contact me with any questions.

Respectfully submitted,

/s/ Hector Garcia

Hector Garcia
Counsel for AEP Ohio Transmission Company

cc: Jon Pawley



An affiliate of the Ohio Newspaper Association

1335 Dublin Rd. Suite 216-B
Columbus, OH 43215

Proof of Publication

I, Walter Dozier, do hereby attest that the AEP Legal Notices did appear in the following newspaper(s) as ordered:

Chillicothe Gazette 8/28/2017

Walter Dozier 8/29/17
Walter Dozier Date

State of Ohio
County of Franklin

On this day, the 29th day of August, 2017 before me, Patricia A. Conkle, the undersigned Notary Public, personally appeared Walter Dozier, proved to me on the basis of satisfactory evidence to be the person whose name was subscribed to the within instrument and acknowledged that he executed it.

Witness my hand and official seal.

Patricia A. Conkle
Notary Public



Patricia A. Conkle
Notary Public, State of Ohio
My Commission Expires 06-17-19

Can computers enhance the work of teachers?

The debate is on about value, limits of personalized learning

MARIA DANILOVA
A. JOURNALIST

WASHINGTON — In middle school, Junior Alexander often struggled with multiplication and earned poor grades in math, so when he started his freshman year at Washington Leadership Academy, a charter high school in the nation's capital, he fretted he would lag behind.

But his teachers used technology to identify his weak spots, customize a learning plan just for him and coach him through it. This past week, as Alexander started with more geometry, he was more confident in his skills.

"For me, personalized learning is having classes set at your level," Alexander, 15, said in between lessons. "They explain the problem step by step. It wouldn't be as fast. It will be at your pace."

As schools struggle to raise high school graduation rates and close the persistent achievement gap for minority and low-income students, many educators tout digital technology as the classroom's way forward. But experts caution that this approach still needs more scrutiny and warns schools and parents not to become overly reliant on computers.

The use of technology in schools is part of a broader concept of personalized learning that has been gaining popularity in recent years. It's based on the idea to help, connect, and meet the needs of each individual child as opposed to one-size-fits-all. Other features include flexible learning environments, customized education paths, and letting students have a say in what and how they want to learn.

Under the Obama administration, the Education Department poured \$500 million of personalized learning programs in 10 school districts serving close to a half-million students in 13 states plus the District of Columbia. Large universities such as the Johns Hopkins and MIT, and the Foundation have also invested heavily in digital tools and other student-centered practices.

The International Association for K-12 Online Learning estimates that up



Maxwell Heston, 14, looks to his tablet during English class Wednesday at the Washington Leadership Academy in the nation's capital. The school offers "personalized learning," using software, data and constant monitoring of student progress to adapt teaching to each child.

to 10 percent of all American public schools have adopted some form of personalized learning. Rhode Island plans to spend \$2 million to become the first state to make instruction in every one of its schools individualized. Florida's Secretary of Education DeVos also endorses personalized learning as part of her broader push for school choice.

Supporters say the traditional education model, in which teachers lecture at the blackboard and then tests all students at the same time, is obsolete and doesn't reflect the modern world.

"The economy needs kids who are creative problem solvers who synthesize information, formulate and express a point of view," said Rhode Island Education Commissioner Kim Wanner. "That's the model we are trying to move toward."

At Washington Leadership Academy, educators rely on software and data to track student progress and adapt teaching to enable students to master topics at

their own speed.

This past week, eighth-graders used special computer programs to take diagnostic tests in math and reading, and teachers then used that data to develop individual learning plans. In English class, for example, students reading below grade level would be assigned the same books or articles as their peers, but completed vocabulary in the text would be annotated on their screen.

"The digital tool tells us, 'We have a problem to fix with these kids with this, and we can do it right then and there, we don't have to wait for the problem to come to us,'" said Joseph Webb, founding principal of the school, which opened last year.

Webb, dressed in a gray T-shirt reading "super school builder," greeted students Wednesday with high-fives, hugs and humor. "Real boxes are not part of our curriculum," he shouted to one student, who responded by pulling up a pants.

The school serves some 260 students,

mainly African American students from high-poverty and high-risk neighborhoods. It used to be a national assessment last year, the school ranked in the 90th percentile for improvement in math and in the 90th percentile in reading compared with schools whose students scored similarly at the beginning of the year.

It was one of 16 schools to win a \$10 million grant in a national competition aimed at reviving inner-city schools that is funded by Lauren Powell Jobs, widow of Apple founder Steve Jobs.

Sarah M. Natt, a lively 18-year-old who hopes to become "the African-American and female Bill Gates," remembers feeling so bored and time slowed in fourth grade that she stopped doing homework, and her grades slipped.

At the academy, "I don't get bored cause I guess I am pushed so much," said M. Natt, a sophomore. "It makes you feel like you need to do more, you need to know more."

In math class, McNatt quickly worked through quadratic equations on her laptop. When she finished, the system prompted additional, more challenging problems.

Her math teacher Brinley Wray said that in her previous school she was torn between advanced learners and those who lagged significantly. She said often she wouldn't know if a student was following a specific unit until she started a new one.

In comparison, the academy's technology now gives Wray instant feedback on which students need help and where.

"We like less of the problem and fix the problem if necessary," she said. "It's still, in my opinion, very early to tell if personalized learning works better than traditional teaching."

A recent study by the Rand Corp. found that personalized learning produced modest improvements: a 3 percent increase in math and a smaller, statistically insignificant increase for reading compared with schools that used more traditional approaches. Some students also complained that collaboration with classmates suffered because everyone was working on different tasks.

"I would not advise it for everybody to drop what they are doing and adopt personalized learning," said John Pans, a member of the report. "A more cautious approach is more realistic."

NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

AEP Ohio Schedules Open House to Discuss Electric Transmission Line

AEP Ohio is planning an open house to discuss the proposed electric transmission line project. The project is located in the area of the proposed line. The open house will be held on September 13 at 6:00 PM. The location is at 23227 US RT 23, Chillicothe, OH 43001. The open house will be held from 6:00 PM to 8:00 PM. The open house will be held from 6:00 PM to 8:00 PM. The open house will be held from 6:00 PM to 8:00 PM.

The open house will be held on September 13 at 6:00 PM. The location is at 23227 US RT 23, Chillicothe, OH 43001. The open house will be held from 6:00 PM to 8:00 PM. The open house will be held from 6:00 PM to 8:00 PM. The open house will be held from 6:00 PM to 8:00 PM.

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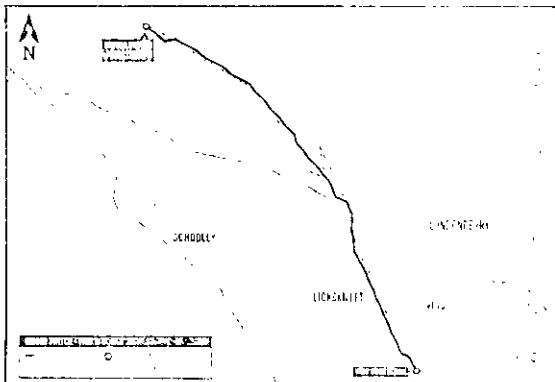
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AEP Ohio

23227 US RT 23

Chillicothe, OH 43001

September 13, 2012



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American Electric Power
1 Riverside Plaza
Columbus, Ohio 43260-1128
614.466.7000

October 3, 2017

Hector Garcia
Christen M. Blend
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cmblend@aep.com

Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Re: Proof of Publication
PUCO Case No. 17-0638-EL-BTX
Ginger Switch – Vigo 138 kV Transmission Line Rebuild

Dear Chairman Haque,

Attached please find the proof of publication of public notice concerning the proposed major utility facility in the above-referenced case, which was published September 16, 2017. The notice was published pursuant to Rule 4906-3-03, Ohio Administrative Code.

Thank you for your attention to this matter. Please contact me with any questions.

Respectfully submitted,

/s/ Christen M. Blend

Hector Garcia (0084517)
Christen Blend (0086881)
Counsel for AEP Ohio Transmission Company

cc: Jon Pawley



Proof of Publication

I, Walter Dozier, do hereby attest that the AEP Legal Notices did appear in the following newspaper(s) as ordered:

Chillicothe Gazette 9/16/17

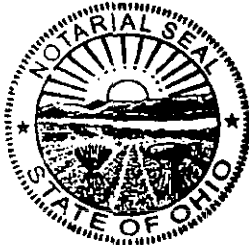
Walter Dozier 9/22/17
Walter Dozier Date

State of Ohio
County of Franklin

On this day, the 22nd day of September, 2017 before me, Patricia A. Conkle, the undersigned Notary Public, personally appeared Walter Dozier, proved to me on the basis of satisfactory evidence to be the person whose name was subscribed to the within instrument and acknowledged that he executed it.

Witness my hand and official seal.

Patricia A. Conkle
Notary Public



Patricia A. Conkle
Notary Public, State of Ohio
My Commission Expires 08-17-19

NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

AEP Ohio Schedules Open House to Discuss Electric Transmission Line

AEP Ohio, a unit of American Electric Power (AEP), and the AEP Ohio Transmission Company (AEP Ohio TCo) invite residents of Ross County to attend a public informational open house regarding plans to upgrade an electric transmission line in Liberty Township in Ross County.

To learn more about this project, the public is invited to attend a project open house, **Saturday, 10 AM God's Community Outreach, 27301 and US Rt 33, Chillicothe, OH 45601**. Doors open at 9:30 a.m. The open house will run until 7:30 a.m. The informational open house provides the public the opportunity to meet and talk with project representatives. There is no formal presentation. Visitors may come and go at any time during the workshop. Residents can ask questions of project team members and learn more about the new 138 kV line.

The Liberty 138 kV Transmission Line Rebuild Project involves upgrading about 7 miles of transmission line. This project is located in Liberty Township in Ross County. This project updates an aging transmission line which will improve the reliability of the electric transmission service in the region. The upgraded line will use several structure types, including steel monopoles and R-frame structures. AEP Ohio anticipates completion of this project spring 2022. Early estimates show this is an approximate \$11 million investment.

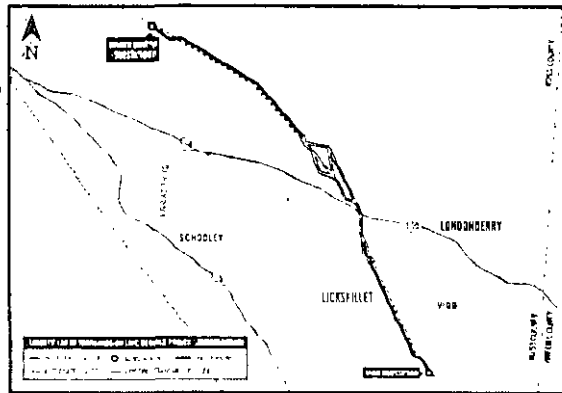
AEP Ohio Transmission Company expects to file its application for a Certificate of Environmental Compatibility and Public Need for the Liberty 138 kV transmission line with the state of Ohio Power Siting Board in late 2017. This application has been assigned Case Number 17-0638-EL-87X. This number should be included in all communications with respect to this project.

The Ohio Power Siting Board is responsible for reviewing information related to the project—including input from the public—and determining whether the proposed project should be approved. AEP Ohio is required to produce two transmission line routes to the siting board. The siting board will make the final decision on which route is selected. The accompanying conceptual map depicts the proposed routes the company is key up submit to the siting board as the preferred route and alternate route. It should be noted that due to reduced scale and limited detail, this map should be used only as a general guide.

If the application is approved, construction of the transmission line could begin as early as the spring of 2020 and be completed by spring of 2021.

Approval information about this project can be found online at AEPOhio.com/liberty. The public also can ask questions or make comments about the project by calling 614-552-1929 or 800-721-5926 or sending an email inquiry to enquiries@aepp.com. Mail inquiries may be sent to the following address:

AEP Ohio
Attention: Erin Miller
700 Morrison Road
Chillicothe, OH 45601



APPRECIATION DAY & BENEFIT

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Appreciation Day &
Salt Creek School Benefit**

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*Limited time offer. Valid until September 17, 2017, at participating dealers only. Not available in AEP Ohio: Adams County, NY; Fulton County, NY; Hamilton County, NY; and Sullivan County, NY. Also may not be available in other areas. Dealer will provide customer with certificate for free gift card upon completion of in-home consultation. No certificate will be provided for in-home consultations that are scheduled but not completed. Certificate to be redeemed directly from dealer. Cannot be combined with any other promotional offer.



American Electric Power
1 Riverside Plaza
Columbus, OH 43260-2115
614.466.1000

January 4, 2018

Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215-3793

Hector Garcia
Christen M. Blend
Senior Counsel –
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(614) 716-1915 (P)
hgarcia1@aep.com
cmblend@aep.com

RE: Pre-Application Notification Letter
In the matter of the application of AEP Ohio Transmission Company,
Inc. for a Certificate of Environmental Compatibility and Public Need
for the Ginger Switch-Vigo 138 kV Transmission Line Project.
Case No. 17-0638-EL-BTX

Dear Chairman Haque:

AEP Ohio Transmission Company, Inc. (“AEP Ohio Transco”) files this pre-application notification letter in accordance with Rule 4906-3-03 of the Ohio Administrative Code (O.A.C.). According to this provision, a prospective applicant must hold a public informational meeting within 90 days before filing an application for a certificate of environmental compatibility and public need and provide this notice to the Ohio Power Siting Board (OPSB) at least 15 days before the public informational meeting. Specifically, O.A.C. 4906-3-03 requires:

- (1) A basic description of the project that shall include information about the anticipated function, equipment size, approximate aerial extent, general location, and purpose of the project.**

The Ginger Switch-Vigo 138 kV Transmission Line Project (the “Project”) is part of the overall Ross-Jackson Area Improvements Project, where AEP Ohio Transco plans to improve the reliability of the electric transmission grid in Ross and Jackson County by updating aging infrastructure to improve its condition and address performance issues.

A portion of the existing Berlin-Ross 69 kV line will be rebuilt to a 138 kV transmission line that connects Ginger Switch to Vigo Substation in Ross County.

The Project will be approximately 7 miles long. The line will run through Springfield, Liberty, and Jefferson Townships in Ross County. AEP Ohio Transco

anticipates building the new transmission line using several structure types, including steel H-frame and monopoles.

AEP Ohio Transco estimates that the Project will cost approximately \$17 million.

AEP Ohio Transco expects to file the application for a Certificate of Environmental Compatibility and Public Need for the Ginger Switch-Vigo 138 kV Transmission Line Project with the OPSB in early 2018.

The new transmission line will have the following major equipment:

- Steel monopoles or H-frame structures
- Conductor
- Shield wire
- Associated hardware

(2) The date, time, and location of the public informational meeting to be held pursuant to paragraph (B) of this rule.

AEP Ohio Transco plans to hold a second Public Information Meeting on January 25, 2018, from 5:30-7:30 p.m. at Northview Elementary School, 11507 Chillicothe Pike, Jackson, Ohio 45640. If there is any change to the meeting date, time or place, the OPSB Staff will be notified.

(3) A list of any anticipated waivers of the board's rules that the applicant will be requesting for the project.

At this time, AEP Ohio Transco does not anticipate filing any waivers.

Respectfully submitted,

/s/ Christen M. Blend

Christen M. Blend (0086881), Counsel of Record
Hector Garcia (0084517)

Counsel for AEP Ohio Transmission Company, Inc.

cc: John Jones, Counsel for OPSB Staff
Jon Pawley, OPSB Staff



American Electric Power
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614.466.1000

January 11, 2018

Hector Garcia
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Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Re: Proof of Publication
Case No. 17-0638-EL-BTX
Ginger Switch - Vigo 138kV Transmission Line Project
aka The Liberty 138kV Tline Rebuild Project

Dear Chairman Haque,

Attached please find the proof of publication of a public notice concerning the proposed major utility facility in the above-referenced case, which was published January 4, 2018, pursuant to Rule 4906-3-03(B)(1) of the Ohio Administrative Code.

Thank you for your attention to this matter. Please contact me with any questions.

Respectfully submitted,

/s/ Christen M. Blend
Christen M. Blend (0086881), Counsel of Record
Hector Garcia (0084517)
Counsel for AEP Ohio Transmission Company, Inc.

cc: Jon Pawley, OPSB Staff



Proof of Publication

I, Walter Dozier, do hereby attest that the AEP Legal Notices did appear in the following newspaper(s) as ordered:

Chillicothe Gazette

1/4/18

Walter Dozier
Walter Dozier

1/9/18
Date

State of Ohio
County of Franklin

On this day, the 9th day of January, 2018 before me, Patricia A. Conkle, the undersigned Notary Public, personally appeared Walter Dozier, proved to me on the basis of satisfactory evidence to be the person whose name was subscribed to the within instrument and acknowledged that he executed it.

Witness my hand and official seal.

Patricia A. Conkle
Notary Public



Patricia A. Conkle
Notary Public, State of Ohio
My Commission Expires 06-17-19

ON THE AIR

The Associated Press		5 p.m.	6 p.m.	7 p.m.	8 p.m.
Thursday Jan. 4		5 p.m.	6 p.m.	7 p.m.	8 p.m.
COLLEGE BASKETBALL		5 p.m.	6 p.m.	7 p.m.	8 p.m.
Alabama vs. Kentucky	5 p.m.	Alabama vs. Kentucky	6 p.m.	Alabama vs. Kentucky	7 p.m.
Florida vs. Duke	6 p.m.	Florida vs. Duke	7 p.m.	Florida vs. Duke	8 p.m.
Georgia vs. North Carolina	7 p.m.	Georgia vs. North Carolina	8 p.m.	Georgia vs. North Carolina	
Illinois vs. Michigan	8 p.m.	Illinois vs. Michigan		Illinois vs. Michigan	
LSU vs. Texas A&M		LSU vs. Texas A&M		LSU vs. Texas A&M	
Marquette vs. Saint Louis		Marquette vs. Saint Louis		Marquette vs. Saint Louis	
Ohio State vs. Wisconsin		Ohio State vs. Wisconsin		Ohio State vs. Wisconsin	
Penn State vs. Virginia Tech		Penn State vs. Virginia Tech		Penn State vs. Virginia Tech	
South Carolina vs. Texas		South Carolina vs. Texas		South Carolina vs. Texas	
UConn vs. Virginia		UConn vs. Virginia		UConn vs. Virginia	
West Virginia vs. Xavier		West Virginia vs. Xavier		West Virginia vs. Xavier	
Wichita State vs. Iowa State		Wichita State vs. Iowa State		Wichita State vs. Iowa State	
Yale vs. Stanford		Yale vs. Stanford		Yale vs. Stanford	
FOOTBALL		5 p.m.	6 p.m.	7 p.m.	8 p.m.
Alabama vs. Kentucky	5 p.m.	Alabama vs. Kentucky	6 p.m.	Alabama vs. Kentucky	7 p.m.
Florida vs. Duke	6 p.m.	Florida vs. Duke	7 p.m.	Florida vs. Duke	8 p.m.
Georgia vs. North Carolina	7 p.m.	Georgia vs. North Carolina	8 p.m.	Georgia vs. North Carolina	
Illinois vs. Michigan	8 p.m.	Illinois vs. Michigan		Illinois vs. Michigan	
LSU vs. Texas A&M		LSU vs. Texas A&M		LSU vs. Texas A&M	
Marquette vs. Saint Louis		Marquette vs. Saint Louis		Marquette vs. Saint Louis	
Ohio State vs. Wisconsin		Ohio State vs. Wisconsin		Ohio State vs. Wisconsin	
Penn State vs. Virginia Tech		Penn State vs. Virginia Tech		Penn State vs. Virginia Tech	
South Carolina vs. Texas		South Carolina vs. Texas		South Carolina vs. Texas	
UConn vs. Virginia		UConn vs. Virginia		UConn vs. Virginia	
West Virginia vs. Xavier		West Virginia vs. Xavier		West Virginia vs. Xavier	
Wichita State vs. Iowa State		Wichita State vs. Iowa State		Wichita State vs. Iowa State	
Yale vs. Stanford		Yale vs. Stanford		Yale vs. Stanford	

IN BRIEF

Injured Alabama LB Jennings to miss title game

TUSKALOOSA, Ala. — Alabama starting linebacker Anfernee Jennings said he will miss the national championship game against Georgia with a left knee injury sustained in the semifinals.

Jennings said on Twitter Wednesday he had successful surgery and will have an MRI on Friday.

Jennings had perhaps his best game of the season against Clemson in the Sugar Bowl. He had five tackles, including three for a loss and his first sack of the season. He had Clemson quarterback Kells Bryant's arm on a pass that was intercepted by defensive tackle Da'Ron

Payne to set up a pivotal third-quarter touchdown. Linebackers Shaun Dion Hamilton and Dylan Moses are also out for the game with injuries. Outside linebackers Christian Miller and Terrell Lewis have returned from injuries that sidelined them for much of the season.

Rosen, Darnold entering NFL draft

LOS ANGELES — UCLA quarterback Josh Rosen is skipping his senior season to enter the NFL draft.

Rosen made the expected announcement Wednesday with a post on Twitter. Also, Southern California quarterback Sam Darnold will skip his final two seasons of eligibility to enter the draft.

Thomas

Continued from Page 1B

his sister's death, patiently stuck with his rehab.

And with a 4.33 left in the first quarter, Thomas checked in to a loud ovation as fans cheered for a player they believe can help the Cavs win another title.

"It was a special moment," he said. "I haven't played in a game and you would think I was here for a few years and playing and battling in the Finals with this team. But it was special for my family to be here, my wife and kids to see that, that's genuine love right there."

This was the first chance for James and the rest of the Cavs to play with Thomas, who will sit out Wednesday's homecoming in Boston. He's not an enemy, but family.

"What I like most about him is he has

a chip on his shoulder for life," James said. "That's just who he is. When a guy's got a chip on his shoulder for life, he's never going to not work hard. Not going to never give it his all. Not going to never disappoint you."

The Cavs were unable to separate from the Blazers until Thomas and Dwyane Wade teamed up in the fourth.

Thomas knocked down a jumper and then fired a pass toward the baseline to a cutting Wade, who made a reverse layup. On Cleveland's next possession, Thomas spotted up in the corner and buried a 16-footer to give the Cavs a 90-91 lead.

"This is obviously our first time playing together, but you can see moments where he added a dynamic that we need, especially if we want to get to where we want to be," Wade said. "Happy that he's back on the court and glad he's on our side."

Southeastern

Continued from Page 1B

"McKinley is our biggest outside threat," Adams said. "When the son, it holds things up inside and allows us to crush the offensive boards when we miss a shot. It's huge."

Overall, the Panthers finished 7 of 15 from long range as Mitten, Skeens, Mandy, Morris and Hunter Adams all knocked down treys.

Roster Depth

Eight different players scored Tuesday night for Southeastern with six having five or more points. That kind of depth has been a strength for the Panthers all year long.

Tuesday night, it was Mandy Morris and Rachel Collins' turn to share the spotlight. The two seniors combined for 36 points alongside 12 rebounds and four assists.

"A lot of teams have been playing box and one defense against us," Adams said. "That gets all of our kids involved and they're going to get a lot of touches and take the basketball strong to the hole. We've been living at the free throw line."

Using the Charity Stripe

In Southeastern's past three games, the Panthers have ranked up 81 free throw attempts. Out of that number, they've hit 64 — a shooting percentage of 79.

Tuesday, they were 18 of 22 from the line, an even better percentage at 81.8.

"We had a little break (over the holidays) and I got out yearly statistics," Adams said. "We were shooting 55 percent as a team from the line. So I really got on them and at the end of practice,

Box Score

Huntington: 13-9, 10-15 — 47

Southeastern: 27-25, 16-11 — 79

Huntington: 16-50 FG, 12-21 FT, 3-15 3pt (Snyder 2), 27 rebounds (Enter 9) 17 turnovers, 7 assists (McDonald 4) Scoring: Collins 21, Enter 7, Snyder 6, Black 6, Conley 3, Haubel 2, Acord 2

Southeastern: 27-55 FG, 18-22 FT, 7-14 3pt (Mitten 4), 35 rebounds (E Skeens 12), 11 turnovers, 14 assists (E Skeens 4) Scoring: E Skeens 30, Mitten 19, Morris 9, Collins 7, Hice 6, Adams 5, L Skeens 2, Huff 1

they now have to hit 50 free throws before they can go home. So there's a secret to that. They've started concentrating at the line and they're getting it done."

Stat Book

After Skeens and Mitten's twinset nights, Collins finished with seven points and 11 rebounds while Morris had nine points and three assists. Hunter Adams scored five points and had a pair of assists, and Skylar Hirt tallied six points and seven boards.

For Huntington (7-2, 3-2 SV), Branden Collins led the way with 21 points and three rebounds while Brody Enter added seven points and a team-high nine rebounds. Lillie Snyder and Riley Black also contributed, both ending the night with six points.

What's on Tap

Southeastern will try and win its third consecutive SVC contest Thursday evening at Point Valley while Huntington looks to bounce back the same night, hosting Zane Trace.

Outdoors

Continued from Page 1B

der the Renewable Fuel Standard (RFS). Then, EPA set the 2018 RFS at 19.29 billion gallons, a 0.05 percent increase over the 2017 standard. In short, BoatUS said boat owners asked for less ethanol, and the EPA added more. Ethanol has been demonstrated to cause harm to many gasoline engines at the present 10 percent level, especially leg-

acy outboard motors.

Illegal digging of ginseng roots is no joke as two Knox County ginseng hunters discovered. They were caught by State Wildlife Officer Michael Biedt, recovered a \$300 fine and 180 days in jail with 150 suspended, and lost their ginseng to boot.

Dick Martin is a retired biology teacher who has been writing outdoor columns for 30 years. You can reach him at richmartin@ncrr.com.

NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

AEP Ohio Schedules Open House to Discuss Electric Transmission Line

AEP Ohio, a unit of American Electric Power (AEP), and the AEP Ohio Transmission Company Inc. invite residents of Ross County to attend a public informational open house regarding plans to upgrade an electric transmission line in Liberty Township in Ross County.

To learn more about this project, the public is invited to attend a project open house on Thursday, January 25 at Northview Elementary School located at 11507 Chillicothe Pike in Jackson. Doors open at 5:30 p.m. The open house will run until 7:30 p.m. The informational open house provides the public the opportunity to meet and talk with project representatives. There is no formal presentation. Visitors may come and go at any time during the workshop. Residents can ask questions of project team members and learn more about the new transmission line.

The Liberty 138 kV Transmission Line Rebuild Project involves upgrading about 7 miles of transmission line. This project is located in Liberty Township in Ross County. This project updates an aging transmission line which will improve the reliability of the electric transmission service in the region. The upgraded line will use several structure types including steel monopole and H-frame structures. AEP Ohio anticipates completion of this project spring 2021. Early estimates show this is an approximate \$17 million investment.

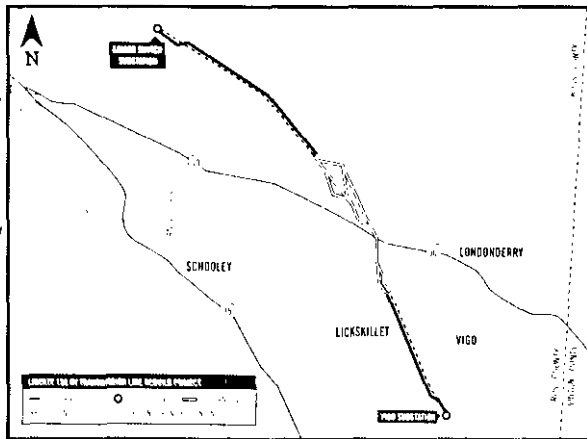
AEP Ohio Transmission Company expects to file its application for a Certificate of Environmental Compatibility and Public Need for the Liberty 138 kV transmission line with the state of Ohio Power Siting Board in early 2018. This application has been assigned Case Number 17-0638-EL-BTX. This number should be included in all communications with respect to this project.

The Ohio Power Siting Board is responsible for reviewing information related to the project, including input from the public, and determining whether the proposed project should be approved. AEP Ohio is required to propose two transmission line routes to the siting board. The siting board will make the final decision on which route is selected. The accompanying concept map depicts the proposed routes the company is likely to submit to the siting board as the preferred route and alternate route. It should be noted that due to reduced scale and limited detail, this map should be used only as a general guide.

If the application is approved, construction of the transmission line could begin as early as the spring of 2020 and be completed by spring of 2021.

Additional information about this project can be found online at AEPOhio.com/Liberty. The public also can ask questions or make comments about the project by calling 614-552-1929 or 877-215-9261 or sending an email inquiry to csmiller1@aep.com. Mail inquiries may be sent to the following address:

AEP Ohio
Attention: Erin Miller
700 Morrison Road
Gahanna, Ohio 43230





American Electric Power
1 Riverside Plaza
Columbus, OH 43260-1199
614.525.1000

January 18, 2018

Hector Garcia
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Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215

Re: Second Proof of Publication
Case No. 17-0638-EL-BTX
Ginger Switch - Vigo 138kV Transmission Line Project
aka The Liberty 138kV Tline Rebuild Project

Dear Chairman Haque,

Attached please find the proof of publication of a public notice concerning the proposed major utility facility in the above-referenced case, which was published January 11, 2018, pursuant to Rule 4906-3-03(B)(1) of the Ohio Administrative Code.

Thank you for your attention to this matter. Please contact me with any questions.

Respectfully submitted,

/s/ Christen M. Blend
Christen M. Blend (0086881), Counsel of Record
Hector Garcia (0084517)
Counsel for AEP Ohio Transmission Company, Inc.

cc: Jon Pawley, OPSB Staff



Proof of Publication

I, Walter Dozier, do hereby attest that the AEP Legal Notices did appear in the following newspaper(s) as ordered:

Chillicothe Gazette

1/11/18

Walter Dozier
Walter Dozier

1/18/18
Date

State of Ohio
County of Franklin

On this day, the 18th day of January, 2018 before me, Patricia A. Conkle, the undersigned Notary Public, personally appeared Walter Dozier, proved to me on the basis of satisfactory evidence to be the person whose name was subscribed to the within instrument and acknowledged that he executed it.

Witness my hand and official seal.

Patricia A. Conkle
Notary Public



Patricia A. Conkle
Notary Public, State of Ohio
My Commission Expires 08-17-19

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NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

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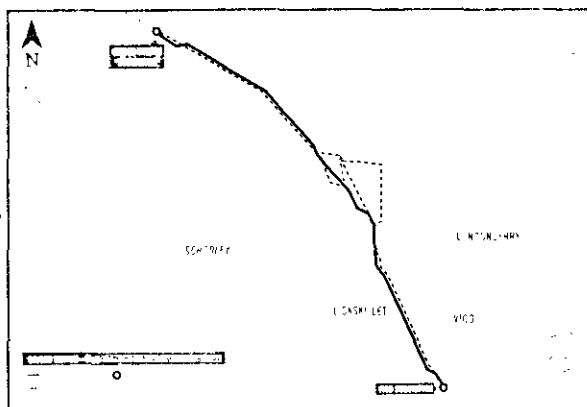
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Additional information about this project can be found online at AEPOhio.com/Liberty. The public also can ask questions or make comments about the project by calling 614-552-1929 or 877-215-9261 or sending an email inquiry to ecmiller1@aep.com. Mail inquiries may be sent to the following address:

AEP Ohio
Attention: Erin Miller
700 Morrison Road
Gahanna, Ohio 43230





March 15, 2018

Chairman Asim Z. Haque
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215-3979

Ohio Power Siting Board
Docketing Division
180 East Broad Street
Columbus, Ohio 43215-3979

Hector Garcia
Christen M. Blend
Senior Counsel -
Regulatory Services
(614) 716-3410 (P)
(614) 716-1915 (P)
hgarcia@aep.com
cblend@aep.com

Re: Case No. 17-0638-EL-BTX
In the Matter of the Application AEP Ohio Transmission Company, Inc. for a
Certificate of Environmental Compatibility and Public Need for the
Ginger Switch - Vigo 138 kV Transmission Line Project

Dear Chairman Haque:

Attached, please find a copy of the Application of AEP Ohio Transmission Company, Inc. for a Certificate of Environmental Compatibility and Public Need ("Application") for the above-referenced project. This filing is made pursuant to O.A.C. 4906-5-01, *et seq.*, and 4906-2-01, *et seq.*

Filing of this Application is effected electronically pursuant to O.A.C. 4906-2-02 (A) and (D). Five printed copies and ten additional electronic copies (CDs) of this filing will also be submitted to the Staff of the Ohio Power Siting Board for its use.

The following information is included pursuant to O.A.C. 4906-2-04(A)(3):

- (a) Applicant:
AEP Ohio Transmission Company, Inc.
c/o American Electric Power
Energy Transmission
700 Morrison Road
Gahanna, Ohio 43220
- (b) Facilities to be Certified:
Ginger Switch-Vigo 138 kV Transmission Line Project

- (c) Applicant's Authorized Representative with respect to this Application:
Eric L. Bennett
Project Manager
700 Morrison Road
Gahanna, Ohio 43220

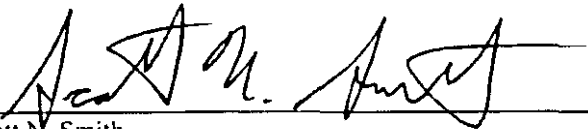
If you have any questions, please do not hesitate to contact me.

/s/ Christen M. Blend

Christen M. Blend (0086881), Counsel of Record
Hector Garcia (0084517)


Counsel for AEP Ohio Transmission Company, Inc.

Now comes Scott N. Smith and states that the information contained in the Application is complete and correct to the best of his knowledge, information, and belief.



Scott N. Smith
Senior Vice President – Transmission Field Services and Controls
American Electric Power Service Corporation, as agent for
AEP Ohio Transmission Company, Inc., an Ohio corporation

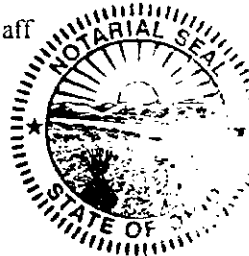
Sworn to and subscribed before me this 15 day of March, 2018.



Notary Public

My commission expires 11/02/2018.

cc: Executive Director and Counsel, c/o Jon Pawley, OPSB Staff





An **AEP** Company

BOUNDLESS ENERGY

**Application for Certificate of Environmental
Compatibility and Public Need
for the**

**GINGER SWITCH - VIGO 138 kV
TRANSMISSION LINE PROJECT**

OPSB CASE NO. 17-0638-EL-BTX

Submitted pursuant to O.A.C. 4906-5

AEP Ohio Transmission Company, Inc.

March 2018

BEFORE THE OHIO POWER SITING BOARD
Certificate Application for Electric Transmission Facilities

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Appendix 8-2.	Agency Consultation

4906-5-02 PROJECT SUMMARY AND APPLICANT INFORMATION**(A) PROJECT SUMMARY**

American Electric Power Ohio Transmission Company, Inc. ("AEP Ohio Transco" or "Company") is proposing the Ginger Switch-Vigo 138 kilovolt ("kV") Transmission Line Project (Project) located in Ross County, Ohio ("OH"). The Project is externally known as the Liberty 138 kV Transmission Line Rebuild Project. The Project is part of the overall Ross-Jackson Area Improvements Project which has been implemented to improve the reliability of the electric transmission grid in Ross and Jackson Counties, OH. The Project involves rebuilding approximately 7 miles of the existing Berlin-Ross 69 kV transmission line to 138 kV standards. Construction of the Project is anticipated to begin in the first quarter of 2019 and end in the second quarter of 2021. Upon completion of the new line, the existing 69 kV transmission line is planned to be removed.

(1) General Purpose of the Facility

The purpose of the Project is to replace aging equipment with modern structures and wires to improve electric service reliability. The existing Berlin-Ross 69 kV transmission line was constructed in 1926 and will be retired and replaced with a new 138 kV transmission line, although it will be initially energized at 69 kV. The Project serves several distribution customers, which may not immediately be able to incur the cost burden of upgrading their facilities to 138 kV standards. By constructing the line to 138 kV standards, AEP Ohio Transco will be able to energize the line at 138 kV in an expedited fashion when necessary and once the proper funding has been secured from the distribution customers. The benefits of this Project include faster recovery of service after outages, fewer service interruptions, and overall improved service to customers. Additional details can be found in this application's Review of Need and Schedule, in Section 4906-5-03.

(2) General Location, Size, and Operating Characteristics

The Project starts at the existing Ginger Switch located just west of C.R. 213A (Ginger Hill Road). Improvements to the Ginger Switch are required as part of this rebuild effort and will be filed in a separate Letter of Notification to the Ohio Power Siting Board (Case No. 18-0156-EL-BLN). The Project continues approximately 7 miles southeast to the existing Vigo Substation located off of Vigo Road, just south of Vigo, OH. The Project is located within Harrison, Jefferson, Liberty, and Springfield Townships in Ross County, OH. The study corridor for this rebuild siting evaluation does not cross any designated communities or otherwise incorporated municipalities. The Project will require a 100-foot-wide permanent right-of-way ("ROW"). Figure 2-1, Project Overview, shows the Project end points and the Preferred and Alternate Routes identified by AEP Ohio Transco.

(3) Suitability of Preferred and Alternate Routes

AEP Ohio Transco and its siting team identified a Preferred and an Alternate Route (Figure 2-1, and detailed in Appendix 4-1) after conducting a Rebuild Siting Study ("RSS"). The RSS documents the selection process of the routes and is discussed in detail in Section 4906-5-04 of this Application.

The goal of the RSS is to identify reasonable routes while avoiding or minimizing effects on sensitive land uses, and ecological and cultural resources in the Project vicinity. The Preferred and Alternate Routes are both constructible and were selected by AEP Ohio Transco for consideration by the Ohio Power Siting Board ("OPSB") in this application.

Per O.A.C. 4906-3-05, the Preferred Route and the Alternate Route are no more than 20 percent in common and therefore can be considered alternatives.

(i) Preferred Route

The Preferred Route begins at the existing Ginger Switch Station and proceeds southeast, paralleling the southern edge of the existing Berlin-Ross 69 kV transmission line ROW through agricultural land use for approximately 0.4-mile. It then crosses to the northern edge of the existing ROW. The Preferred Route parallels the northern edge of the existing ROW through agricultural and forested land uses and rural residential areas for approximately 2.7 miles. The Preferred Route then aligns with the existing 69 kV line near the community of Londonderry and continues approximately 0.7-mile through agricultural land use and rural residential areas. Within this 0.7-mile, the alignment incorporates a slight adjustment away from the existing 69 kV line to maximize distance between residences along Smith Lane. The Preferred Route then deviates from the existing centerline by heading southeast and south through agricultural land use for approximately 0.7-mile before rejoining the existing ROW south of U.S. Route 50. The Preferred Route continues on the existing transmission centerline for approximately 0.5-mile through agricultural land use before it deviates from the existing 69 kV line by heading south and southeast through agricultural land use for approximately 0.2-mile. This adjustment was made to avoid a structure encroachment within the existing ROW. The Preferred Route then proceeds southeast, paralleling the southern edge of the existing ROW through agricultural and forested land uses and rural residential areas for approximately 1.3 miles. The Preferred Route then realigns with the existing 69 kV line for approximately 0.7-mile before reaching its southern terminus at the existing Vigo Substation. In total, approximately 2.0 miles of the Preferred Route is also common to the Alternate Route. Of the 2.0 miles in common, approximately 1.9 miles utilize the existing centerline of the Berlin-Ross 69 kV transmission line. The total length of the Preferred Route is 7.2 miles.

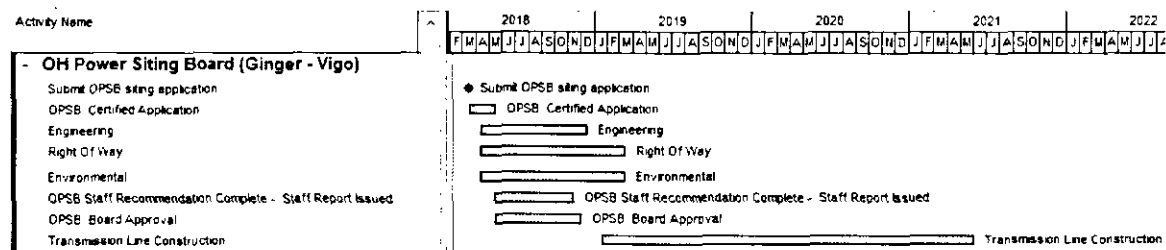
(ii) Alternate Route

The Alternate Route for the Project was designed to predominantly utilize the existing centerline and ROW of the Berlin-Ross 69 kV transmission line by rebuilding on centerline, where feasible. North and

south of the Londonderry community, the Alternate Route is located on the existing transmission centerline. However, within the Londonderry community, the Alternate Route deviates from the existing centerline in two locations. The first deviation occurs at existing structure No. 179 where the alignment follows the Preferred Route and incorporates a slight adjustment away from the existing 69 kV line to avoid a structure within the expanded 100 foot ROW. The second deviation occurs from existing structure No. 167 to 165, where the Alternate Route heads south and southeast through agricultural land use for approximately 0.2-mile before realigning with the existing 69 kV line. The total length of the Alternate Route is 7.1 miles.

(4) Schedule

The current Project schedule is illustrated in the diagram below.



(B) APPLICANT INFORMATION

(1) Company History

AEP Ohio Transco is a transmission-only company approved as a public utility in Ohio in 2010 in Case No. 10-245-EL-UNC.

(2) Current Operations and Affiliate Relationships

AEP Ohio Transco is an affiliate of American Electric Power ("AEP") and Ohio Power Company ("AEP Ohio"). AEP was originally incorporated in 1906 as the American Gas and Electric Company. The company's earliest utility properties provided electric, gas and other services in communities in New Jersey, New York, Pennsylvania, West Virginia, Ohio, Indiana, and Illinois. The company became AEP in 1958 and merged with Central and Southwest Corporation in 2000. AEP is one of the largest electric utilities in the United States, delivering electricity to nearly 5.4 million customers through 224,000 miles of distribution lines in 11 states. AEP owns the nation's largest electricity transmission system, which is a network comprised of more than 40,000 miles and includes more 765 kV extra-high voltage transmission lines than all other U.S. transmission systems combined. AEP also ranks among the nation's largest generators of electricity, owning approximately 26,000 megawatts of generating capacity in the U.S. AEP's regulated utility units operate as AEP Ohio, AEP Texas, Appalachian Power (in Virginia and West Virginia), Wheeling Power (West Virginia), AEP Appalachian Power (in

Tennessee), Indiana Michigan Power Company, Kentucky Power, Public Service Company of Oklahoma, and Southwestern Electric Power Company (in Arkansas, Louisiana, and east Texas). AEP's headquarters are in Columbus, OH. News releases and other information about AEP can be found at www.AEP.com. AEP Ohio, the regulated electric distribution utility affiliate of AEP and AEP Ohio Transco operating in the state of Ohio, provides electricity to nearly 1.5 million distribution customers in Ohio and is based in Gahanna, Ohio. News and information about AEP Ohio can be found at www.AEPOhio.com.

4906-5-03 REVIEW OF NEED AND SCHEDULE**(A) NEED FOR PROPOSED FACILITY**

The existing 69 kV transmission facilities are in need of a rebuild and redesign to better meet the needs of customers in the area. The existing infrastructure was initially established in 1926 and has deteriorated to the point that its poor performance is causing long recovery times and frequent customer interruptions. In addition to the existing line's poor performance, there is a need to construct to 138 kV standards to relieve the only 138 kV source at the Ross Substation from the south (via the Waverly Station), which is currently loaded to 90%. By adding an additional 138 kV source from the south, it will allow for future operational and construction flexibility and may avoid rebuilding the Waverly-Ross circuit in the future due to contingency overload.

AEP Ohio Transco has developed a multi-year construction plan for the Ross-Jackson Area Improvements Project that will replace the infrastructure in place today. The focus of the construction is to replace the existing 69 kV transmission facilities with new 138 kV transmission facilities. Although the Project is being built to 138 kV standards, the Project will initially be energized to 69 kV. The Ross-Jackson Area Improvement Project serves several customers, which may not immediately have the ability to upgrade their facilities. Therefore, by constructing the line to 138 kV standards, it enables AEP Ohio Transco to energize the line at 138 kV in the future when customers are ready. The benefits of this Project include faster recovery of service after outages, fewer service interruptions and overall improved service to customers.

(1) Purpose of the Proposed Facility

The purpose of the proposed Project is to improve reliability of service to customers through AEP Ohio Transco's Ginger Switch Station, while also connecting to AEP Ohio Transco's Vigo Substation. The Project will be part of an overall effort to increase customer service reliability and will rebuild two-way transmission service to AEP Ohio Transco's Ginger Switch Station, Vigo Substation, and Pine Ridge Substation (owned by Buckeye Rural Electric Cooperative), thus significantly improving reliability to area customers. These projects will enhance service for customers, decrease power interruptions, and speed recovery of service when outages occur.

(2) System Conditions, Local Requirements, and Other Pertinent Factors

The Berlin-Ross line was originally constructed in 1926 with wood pole structures. The structures have age-related conditions that have contributed to outages. There are also operability issues with several of the line's switches that could increase restoration time.

(3) Load Flow Studies and Contingency Analyses

The need for the rebuild and redesign of the existing facilities is purely performance driven and does not have any load flow or contingency analysis drivers forcing a rebuild. The construction of the facilities to 138 kV standards, however, does have load flow and contingency analysis-related drivers.

Currently, there are two 138 kV lines connecting to AEP Ohio Transco's Ross Substation; one from AEP Ohio Transco's Waverly Substation in southern OH, and one from the AEP Ohio Transco's Poston Substation in eastern OH. Under contingency conditions, the circuit from AEP Ohio Transco's Waverly Substation gets loaded to 92 percent of its emergency rating as it attempts to push power to the north to AEP Ohio Transco's Ross Substation. Constructing this Project to 138 kV standards will provide AEP Ohio Transco with future flexibility and provide a second 138 kV source connecting to AEP Ohio Transco's Ross Substation from southern OH. This will relieve the circuit from AEP Ohio Transco's Waverly Substation and likely avoid a rebuild of that circuit due to contingency overload.

(4) System Performance Transcription Diagrams

This section does not apply because the driver for the Project is to rebuild transmission facilities to better meet the needs of customers in the area. Thus, system performance transcription diagrams are not applicable.

(B) REGIONAL EXPANSION PLANS

(1) Proposed Facility in Long-Term Forecast

(a) Reference in Recent Long-Term Forecast

The Project is referenced in AEP Ohio Transco's 2017 Long-Term Forecast Report (Appendix 5-1).

(b) Explanation if Not Referenced

Not applicable, see Section 4906-5-03(B)(1)(a) directly above.

(c) Reference in Regional Expansion Plans

The Project has been submitted to PJM as a supplemental reliability improvement project and was reviewed on November 2, 2017 at the PJM Subregional RTEP Committee – Western meeting. The purpose of the Project is to enhance service for customers, decrease power interruptions, and speed recovery of service when outages occur. The PJM RTEP identifier for the Project is s1432.

(C) SYSTEM ECONOMY AND RELIABILITY

The Project is part of a program that is being developed to replace the 69 kV transmission facilities in place today and to enhance service for customers, decrease power interruptions, and speed recovery of service when outages occur. This Project is a component of the overall Program submitted to the

OPSB for review. The Program includes the Vigo-Pine Ridge Switch (Jackson Township) 138 kV Transmission Line project (case number 18-0030-EL-BTX), Pine Ridge Switch-Heppner (Coal Township) 138 kV Transmission Line Project (case number 18-0031-EL-BTX), Ross-Ginger Switch (Springfield) 138 kV Transmission Line Project (case number 17-0637-EL-BTX), Rhodes-Heppner Switch 138 kV Transmission Line Project (case number 17-0807-EL-BLN), and the Heppner-Lick 138 kV Transmission Line Project (to be submitted to the OPSB later this year). The new 138 kV transmission network will be significantly more reliable than the existing 69 kV infrastructure, and result in less line losses.

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

The purpose of the existing infrastructure is to serve the AEP Ohio Transco customers served from the Ross Substation, Ginger Switch Station, and the Vigo Substation, as well as Buckeye Rural Electric Cooperative customers served from the Pine Ridge Switch Station. Therefore, there are no available options to eliminate the need for the proposed Project, as the line exists to serve thousands of customers.

(E) FACILITY SELECTION RATIONALE

The proposed facility was selected to meet, at a minimum, the rating of the two existing 138 kV lines connecting to AEP Ohio Transco's Ross Substation. Constructing this facility with these ratings will allow the line to operate as a backup transmission source to the two aforementioned lines.

(F) PROJECT SCHEDULE

(1) Schedule Gantt Chart

A schedule Gantt chart of the proposed Project is presented in Section 4906-5-02 (4) of this application.

(2) Impact of Critical Delays

Critical delays to the Project will postpone reliability improvements for AEP Ohio Transco and Buckeye Rural Cooperative customers in the area, leaving them connected to one of the worst performing facilities in Ohio. This effort is the culmination of an attempt to address existing reliability conditions in the area. Delays in the schedule would further affect the local and regional benefits associated with the planned improvements. Continued poor electric service reliability and the perception of utilities being slow to respond would deter critical investment and economic development in the region.

4906-5-04 ROUTE ALTERNATIVES ANALYSIS**(A) ROUTE SELECTION STUDY**

AEP Ohio Transco retained GAI Consultants, Inc. ("GAI") to prepare the transmission line RSS Report for the Project (Appendix 4-1). The goal of the RSS was to identify a Preferred and Alternate Route for the Project, while avoiding or minimizing effects on sensitive land uses, ecological and cultural resources in the Project vicinity. From the onset of the Project, the siting team understood that utilizing or paralleling the existing ROW of the Berlin – Ross 69 kV transmission line was the preferred method for developing alternatives. However, there were constraints (i.e., encroaching structures) within the Londonderry community that would inhibit utilizing or paralleling portions of the existing ROW.

The siting team identified one focus area for the Project in the community of Londonderry. The remainder of the Project area, north and south of Londonderry, does not have structure encroachments and the siting team focused on paralleling the existing ROW or utilizing the existing 69 kV centerline as the proposed route alternatives.

(1) Study Area Description and Rationale

The Project is located in the eastern portion of Ross County, OH, running northwest to southeast. Review of the U.S. Geological Survey ("USGS") 7.5-minute topographic maps of the area indicates the Scioto River is the prominent drainage feature associated with the Project area, along with Walnut Creek and Salt Creek, as well as smaller perennial and intermittent streams. The Project area is characterized by relatively level low-lying terrain among pockets of moderate topographic relief. The northeastern portion of the Project area and west of the Vigo Substation contains more significant topographic relief consisting of steep slopes and narrow ridges and valleys. Elevation in the Project area ranges from approximately 660 feet to 840 feet above mean sea level.

The Project area is largely agricultural, followed by forest/wood lots/tree lines, and rural residential areas. Rural residential areas are present at varying densities throughout the Project area, but are most concentrated in the vicinity of the Londonderry community and along Vigo Road near the Vigo Substation. There are no commercial or industrial lands within the Project area. Additional information can be found in the RSS Report provided in Appendix 4-1.

As mentioned above, the main priority for the Project was to utilize or parallel the existing ROW of the Berlin-Ross 69 kV transmission line in order to develop alternatives. However, there were constraints (i.e., encroaching structures) within the Londonderry community that would inhibit utilizing or paralleling portions of the existing ROW. North and south of the Londonderry community, constraints to utilizing or paralleling the existing ROW were limited and therefore allowed for a more streamlined development of a Preferred and Alternate Route.

(2) Study Area Map

Figure 4-1 illustrates the approximate boundary of the Project.

(3) Map of Study Area, Routes, and Sites Evaluated

Figure 4-2 illustrates the Study Area, Preferred Route and Alternate Route.

(4) Siting Criteria

The list and description of the quantitative siting criteria and data utilized in the siting study are presented in Section 2.3 of the RSS Report (Appendix 4-1) and can be seen in Figure 4-1. The quantitative siting criteria consisted of constraint and attribute data, including but not limited to locations of individual residences, property boundaries, institutional land uses, forested lands, wetlands, streams, existing transmission lines, roads, and other land use features.

The qualitative criteria considered by the siting team in the assessment of the Preferred and Alternate Route included overall constructability factors (i.e., terrain and access), outage constraints during construction, and an emphasis on minimizing impacts to undeveloped land by utilizing the existing Berlin-Ross 69 kV transmission line ROW to the extent feasible. Feedback from property owners received during the public informational meetings and early ROW discussions were also considered.

(5) Siting Process for Preferred and Alternate Route

After the Study Area and siting criteria were established, preliminary routes and study segments were developed based on the understanding that utilizing the existing ROW of the Berlin-Ross 69 kV transmission line, to the extent feasible, was preferred. Study segments were identified in the Londonderry Focus Area. North and south of Londonderry, the preliminary routes either utilized or paralleled the existing Berlin-Ross 69 kV centerline. Results of several map analyses, including review of aerial photography, topographic maps, and mapped attribute and constraint data, were also utilized for the development of preliminary routes and study segments. The intent when placing these preliminary routes and study segments was to minimize impacts to residences, wetlands, forested areas, and to utilize the existing 69 kV corridor, where practical. As a result of this analysis, a Preferred and Alternate Route were established. The entire siting process, methodology, and results are described in further detail in the RSS Report in Appendix 4-1.

Once a Preferred and Alternate Route were established, the siting team worked to determine which of the two routes: (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe, and reliable manner. Although no proposed route can optimally minimize impacts across all area resources, the siting team used a series of general siting guidelines to direct the development, evaluation, and selection of routes toward this overall goal.

The following guidelines were considered for this effort:

- Maximize use of the existing 69 kV transmission line ROW;
- Avoid or minimize outages and service disruptions;
- Consider parallel alignments along existing ROWs or other infrastructure;
- Maximize the separation distance from and/or minimize impact on dwellings, schools, daycare facilities, hospitals, and other community facilities;
- Consider stakeholder input as practicable;
- Avoid or minimize visibility from populated areas, scenic roadways, and designated scenic resources;
- Minimize interference with economic activities, including agricultural activities;
- Avoid or minimize conflict with existing and proposed future development and land uses;
- Avoid crossing or minimize conflict with designated public resource lands such as national and state forests and parks, large camps and other recreation lands, designated battlefields, nature preserves or other designated historic resources and sites, and conservation areas;
- Avoid or minimize new crossings of large lakes, rivers, and large wetland complexes, critical habitat, and other unique or distinct natural resources; and
- Minimize habitat fragmentation and impacts on designated areas of biodiversity concern.

(6) Route Descriptions and Rationale for Selection

The Preferred Route generally parallels the existing 69 kV transmission line ROW north and south of the Londonderry community. Due to the potential inability to de-energize long stretches of the existing Berlin-Ross 69 kV transmission line during construction, it is preferable to construct the Project generally parallel to the existing ROW, where feasible, to avoid outage constraints. Within the Londonderry Focus Area, the Preferred Route deviates from the existing line for a total length of approximately 1.2 miles. Two deviations from the existing line occur within the focus area to avoid structures. As a result of both route options being similarly located, both route options incur similar resource impacts. The siting team considered the following technical guidelines during the development, evaluation, and comparison of routes:

- Maintain a minimum of 50 feet of centerline-to-centerline separation when paralleling 138 kV or lower voltage transmission lines;
- Minimize duration of outages during construction along existing 69 kV transmission line.

- Minimize crossing lines of higher voltage; and,
- Avoid angles greater than 65 degrees and steep slopes (more than 20 degree slopes for angle structures, and more than 30 degrees for tangent structures).

(B) COMPARISON TABLE OF ROUTES, ROUTE SEGMENTS, AND SITE

Tables 1 through 6 of the RSS Report (Appendix 4-1) provide approximate impacts for the Preferred Route and Alternate Route as well as route alternatives considered for the Londonderry Focus Area. These tables include the individual impact results (natural resource, land use, and technical) for both route alternatives.

(C) PUBLIC INVOLVEMENT

AEP Ohio Transco conducted an information program to communicate Project planning details, seek feedback from landowners and residents, media and local elected officials, and generally raise awareness of the Project. The program involved conducting two public informational meetings (i.e., open house forums) to seek feedback from the community on the Project and the routes being considered. Prior to the public informational meetings, AEP Ohio Transco mailed invitation letters to residents, tenants, and officials, and issued a newspaper public notices and news releases. A Project website (available at <http://aeptransmission.com/ohio/Liberty/index.php>) was also created with Project mapping and a summary description. At the public information open houses, AEP Ohio Transco representatives were available to answer questions, listen, and receive feedback from the public. A summary of the public information open houses is provided below.

Two public open houses were held for the Project. An initial open house was held on September 18, 2017, at the God's Community Church located in Chillicothe, OH, and a second open house was held on January 25, 2018, at the Northview Elementary School in Jackson, OH. The siting team set up stations at the meetings and provided information related to engineering and design of the structures, Project need, real estate and ROW issues, and the siting process. The community was notified about the time and location of the meetings through the newspaper public notices, as well as coordination letters sent to each unique landowner address along the proposed Project routes which gave an overview of the proposed Project and invited each to attend the open house. AEP Ohio Transco sent coordination letters to 65 property owners along the proposed Project routes for the initial open house, and 12 additional property owners were notified for the second open house.

Printed maps at a scale of one inch equals 400 feet (1:4,800 scale) were provided at the open houses for the public to review and were used to record written comments concerning sensitive resources in their local environment. Members of the siting team greeted meeting attendees, answered questions about the Project, and aided attendees in locating their property or other features of concern on aerial maps showing the Preferred and Alternate Routes under consideration as well as Route Segments considered for the Londonderry Focus Area. Participants were encouraged to document the location

of their houses, places of business, property of concern, or other sensitive resources on the printed maps. After the public open houses, handwritten comments were digitized and entered into a Geographic Information System ("GIS") database.

Comment sheets were distributed to all meeting attendees. Attendees were asked to fill out the sheet completely, including contact information. The siting team read completed comment sheets, and scanned and stored them in the Project database as a record of meeting attendance and public comments. A total of 19 individual comment cards were submitted on the Project at the September 18, 2017 open house, and three additional comment cards were submitted at the January 25, 2018 open house. Most of the comments received were concerns about tree clearing, deviating from the existing centerline, terrain, bisecting property parcels and not aligning to property boundaries, loss of road frontage, impacts of structures in cultivated fields, and future development plans and property value loss.

The siting team staff reviewed comments from the open house and, where applicable, incorporated the information when reviewing, revising, and comparing the Preferred and Alternate Routes. Selection of Route Segments to develop the Preferred and Alternate Routes were made to address landowner comments and concerns, including specific adjustments to the Route Segments presented at the open houses which were made as a result of the public comments received at the open houses. These adjustments were ultimately integrated into the Preferred and Alternate Routes presented in this application.

4906-5-05 PROJECT DESCRIPTION**(A) PROJECT AREA DESCRIPTION**

This section provides a description of the Project area's geography, topography, populated centers, major industries, and land marks.

(1) Project Area Map

Figures 7-1 and 7-2 provide maps at 1:12,000-scale, showing the Preferred and Alternate Routes for the Project. These maps include a 1,000-foot buffer on each side of the proposed transmission centerlines (hereafter referred to as the 2,000-foot corridor). These maps depict the proposed transmission line, roads, parks, and recreational areas that are publicly owned, existing AEP Ohio Transco electric transmission line corridors, named lakes, reservoirs, streams, canals, rivers, and land use.

The information on the map was updated by reviewing digital, georeferenced aerial photography, property parcel data from the Ross County Auditors, and field reconnaissance completed in May, June, and August 2017, and January and February 2018. The aerial photographs are georeferenced, orthorectified color images derived from ESRI ArcGIS Online.

(2) Proposed Right-of-Way, Transmission Length, and Properties Crossed

The proposed ROW width is 100 feet. Table 5-1 provides information about the Preferred and Alternate Route ROW acreage, length, and properties crossed based on the proposed centerline.

TABLE 5-1
Right-of-way Area, Length, and Number of Properties Crossed

	Route Alternatives	
	Preferred	Alternate
Proposed ROW area (in acres)	87.4	86.6
Length (in miles)	7.2	7.1
Number of Properties Crossed (by ROW)	65	71

(B) ROUTE OR SITE ALTERNATIVE FACILITY LAYOUT AND INSTALLATION**(1) Site Clearing, Construction, and Reclamation**

The following paragraphs provide information on the proposed site clearing, construction methods, and reclamation operations for the Project.

(a) Surveying and Soil Testing

The selected transmission line route will be civil surveyed to establish the centerline, ROW, and pole locations. The surveying will be completed using conventional and/or aerial methods. Topographic features and manmade structures near the Preferred Route that may affect the design will be identified during the civil survey. Minimal clearing of small trees and brush may be required if the civil surveyor's line of sight is obstructed. Offsets will be used to survey around large trees and other large obstructions. Profile measurements of the topography will be obtained by conventional and/or aerial methods. The centerline and ROW will be staked prior to construction.

Soil and rock tests will be performed along portions of the final approved route, if foundations for poles are necessary. Augured test borings will be achieved using a machine-driven auger at least four inches in diameter. Soil samples will be obtained at approximately 2.5 foot intervals for the first 10 feet, five foot intervals below 10 feet, and at any change in subsurface strata. Sampling will include split barrel samples in non-cohesive soils and thin-walled tube samples in cohesive soils. Typically, the testing will be performed to a depth of 30 to 40 feet. If rock is encountered, a carbide-tipped bit will be drilled five to ten feet into the rock.

(b) Grading and Excavation

Soil surface grading for the Project is not anticipated. Some laydown and set-up areas for construction equipment may require minor local leveling, but this will be restricted to the immediate area. It is anticipated most self-supporting steel pole locations will be installed by direct-embed methods. Due to site-specific requirements, some self-supporting steel poles may require concrete foundations. The excavation for each foundation will be approximately 5.5 feet to eight feet in diameter and 20 to 35 feet deep. A portion of the excavated soil will be used for backfill around the foundation, and the excess soil material will be placed around the pole or hauled offsite to an approved spoil disposal site.

(c) Construction of Temporary and Permanent Access Roads and Trenches

Construction access will be required for installation of the pole structures and stringing of the conductor cable or wire. Access roads will require the landowner's input and approval. Preliminary access roads for the Preferred Route are presented on Figures 8-2A through 8-2E. Note these access roads cannot be fully planned and identified until after a final route is approved and contact with affected landowners for transmission line easements has been completed by AEP Ohio Transco. Where access across wetlands or streams is necessary, timber mats or equivalent will be used to minimize the environmental impacts. If field conditions necessitate the modification of the finalized access road locations during construction, the concurrence of the property owner will be obtained, necessary environmental field studies will be performed, and necessary permits will be obtained/updated.

(d) Stringing of Cable

During wire stringing operations, areas along the transmission line will be used as setup locations for the wire pulling equipment (i.e., such as conductor reels, ground wire reels, and the wire tensioner). Conductor installation will be accomplished using the tension stringing method. Lightweight cables or ropes will be fed through the stringing sheaves mounted on the poles. Conductors will be pulled through under sufficient tension to keep the conductor off the ground to prevent any damage to the conductor. Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crew members or the public. The locations and heights of clearance poles will be such that conductors are held clear of other electric distribution lines, communication cables, railroads, and roadways. The stringing operation will be under the observation of transmission line construction crew members at all times. The observers will be in radio or visual contact with the operator of the stringing equipment.

(e) Installation of Electric Transmission Line Poles and Structures, Including Foundations

The Project will be constructed using steel poles of varying types. Most pole locations will involve direct embed installation. Where necessary, due to site-specific conditions, installation of a concrete foundation may be used. The excavation for each concrete foundation will be approximately 5.5 to eight feet in diameter and 20 to 35 feet deep.

(f) Post-Construction Reclamation

Topsoil at pole excavations will be stockpiled when necessary and protected from erosion. Topsoil will be redistributed over disturbed areas to foster re-vegetation following construction (except in wetland areas). Restoration, including temporary and permanent seeding, will be coordinated with the construction activities to provide re-vegetation and soil stabilization at the earliest reasonable time. Following construction, all pole locations, material storage sites, and temporary access roads will be restored and seeded with a suitable grass seed mixture that will be specified in the erosion and sediment control plan.

Re-vegetation techniques will enhance the ROW for use as possible wildlife habitat. Where stream banks are disturbed, they will be restored by seeding of low-growing herbaceous species, where necessary, in order to reduce bank erosion. Lawn or garden areas, or paved areas damaged during the construction of the transmission line, will be restored to original condition. Landscaping or landscape plantings damaged during construction will also be restored to original condition or replaced as directed by the affected property owner, unless safety concerns prohibit the re-establishment. After restoration is complete, AEP Ohio Transco will periodically inspect the ROW to identify areas of erosion, sedimentation accumulation, and inadequate re-vegetation conditions, if any. If such conditions are identified, corrective actions will be implemented.

(2) Facility Layout

No new associated facilities such as new substations or switch stations are proposed for the Project.

(a) Transmission Line Route Map

Figures 8-2A through 8-2E show maps at 1:12,000-scale of the Preferred and Alternate Routes. These maps illustrate the data required by O.A.C. 4906-5-05(A)(1). Although the additional information required by O.A.C. 4906-5-05 (B)(2)(a) (for example, pole structure locations) will not be finalized until a final route is approved by the OPSB and the final engineering design is complete. The data and information defined in O.A.C. 4906-5-05 (B)(2)(a) includes temporary access roads and proposed locations of transmission line poles and buildings. No fenced-in or secured areas are planned for Project.

AEP Ohio Transco is currently identifying staging areas and laydown areas for the Project. To date, none have been identified within the Project area. After sites are identified, AEP Ohio Transco will provide final locations that support this Project.

(b) Proposed Layout Rationale

A detailed description of the reasons for the proposed layout (i.e., the Preferred and Alternate Routes) are presented in the RSS (Appendix 4-1). There are no unusual features within the Project area beyond the generally undeveloped land use.

(c) Plans for Future Modifications

Except as otherwise described in this application, AEP Ohio Transco currently has no plans for future modifications of the proposed Project.

(C) DESCRIPTION OF PROPOSED TRANSMISSION LINES**(1) Electric Power Transmission Line****(a) Design Voltage**

The Ginger Switch-Vigo transmission line will be designed at 138 kV and operated at 69 kV, until the need to increase the voltage due to customer demand deems it necessary.

(i) Tower Designs, Pole Structures, Conductor Size and Number per Phase, and Insulator Arrangement

The majority of the line will be composed of a tangent, H-Frame structure (Figure 5-1) with an estimated aboveground height of 100 feet. The conductor used for the new transmission line will be a 1,033 thousand circular mil ("kcm") 54/7 aluminum conductor steel-reinforced cable ("ACSR") per

phase. This conductor has a maximum strength of approximately 36,600 pounds ("lbs."). The new line will utilize one 7#10 Alumoweld shield wire and one AlumaCore Optical Ground Wire ("OPGW") fiber shield wire. The 7#10 shield wire has a maximum strength of 10,020 lbs. and OPGW has a maximum strength of 24,522 lbs. Both the phase conductors and the shield wire will be installed in accordance to the latest version of the National Electric Safety Code. The conductors will be supported by aluminum clamps which will be attached to the insulators. Aluminum suspension clamps will support the shield wires. At dead-end locations, compression dead-end clamps will be used on both the conductor and the shield wire.

(b) Base and Foundation Design

All angle locations will require installation of one or three concrete foundations depending on structure type. The excavation for each concrete foundation will be approximately 5.5 to eight feet in diameter and 20 to 35 feet deep.

(c) Cable Type and Size, where Underground

No underground cables are associated with this Project; therefore, this section is not applicable.

(d) Other Major Equipment or Special Structures

No other major equipment or special structures are required for the Project.

(2) Diagram of Electric Power Transmission Substations

No new electric power transmission substations are proposed for this Project.

4906-5-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP OF PROPOSED FACILITY

AEP Ohio Transco will construct, own, operate, and maintain the proposed Ginger Switch-Vigo 138 kV transmission line.

(B) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR ELECTRIC POWER TRANSMISSION FACILITY ALTERNATIVES

The applicable capital and intangible costs for a variety of components of the Project are included below. Each of the enumerated components is included in Table 6-1. The table also includes estimates of applicable intangible and capital costs for both the Preferred and Alternate Routes of the Project. The items marked as not applicable ("NA") are components that do not apply to this Project.

TABLE 6-1

Estimates of Applicable Intangible and Capital Costs

FERC Account Number	Description	Preferred Route	Alternate Route
350	(1) Land and Land Rights	\$3,402,614	\$2,268,409
352	(2) Structures and Improvements	NA	NA
353	(3) Substation Equipment	NA	NA
354	(4) Towers and Fixtures	NA	NA
355	(5) Poles and Fixtures	\$6,877,550	\$8,528,162
356	(6) Overhead Conductors and Devices	\$1,586,772	\$1,967,535
357	(7) Underground Conductors and Insulation	NA	NA
358	(8) Underground-to-Overhead Conversion Equipment	NA	NA
359	(9) ROW Clearing and Roads, Trails or Other Access	\$4,847,690	\$4,548,695
TOTAL		\$16,714,576	\$17,312,802

FERC = Federal Energy Regulatory Commission

(C) CAPITAL AND INTANGIBLE COSTS ESTIMATE FOR GAS TRANSMISSION FACILITY ALTERNATIVES

This application is for an electric transmission line therefore this section is not applicable.

(D) PUBLIC INTERACTION AND ECONOMIC IMPACT

This section of the application provides information regarding public interaction and the economic impact for each of the route alternatives.

(1) Counties, Townships, Villages, and Cities within 1,000 feet

Both routes, including all areas within 1,000 feet of the centerlines, are located within and cross Springfield, Harrison, Liberty, and Jefferson Townships of Ross County, OH. Neither the Preferred nor the Alternate Route are located within any incorporated village or city. The routes are located within the unincorporated community of Londonderry. Both the Preferred and Alternate Route begin at the existing Ginger Switch Station (at existing Structure 201) and terminate at the existing Vigo Substation.

(2) Public Officials Contacted

Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date or will be provided a digital or hard copy of the application.

(3) Planned Public Interaction

AEP Ohio Transco's planned and completed public interaction included mailing letters to residents, tenants, and elected officials, issuing a public notices and a news releases to the local media, created a Project website, and hosted two public information open houses. During the construction of this Project, AEP Ohio Transco will maintain Project updates on its website, retain ROW land agents to discuss Project timelines, construction and restoration activities, and convey this information to affected owners and tenants. Copies of informational material available at the public open houses is included in Appendix 6-2.

During any phase of this Project, the public may contact Erin Miller, Project Outreach Specialist, at 614-552-1929 or 877-215-9261, or email ecmiller1@aep.com to ask questions or provide comments. To access the Project's website, please visit <http://aeptransmission.com/ohio/Liberty/index.php>.

For copies of this application, the public can do any of the following:

- Go to the local Library;
- Go to <http://opsb.ohio.gov/> and search for this project's case number (Case No. 17-0638-EL-BTX); or

- Access the project's website on <http://aeptransmission.com/ohio/Liberty/index.php> and follow the directions to obtain a copy.

AEP Ohio Transco is logging comments and information provided through its public interaction program. This information will be shared with the OPSB Staff.

At least seven days prior to any construction activities, an AEP Ohio Transco ROW agent will notify the affected landowners or the tenant by mail, telephone, or in person, depending on landowner/tenant preference.

(4) Liability Insurance or Compensation

AEP's insurance program for construction and operation of the proposed facility is outlined below.

- AEP Ohio Transco maintains bodily injury and property damage liability insurance with limits of at least \$1,000,000 for each occurrence; and
- AEP Ohio Transco is a qualified self-insuring employer under the State of Ohio Worker's Compensation law. AEP Ohio Transco maintains insurance as required by the Industrial Commission of Ohio statutes.

(5) Tax Revenues

The Preferred and Alternate Routes are located within Ross County. Local school districts, public library, and mental health district will receive tax revenue from the Project. AEP Ohio Transco will pay property taxes on utility facilities in each jurisdiction. Due to the proximity of the Preferred and Alternate Routes, the approximate annual property taxes over the first year after the Project is completed are very similar, with the Preferred Route totaling \$634,430 and the Alternate Route totaling \$717,040.

Based on the 2015 tax rates, the following information includes preliminary estimates for these taxing authorities:

Preferred Route:

Chillicothe & Ross County Public Library	\$16,680
Harrison Township	\$5,270
Jefferson Township	\$5,640
Liberty Township	\$60,200
Paint Valley Mental Health District	\$11,120
Pickaway-Ross County JVSD	\$46,720
Ross County	\$130,140
Southeastern Local School District (Ross County)	\$353,710
Springfield Township	\$740
Springfield Township Exc. Chillicothe	\$4,210
Total	\$634,430

Alternate Route:

Chillicothe & Ross County Public Library	\$18,860
Harrison Township	\$5,930
Jefferson Township	\$6,430
Liberty Township.....	\$67,960
Paint Valley Mental Health District.....	\$12,570
Pickaway-Ross County JVSD.....	\$52,800
Ross County.....	\$147,070
Southeastern Local School District (Ross County)	\$399,740
Springfield Township.....	\$850
Springfield Township Exc. Chillicothe	\$4,830
Total.....	\$717,040

4906-5-07 HEALTH AND SAFETY, LAND USE, AND REGIONAL DEVELOPMENT**(A) HEALTH AND SAFETY****(1) Compliance with Safety Regulations**

The construction and operation of the Project will comply with the requirements specified in the North American Electric Reliability Corporation mandatory Reliability Standards, the National Electrical Safety Code, the Public Utilities Commission of OH, and will meet all applicable safety standards established by the Occupational Health and Safety Administration ("OSHA").

Safety is the highest priority for AEP Ohio Transco. Our priority towards employee and public safety is exemplified by AEP Ohio Transco's policy as stated in the Company Safety Manual:

The AEP Ohio Transco system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience, and expense. We believe, "No operating condition or urgency of service can ever justify endangering the life of anyone."

To this end, we will constantly work toward the following:

- The maintenance of safe and healthful working conditions,*
- Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses, and*
- Conscientious observance of governmental and company safety regulations.*

AEP Ohio Transco also administers a contractor safety program. Contractors are required to maintain internal safety programs and to provide safety training.

(2) Electric and Magnetic Fields

In accordance with the OPSB requirements specified in O.A.C. 4906-5-07(A)(2), the following subsections discuss the analysis of electric and magnetic fields ("EMF") associated with the Project.

(a) Calculated Electric and Magnetic Field Strength Levels

EMF calculations for winter normal conductor rating, emergency line loading and normal maximum loading are provided for the proposed single-circuit line configuration representative of the most common structure design planned for the Project. Refer to Section (a)(iv) below for further justification. This configuration, representing the H-Frame design, is shown on Figure 5-1. EMF levels

were computed within the ROW of the line configuration at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the ROW edge. Because the line configurations associated with the Preferred and Alternate Routes are similar, EMF levels produced by these configurations in any route selected for the Project would be the same.

Factors that affect EMF include the ROW width, operating voltage, current flow magnitude, phase configuration, conductor height aboveground, electrical unbalance, and other nearby objects. Nominal voltages and balanced conditions are assumed, with line conductors arranged in a horizontal configuration depicted in Figures 5-1. No trees, shrubs, buildings, or other objects that can block EMF are assumed in proximity to the proposed line.

All calculations were obtained at the height of 3.28 feet (1 meter) aboveground using the Electric Power Research Institute EMF Workstation computer program. Three loading conditions were examined: (1) normal maximum loading, (2) emergency loading, and (3) winter normal conductor rating, consistent with the OPSB requirements. Normal maximum loading represents the peak flow expected with all system facilities in service; daily/hourly flows fluctuate below this level. Emergency loading is the maximum current flow during unusual (i.e., contingency) conditions, which exists only for short periods of time. Winter normal ("WN") conductor rating represents the maximum current flow that a line, including its terminal equipment, can carry during winter conditions. It is not anticipated that the circuit would operate at its WN rating in the foreseeable future.

Loading levels used in the EMF calculations, along with key line design data, are presented in the tables below. These levels are based on the 2019 projected system conditions.

TABLE 7-1
Ground Clearances, Right-of-Way, and Projected Loading

Ginger Switch-Vigo 138 kV Line Design	Phase Cond. (kcm ACSR)	Ground Clearance ^a		Right-of-Way		Line Loading (A)		
		A (feet)	B (feet)	Width (feet)	Edge ^b (feet)	Normal Max.	Emerg. Load	Winter Rating
Single-Circuit	1033	18.6	26.0	100	50	96.2	468.6	1,568.9

Notes:

^a Minimum ground clearance: A – normal maximum and emergency load and B – winter normal rating.

^b Distance from centerline to ROW edge.

The calculated electric and magnetic fields for the two line configurations are summarized in Table 7-2.

TABLE 7-2
EMF Calculations

Ginger Switch-Vigo 138 kV Single-Circuit			
Condition	Ginger Switch-Vigo (A)	Electric Field (kV/m) ^a	Magnetic Field (mG) ^a
(1) Normal Max. Loading	96.2	0.64/2.27/0.67	6.6/41.5/6.97
(2) Emergency Line Loading	468.6	0.64/2.27/0.68	32.69/202.21/33.72
(3) Winter Conductor Rating	1568.9	0.67/0.93/0.72	96.65/390.92/99.76

Notes:

- ^a EMF levels (Left ROW Edge/Maximum/Right ROW Edge) calculated one meter aboveground, assuming balanced currents and nominal voltages. Electric fields reflect normal and emergency operation.

(b) Electric and Magnetic Field Strength Values

In accordance with O.A.C. 4905-5-07 (2), EMF strength values are provided for the most utilized pole configuration for the Project; the majority of the line will be composed of a tangent, H-frame structure. As stated in 4906-5-05(C)(1)(a)(i), only one conductor is proposed to be used for the Project.

(c) Current State of EMF Knowledge

Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields are commonly measured in kilovolts per meter ("kV/m"); higher voltages produce stronger electric fields. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases; these fields are measured in units known as gauss, or milligauss ("mG").

Electric fields are blocked by trees, shrubs, buildings, and other objects. Magnetic fields are not easily blocked; they can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to replicate those results consistently in other studies. Similarly,

inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 7-3.

TABLE 7-3
Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
AC Adapters	3	1.4 – 863	0 – 7.5	0 – 0.8
Blood Pressure Monitors	4	4.2 – 39.6	0 – 0.3	0 – 0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 – 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 – 0.1	0 – 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5	0 – 0.1	0 – 0.1
Computers, Desktop	3	3.8 – 68.9	0 – 1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	17.1 – 155	28.3 – 61.5
Electric Toothbrushes	5	3.6 – 742	0 – 4.8	3.6 – 742
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 – 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 – 500
MP3 Players	5	0	0	0

TABLE 7-3
Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 – 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0 – 0.3

Source: Electric Power Research Institute, 2010

As part of the National Energy Policy Act of 1992, U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination program. The National Institute of Environmental Health Sciences (“NIEHS”) was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency “EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard.” Nonetheless, the report stated, “this finding is insufficient to warrant aggressive regulatory concern.” (NIEHS, 1999).

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection wrote in its review of the epidemiologic literature on EMF and health:

“...given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established.”

In addition, in 2001, the International Agency for Research on Cancer (“IARC”) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power frequency “magnetic fields are ‘possibly carcinogenic to humans,’ based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood

leukemia" (IARC, 2001). IARC assigns its "possibly carcinogenic to humans" classification (Group 2B) if there is "limited evidence" of carcinogenicity in both humans and experimental animals, or if there is "sufficient evidence" in animals, but "inadequate evidence" in humans. Group 2B includes some 285 "agents" such as coffee, pickled vegetables, carpentry, textile manufacturing, and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by the World Health Organization ("WHO") in 2007. In its assessment, WHO wrote: "Scientific evidence suggesting that every day, chronic, low-intensity (above 0.3-0.4 μ T) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia" (WHO, 2007). It added, however:

"...virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern (WHO, 2007)."

Regarding acute effects, WHO noted, "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz [kilohertz] that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects" (WHO, 2007).

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, the Institute of Electrical and Electronics Engineers ("IEEE") and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6-2002 recommends the following limits as shown in Table 7-4 (IEEE, 2002).

TABLE 7-4
Recommended Power Frequency EMF Limits

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0 ^a
Magnetic Field Limit (mG)	9040	27,100

Notes:

^a 10.0 kV/m within power line ROW

To address public concerns about EMF, the Government of Canada in 2012 updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: "Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs [extremely low frequencies]. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors" (Healthy Canadians, 2012). Similarly, in 2013, the updated website of the WHO concludes: "to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health" (WHO, 2013).

AEP Ohio Transco has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. In addition, AEP Ohio Transco is a member of Electric Power Research Institute, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory, and exposure studies.

(d) Line Design Considerations

Design alternatives were not considered because of EMF and their strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a material correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF has impacts on human health. Because of these concerns, EMF associated with the new circuits was calculated in Table 7-2. The EMF was computed assuming the highest possible EMF values that could exist along the proposed Project. Normal daily EMF levels will operate below these maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (mG) associated with emergency loading at the highest EMF value for this transmission line, is lower than those associated with normal household appliances like microwaves, electric shavers, and hair dryers. For additional information regarding EMF, the National Institute of Health has posted information on their website:

https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

(e) EMF Public Inquiries Policy

Information on electric and magnetic fields is available on AEP Ohio's website (<https://www.aepohio.com/info/projects/emf/>); it describes the basics of EMF theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities of this Project.

AEP Ohio Transco occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

(3) Estimate of Radio, Television, and Communications Interference

Radio interference can be experienced in the AM broadcast band (535-1605 kHz) and FM band (88-108 megahertz ["MHz"]), caused by transmission line gap-type discharge (1-1000 MHz). Dielectric discharge due to air ionization, known as corona, is not a concern with 138kV transmission planned in this Project. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source.

Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems, which degraded the quality of the image and sound, although the programming was still watchable. With digital TV, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharges if received from air broadcasts (by "rabbit ears"). These problems have largely been addressed with the use of cable television.

(4) Noise from Construction, Operations, and Maintenance

Construction, operation, and maintenance activities will typically be completed during daylight hours.

(a) Blasting Activities

Dynamiting and blasting activities will not be necessary during construction of the Project.

(b) Operation of Earth Moving and Excavating Equipment

During the construction phase of the transmission line installation, a temporary increase in noise will occur from the construction equipment used to clear portions of the transmission line ROW and install the equipment. Standard construction techniques will be used, and procedures will comply with applicable OSHA standards. Therefore, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Project is estimated to be approximately 21 months.

(c) Driving of Piles, Rock Breaking or Hammering, and Horizontal Directional Drilling

Driving of piles is not anticipated during construction of the Project. If required, there will be a temporary increase in noise during construction only.

(d) Erection of Structures

Pole structures will be installed by vehicle-mounted cranes or equivalent equipment. Self-supporting steel poles will require delivery of concrete for foundation construction, including excavation work for the foundation. There will be a temporary increase in noise during construction only.

(e) Truck Traffic

An increase in truck traffic is anticipated during the construction of the Project for equipment access and equipment delivery. No other additional traffic is anticipated for the Project beyond periodic mowing or removal of dangerous trees from the ROW.

(f) Installation of Equipment

The equipment will be installed using standard practices and equipment. There will be a temporary increase in noise during construction only.

(B) LAND USE**(1) Map of the Site and Route Alternatives**

An applicant for a Certificate of Environmental Compatibility and Public Need for electric transmission facilities is required to evaluate both the Preferred and Alternate Routes for the transmission line within the application. Maps at 1:12,000-scale, including the area 1,000 feet on either side of the centerline (also referred to as the 2,000-foot corridor), are presented as Figures 7-1A through 7-1E (refer to Section 4906-5-05) and include the following information:

- Centerline and 2,000-foot corridor for the Preferred and Alternate Route;
- AEP facilities including existing switch, substation, and interconnect locations; and
- Land use types, road names, residences, cemeteries, waterbodies, and agricultural districts.

(2) Impact on Identified Land Uses

Comparisons of the various land use types and land use features for both routes are included in Tables 7-5 through 7-7 for the Preferred and Alternate Route. The estimates (i.e., linear feet, acreage, and percentages) of each land use type being crossed by the transmission line, land use within the 100-foot-wide construction ROW, and the permanent 100-foot-wide ROW were determined using GIS software calculations. The potential disturbance area during construction activities (e.g., vegetation clearing, pole installations, etc.) consists of the 100-foot-wide construction ROW. The 100-foot-wide permanent ROW will be restored through soil grading, seeding, and mulching, thus the permanent impact to the ROW is primarily limited to the removal of existing trees and other vegetation. Property owners may continue to utilize most of the ROW area for general uses that will not affect the safe and reliable operation of the transmission line such as lawn maintenance or agricultural crop production. Some portions of the existing ROW within the rebuild segment(s) may also be used as pasture or hayfield. However, the utility ROW land use is the primary land use for these areas along the proposed centerline. Therefore, these areas are categorized as Utility ROW in Table 7-5. Additionally, Table 7-6 shows an acreage for Agriculture Land. This acreage accounts for the additional 50' of ROW width in the rebuild segment, outside of the ROW of the existing 69kV line

TABLE 7-5
Length and Percent of Land Uses Crossed by the Proposed Centerline

Land Use	Preferred Route ^a		Alternate Route ^a	
	Linear Feet	Percent	Linear Feet	Percent
Agriculture Land	9,308	24.5	1,223	3.2
Industrial/Commercial	0	0.0	0	0.0
Open Land/Pasture	9,606	25.3	41	0.1
Residential	709	1.9	20	0.1
Institutional	0	0.0	0	0.0
Recreational	0	0.0	0	0.0
Road Right-of-Way	204	0.5	51	0.1
Utility Right-of-Way	11,479	30.2	36,324	96.5
Woodlot	6,605	17.4	0	0.0
Water/Wetlands	72	0.2	0	0.0
Total	37,983	100	37,659	100

Note:

- ^a Numbers in the table are for the planned potential disturbance area which is a nominal 100-foot-wide corridor centered on the route. The Agriculture Land category includes parcels that may have specifically been given the Agricultural District Land designation, and may contain areas which would also be considered Open Land/Pasture.

TABLE 7-6

Acreage and Percent of Land Uses Crossed by the Proposed 100-foot Right-of-Way

Land Use	Preferred Route ^a		Alternate Route ^a	
	Acreage	Percent	Acreage	Percent
Agriculture Land	24.2	27.7	14.7	17.0
Industrial/Commercial	<0.1	0.0	<0.1	0.1
Open Land/Pasture	21.0	24.1	23.1	26.7
Residential	2.3	2.6	3.1	3.5
Institutional	0.0	0.0	0.0	0.0
Recreational	0.0	0.0	0.0	0.0
Road Right-of-Way	0.5	0.6	0.4	0.4
Utility Right-of-Way	26.0	29.8	42.2	48.8
Woodlot	13.1	15.0	2.9	3.4
Water/Wetlands	0.2	0.2	0.1	0.1
Total	87.4	100	86.6	100

Note:

^a The planned potential disturbance area is a nominal 100-foot-wide corridor centered on the route.

TABLE 7-7

Number of Sensitive Features Within or Near the Potential Disturbance Area

	Route Alternatives	
	Preferred ^a	Alternate ^a
Length (in miles)	7.2	7.1
Features within 100-foot Right-of-Way		
Historic Structures	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	0
Residences	0	2
Commercial Buildings	0	0
Industrial Buildings	0	0
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
State/Federal Forests and Recreational Lands	0	0
Airports	0	0

TABLE 7-7

Number of Sensitive Features Within or Near the Potential Disturbance Area

	Route Alternatives	
	Preferred ^a	Alternate ^a
Features within 1,000 feet of Route Alternatives (centerline)		
Historic Structures	0	0
National Register of Historic Places	0	0
Previously Identified Archaeological Sites	0	0
Residences	116	132
Commercial Buildings	2	2
Industrial Buildings	0	0
Schools and Hospitals	0	0
Churches and Civic Buildings	0	0
State/Federal Forests and Recreational Land	0	0
Airports	0	0

Note:

^a The planned potential disturbance area is a nominal 100-foot-wide corridor centered on the route.**(a) Residential**

Preferred Route: The Preferred Route is located within 1,000 feet of 116 residences, none of which are within the planned potential disturbance area. As shown in Table 7-6, there is approximately 2.6% residential land within the Preferred Route ROW (2.3 acres).

Alternate Route: The Alternate Route is located within 1,000 feet of 132 residences, two of which are within the planned potential disturbance area. As shown in Table 7-6, there is approximately 3.5% residential land within the Preferred Route ROW (3.1 acres).

(b) Commercial

Both the Preferred and Alternate Routes are located within 1,000 feet of two commercial buildings, neither of which are within the planned potential disturbance area. One is identified as a restaurant (approximately 286 feet from the routes) which was damaged by fire and is no longer in use, and the other is identified as a volunteer fire department (approximately 680 feet from the routes).

(c) Industrial

Neither the Preferred nor the Alternate Route are located within 1,000 feet of any industrial buildings.

(d) School and Hospitals

No schools or hospitals are located within the planned potential disturbance area or within 1,000 feet of the Preferred and Alternate Route.

(e) Churches and Civic Buildings

There are no churches or other civic buildings within the proposed ROW of either the Preferred or Alternate Route. Additionally, neither the Preferred nor Alternate Route are located within 1,000 feet of any churches or other civic buildings.

(f) Recreational

Recreational land is not crossed by the centerline or ROW for either the Preferred or Alternate Route.

(g) Agricultural

As shown in Table 7-5, approximately 24.5 percent (9,308 feet) of the Preferred Route centerline crosses agricultural land. Approximately 24.2 acres of agricultural land is located within the ROW of the Preferred Route. Approximately 3.2 percent (1,223 feet) of the Alternate Route centerline crosses agricultural land, where the route deviates from the existing Berlin-Ross 69kV transmission line ROW within the Londonderry Focus Area. Approximately 14.7 acres of agricultural land is located within the ROW of the Alternate Route. A discussion of agricultural land and Agricultural District Land is provided in section (C) below.

(3) Impact on Identified Structures**(a) Structures within 200 Feet of Proposed Right-of-way**

There are 24 and 25 single-family residences within 200 feet of the ROW of the Preferred and Alternate Route, respectively. For the Preferred Route, one residence is within 50 feet of the ROW, 10 residences are between 51 and 100 feet of the ROW, six residences are between 101 and 150 feet of the ROW, and seven residences are between 151 and 200 feet of the ROW. For the Alternate Route, there are two residences within 50 feet of the ROW, nine residences between 51 and 100 feet of the ROW, nine residences within 101 and 150 feet of the ROW, and five residences between 151 and 200 feet of the ROW.

There are no commercial centers or buildings, industrial buildings and installations, schools, hospitals, churches, civic buildings, or other occupied places within 200 feet of either the Preferred or Alternate Route ROW.

(b) Destroyed, Acquired, or Removed Buildings

The potential removal of structures within the proposed ROW was mitigated during the RSS of the Preferred and Alternate Route by designing route options that avoid structure impacts to the extent

feasible. It is likely that construction of the Preferred Route will require the removal of three uninhabitable structures (outbuildings), but no residences. Construction of the Alternate Route would require the relocation of two residences and four uninhabitable structures (outbuildings) which are currently located within the existing Berlin-Ross 69 kV transmission line ROW.

(c) Mitigation Procedures

Mitigation for the prohibition of the future installation of structures within the ROW and vegetative clearing and maintenance activities for the transmission line will be determined as part of AEP Ohio Transco's acquisition of the ROW for this Project, as part of the negotiated settlement between AEP Ohio Transco and the property owner, or as determined in appropriation proceedings. If an existing septic system located in the transmission ROW is impacted by construction, operation, or maintenance of the proposed Project, the septic system will be repaired or replaced by AEP Ohio Transco as necessary to meet the appropriate installation requirements.

(C) AGRICULTURAL LAND IMPACTS

The potential impacts of the Project on agricultural land use include damage to crops that may be present, disturbance of underground field drainage systems, compaction of soils and temporary reduction of crop productivity. Agricultural land within the Preferred and Alternate Route ROWs is estimated at 24.2 acres and 14.7 acres, respectively. Other agricultural pastureland comprises 21.0 acres of the Preferred Route and 23.1 acres of the Alternate Route.

Soil compaction resulting from construction activities is typically a temporary issue and is resolved within a few seasons of plowing and tilling. AEP Ohio Transco will work with the agricultural landowners to resolve conflicts with drainage tiles and irrigation systems that are affected by the Project where necessary.

(1) Agricultural Land Map

The various categories of agricultural land use are depicted on Figures 7-1A to 7-1E for both the Preferred and Alternate Route.

(2) Impacts to Agricultural Lands and Agricultural Districts

The Ross County Auditor was contacted to obtain information on current Agricultural District land records; current data was received on February 22, 2018. The proposed permanent 100-foot-wide ROW for either the Preferred or Alternate Route does not cross a designated Agricultural District.

(a) Acreage Impacted

Table 7-6 provides the acreage impacted for agricultural land use and open land/pasture. The agricultural land use was based on aerial imagery and field observations. The Agriculture Land category may include parcels that have specifically been given the Agricultural District land designation, and may contain areas which would also be considered Open Land/Pasture.

(b) Evaluation of Construction, Operation, and Maintenance Impacts

The following subsections include an evaluation of the impact of the construction, operation, and maintenance of the proposed transmission line and the following agricultural facilities and practices within the Project area where present.

(i) Field Operations

Field operations such as plowing, planting, cultivating, spraying, and harvesting of cultivated crops will only be interrupted for a portion of the growing season or a portion of the dormant season during construction. Property owners will be compensated for crop damages resulting from AEP Ohio Transco's construction activities. No significant impacts to livestock operations or grazing areas are anticipated. Property owners may continue to utilize most of the ROW area for general use (e.g., lawn maintenance, crop cultivation, livestock) after construction but is contingent upon the use having no adverse impact on the safe and reliable operation of the transmission line.

(ii) Irrigation

There are no known irrigation systems within the proposed ROW for either route. AEP Ohio Transco will identify the presence of any such systems through contact with landowners once the final route is approved. Any system that must be relocated will be coordinated with the landowner to avoid affecting the irrigation system's operation and avoid any cost incurred by the landowner.

(iii) Field Drainage Systems

Damage to field drainage tile systems is unlikely given the installation of mostly direct-embed steel pole structures, but AEP Ohio Transco will restore damaged systems to their pre-construction condition. AEP Ohio Transco will also work with the agricultural landowners to resolve conflicts with field drainage systems and other facilities that may be impacted by the Project where necessary.

(iv) Structures Used for Agricultural Operations

There are three barns and two sheds within an unknown agricultural use that lie within 200 feet of the Preferred and Alternate Route that may be adversely affected by the construction and operation of the transmission line. Barns or sheds within the permanent ROW may require removal.

(v) Agricultural Land Viability for Agricultural Districts

Agricultural Districts are not crossed by either the Preferred or Alternate Route.

(c) Mitigation Procedures

Mitigation for damage to existing crops and the compaction of soils is provided as compensation to the property owner as specified in the easement for the ROW. The specific terms of the easement regarding crop damage or soil compaction are determined as part of AEP Ohio Transco's acquisition of the ROW for the Project, as part of the negotiated settlement between AEP Ohio Transco and the

property owner, or as determined in appropriation proceedings. Additionally, AEP Ohio Transco and the contractors hired to work on the Project have extensive experience in transmission line construction. Both AEP Ohio Transco and the selected contractors will work to minimize agricultural impacts during construction of the Project.

(i) Avoidance or Minimization of Damage

As previously mentioned, AEP Ohio Transco will restore damaged field tile drainage systems in agricultural areas to their pre-construction condition. AEP Ohio Transco will also work with the agricultural landowners to resolve conflicts with field drainage systems that may be impacted by the Project where necessary.

In order to minimize damage to agricultural land, AEP Ohio Transco, to the extent practical, will place poles beyond or at the edges of agricultural fields where the engineering design of the line and structure placement allows. This mitigation effort should limit disruption of plow patterns and minimize the creation of areas where weeds and other non-crops can grow in relation to construction of the transmission line. In instances where there is damage in the ROW, compensation for this limited impact will be provided to the property owner.

(ii) Field Tile System Damage Repairs

Concerns over interference with irrigation systems will be addressed on a case-by-case basis with the individual property owner. In general, AEP Ohio Transco will provide mitigation for damage to underground drainage systems from construction, operation, and maintenance activities by repairing or replacing damaged sections of the drainage systems as necessary.

(iii) Segregation and Restoration of Topsoil

Excavated topsoil will be segregated and stockpiled where necessary to maintain long-term agricultural uses. Top soil will also be de-compacted and restored to original conditions, unless otherwise agreed to by the landowner.

(D) LAND USE PLANS AND REGIONAL DEVELOPMENT

This section of the application provides information regarding land use plans and regional development.

(1) Impacts to Regional Development

This Project is expected to support regional development in Ross County through increased reliability and availability of electric power to residential, commercial, institutional, and industrial users throughout the region. No negative impacts on regional development are foreseen for this Project. A more detailed discussion of the need for this Project and how it will affect regional development is included in Section 4906-5-03 of this application.

(2) Compatibility of Proposed Facility with Current Regional Land Use Plans

The Ross County Planning Building Department was contacted in December 2017 for information regarding regional land use and/or development plans in the Project area. Based on the conversation with the Ross County Planner regarding the Project's general location, that it generally is along an existing electric transmission line with the exception of an area in the Londonderry community, there are no known development and/or land use plans for the townships where crossed by the Project. Ross County does not currently have a county-wide Comprehensive Plan as the last one was prepared in 1976.

(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES

Cultural resource studies of the Project area were conducted by Weller & Associates, Inc., on behalf of AEP Ohio Transco. In addition to a background records check and literature review using data files from the State Historic Preservation Office ("SHPO") for both the Preferred and Alternate Route, detailed History/Architectural Investigations and a Phase I Archaeological Investigation have been completed. Copies of the reports detailing these efforts will be filed as a confidential filing with the OPSB due to the sensitive nature of the location information for archaeological sites.

(1) Cultural Resources Map

Based on the cultural resources desktop study, there are no scenic rivers or scenic routes/byways (as defined by the Ohio Department of Natural Resources ["ODNR"] and/or the Ohio Department of Transportation ["ODOT"]), or registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance within 1,000 feet of the proposed routes. Cultural resources already in the public domain (churches, cemeteries, and OH Historic Inventory ("OHI") structures) are identified on Figures 7-2A to 7-2E.

(2) Cultural Resources in Study Corridor

Cultural resource studies to date have involved both background research utilizing data files from the SHPO online mapping system for the Preferred and Alternate Route, and detailed studies with field testing also being conducted.

For the background research, a one mile buffer was used around both the Preferred and Alternate Route to identify previously known cultural resources and to provide information on the probability of identifying cultural resources within the Project footprint. The SHPO online mapping database included a review of the Ohio Archaeological Inventory, the OHI, Determination of Eligibility files, the National Register of Historic Places ("NRHP"), historic cemeteries, historic bridges, national historic landmarks, and previous cultural resources surveys. Three previous cultural resource surveys were identified within a one mile buffer of the Project routes.

Field investigations resulted in the identification of one previously unrecorded archaeological site (33RO1432). The site is a prehistoric period isolated find and is not considered to be a significant

resource or indicative of a historic landmark. It has been recommended to SHPO that this site should not be considered eligible for inclusion into the NRHP, and no further archaeological work is recommended for this Project.

In total, 35 individual properties of fifty years of age or older were identified within the Project's Area of Potential Effect ("APE") during field investigations. Photographs and structural data for each property were collected. All 35 sites that were identified were determined not eligible for listing in the NRHP due to alterations, additions, and a loss of historic integrity.

(3) Construction, Operation, and Maintenance Impacts on Cultural Resources

Based on the results of the cultural resources desktop review and field surveys, impacts to known cultural resources associated with the construction, operation, and maintenance of the proposed Project are not anticipated.

(4) Mitigation Procedures

Based on the results of the desktop review and field surveys, no impacts to known historic properties are anticipated because of the Project; therefore, no mitigation is proposed at this time.

(5) Aesthetic Impact

(a) Visibility of the Proposed Facility

The viewshed along both the Preferred and Alternate Route from residences and potentially sensitive vantage points may be slightly altered by the presence of the rebuild transmission line, but not comparatively significant as there are already existing structures and wires present immediately adjacent or in close proximity to the Preferred Route, and the Alternate Route is similar in appearance to the existing transmission line. Additionally, the area consists of gently rolling forested hills which serve as a natural screen and many roads in the area are paralleled by wood poles supporting distribution lines. Where the Preferred and Alternate Routes pass through generally level low-lying open terrain, tree lines and small woodlots also provide a natural screen to the transmission line. Furthermore, the proposed line will replace the existing Berlin-Ross 69 kV line that already exists in generally the same location, and therefore, the new line is not anticipated to incrementally have negative aesthetic impacts in the landscape. However, for select locations in the Londonderry community, there may be an incremental change in the viewshed, including for some residences, and where tree clearing is required.

(b) Facility Effect on Site and Surrounding Area

Construction of the Project would affect the existing visual aesthetics of the area, through which the transmission line passes, primarily from the removal of trees for the ROW expansion. However, the degree of visual impact of the man-made element will vary with the setting and selected structure; the impact can be evaluated by comparing the amount of contrast resulting from the construction of the structure and the existing landscape. For example, if the transmission line were screened from

view, then the aesthetic impact would be minimal, and if the transmission line were placed in an existing open area, it would have a comparatively higher aesthetic impact, except where existing structures for the Berlin-Ross 69 kV line are being replaced in a relatively similar location. Because both the Preferred and Alternate Routes follow or replaces similar facilities, the aesthetic impact would be reduced, because either route option creates an incremental visual change in the existing visual setting.

(c) Visual Impact Minimization

The ability to minimize the visual impacts of the Project is constrained by engineering requirements, existing land use, and the Project length. AEP Ohio Transco has limited the potential aesthetic impacts of the transmission line to the extent possible through the route selection process, and where practical, paralleling or rebuilding on centerline of an existing transmission, which this Project accomplishes.

4906-5-08 ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

In summer 2017 and early 2018, AEP Ohio Transco conducted a study to assess the potential effects of construction and operation of the proposed Project on the ecology of the Project area. A map and literature search was conducted for a 1,000-foot corridor on either side of the centerline of the existing Berlin-Ross 69kV transmission line, which includes both the Preferred and Alternate Route. A field survey of ecological habitat and features was performed within 200 feet on either side of the existing Berlin-Ross 69kV transmission line and 150 feet on either side of the Preferred and Alternate Routes within the Londonderry Focus Area (hereafter referred to as the "Field Survey Area"), which encompasses the entirety of the Preferred and Alternate Routes. Field surveys were conducted from May 2017 through February 2018 during several mobilizations. While preliminary access roads have been identified and included with this Application, it should be noted that additional field surveys are required. Information in the following paragraphs addresses AEP Ohio Transco's ecological study conducted for both the Preferred and Alternate Route.

(A) Ecological Map

A map at a scale of 1:12,000 (one-inch = 1,000 feet) including the corridor 1,000 feet either side of the centerline (referred to as the 2,000-foot corridor) of the Preferred and Alternate Route is presented as Figure 8-1. This map depicts soils data, soils exceeding 12 percent slope within the 2,000-foot corridor, lakes, ponds, reservoirs, waterbodies, NWI wetlands, and 100-year floodplains. All features were identified from published data. Figure 8-2 (at 1:12,000 scale) depicts field-delineated water features within the Field Survey Area, defined as a 400-foot wide study area centered on the existing Berlin-Ross 69kV transmission line including a 300-foot wide study area centered on the Preferred and Alternate Routes within the Londonderry Focus Area where the routes deviate from the existing centerline. Both survey areas encompassed the entirety of the Preferred and Alternate Route.

(B) Field Survey Report for Vegetation and Surface Waters

The ecological survey of the Field Survey Area was conducted in the summer of 2017 and early 2018 by AEP Ohio Transco's consultant. The field survey was preceded by review of published mapping, aerial photography, protected federal and state-listed species, and ecological information for at least 1,000 feet on either side of the Preferred and Alternate Route centerlines. Map sources included USGS 7.5-minute quadrangle topographic maps, U.S. Fish and Wildlife Service ("USFWS") National Wetlands Inventory ("NWI") maps, and U.S. Department of Agriculture Natural Resources Conservation Service ("NRCS") soil survey maps.

Published information regarding existing flora and fauna was requested from the ODNR - Division of Wildlife ("DOW") Ohio Natural Heritage Program. This request included available GIS shapefiles of location records of state-listed species within one (1.0) mile of the Project. The information provided by the ODNR-DOW indicated no records of federal- or state-threatened or endangered species, or species of special concern, within 1,000 feet of the Preferred and Alternate Route. More detail on the data provided by the ODNR-DOW is provided in Section 4906-05-08(C)(1).

(1) Vegetative Communities, Wetlands, and Streams in Study Area**(a) Vegetative Communities**

Vegetative communities and land use types within the Field Survey Area include: agricultural and pasture fields, old fields, scrub-shrub, palustrine emergent ("PEM") wetland, palustrine unconsolidated bottom ("PUB") wetland, residential, existing utility ROW, upland forest, and riparian woodland, in addition to the identified waterbodies. Habitat descriptions are provided below. Details on the anticipated impacts from construction of the Project are provided in Section 4906-05-08(B)(3)(a) below and in Table 8-5.

(i) Agricultural and Pasture Fields

Portions of both the Preferred Route and Alternate Route cross agricultural and/or pasture fields. Open fields planted in soybeans, corn, hayfields, and active cattle pastures were observed along both route options. Cattle pastures were dominated by grasses maintained by grazing.

(ii) Old Field and Scrub-Shrub

Herbaceous cover exists in successional old field communities. Old-field plant communities are at the earliest stages of recolonization following disturbance. This community type is typically short-lived (less than 10 years), progressively giving way to shrub and forest communities unless periodically re-disturbed, in which case they remain as old fields. Old-field areas are located within some portions of the Project area, usually in inactive pastures or clear-cut areas. Portions of both the Preferred and Alternate Route have old-field and scrub-shrub communities. Dominant plant species included:

- Common dandelion (*Taraxacum officinale*);
- White clover (*Trifolium repens*);
- Red clover (*Trifolium pratense*);
- Kentucky blue grass (*Poa pratensis*);
- Tall fescue (*Festuca arundinacea*);
- Queen Anne's lace (*Daucus carota*);
- Orchard grass (*Dactylis glomerata*);
- Broom sedge (*Andropogon virginicus*);
- Ground ivy (*Glechoma hederacea*);
- Blackberry (*Rubus sp.*);
- Ironweed (*Vernonia gigantea*);
- Rambler rose (*Rosa multiflora*);
- Bentgrass (*Agrostis sp.*); and
- Goldenrod (*Solidago sp.*).

(iii) Wetlands

Wetlands were observed and delineated within and beyond the Preferred Route and Alternate Route. Dominant plant species typically found in wetlands crossed by the Project are listed below.

Dominant plant species observed within PEM wetlands include the following:

- Lesser poverty rush (*Juncus tenuis*);
- Deer-tongue rosette grass (*Dichanthelium clandestinum*);
- Spotted touch-me-not (*Impatiens capensis*);
- Canadian clearweed (*Pilea pumila*);
- Rice cut grass (*Leersia oryzoides*);
- Rough barnyard grass (*Echinochloa muricata*);
- Broad-leaf cat-tail (*Typha latifolia*);
- Dark-green bulrush (*Scirpus atrovirens*);
- Reed canary grass (*Phalaris arundinacea*);
- Cottongrass bulrush (*Scirpus cyperinus*);
- Lamp rush (*Juncus effusus*); and
- Shallow sedge (*Carex lurida*).

Dominant plant species observed within PUB wetlands include the following:

- Broad-leaf cat-tail

(iv) Residential

Rural residential areas were occasionally crossed within the Preferred and Alternate Route Field Survey Area. Vegetation identified on residential property includes areas of grasses and other herbaceous species, such as fescue, common dandelion, white clover, red clover, and ground ivy maintained through mowing.

(v) Utility ROW

Several linear ROWs were identified within or adjacent to the Preferred and Alternate Route. Vegetation along the existing Berlin-Ross 69 kV transmission line ROW has been maintained by mowing and consists of grasses, herbaceous plants, and scrub-shrub vegetation. Vegetation with tall growth potential that poses a risk to the operation and maintenance of overhead electric transmission lines is typically removed periodically from the ROW. Dominant herbaceous vegetation consists of wood-sorrel (*Oxalis stricta*), common yarrow (*Achillea millefolium*), ox-eye daisy (*Leucanthemum vulgare*), orchard grass, goldenrod, ironweed, fescue, common dandelion, white clover, red clover, ground ivy, Queen Anne's lace, broom sedge, and Christmas fern (*Polystichum acrostichoides*).

(vi) Upland and Riparian Forest

Upland and riparian early successional or second growth forest is present throughout the Field Survey Area within the Preferred and Alternate Route. Dominant canopy species includes the following:

- Black walnut (*Juglans nigra*);
- American beech (*Fagus grandifolia*);
- Shag-bark hickory (*Carya ovata*);
- Tuliptree (*Liriodendron tulipifera*);

- Common pawpaw (*Asimina triloba*); and
- Sugar maple (*Acer saccharum*).

The understory included species found in the canopy, as well as honeysuckle (*Lonicera morrowii* and *L. japonica*), northern spicebush (*Lindera benzoin*), rambler rose, greenbrier (*Smilax sp.*), and Christmas fern. The understory of the upland forest within the Project area ranged from open to moderately dense.

(b) Wetlands

According to the USACE, a wetland is defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

AEP Ohio Transco's consultant used the onsite methodology described in the 1987 Technical Report Y-87-1, USACE Wetlands Delineation Manual and subsequent guidance documents including the 2012 *Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0). Additionally, each identified wetland was evaluated in accordance with the Ohio Rapid Assessment Method (ORAM) developed by Ohio Environmental Protection Agency (OEPA; Mack, 2001). Wetland categorizations were conducted in accordance with the latest quantitative score calibration procedure (OEPA, 2001). To identify whether potential wetlands exist along the Preferred and Alternate Routes, a desktop study of available resources was performed prior to the field wetland delineations. Additionally, USFWS NWI maps and the NRCS soil survey and hydric soil list for Ross County were reviewed for areas within 1,000 feet of the Preferred and Alternate Route.

(i) Summary of National Wetland Inventory Data

USFWS NWI data, including freshwater wetlands and riverine areas, were mapped within 1,000 feet of the Preferred and Alternate Route, and reviewed to guide the field ecological survey as one factor in identifying potential wetland locations (USFWS, 2017). The NWI-mapped areas for the Preferred and Alternate Route are shown on Figure 8-1. Table 8-1 summarizes the NWI data by wetland classification and habitat type. The actual extent and type of field-delineated wetlands along the routes are discussed in the next section.

TABLE 8-1

NWI Wetlands Within 1,000 feet of the Preferred and Alternate Route

Wetland Type	NWI Code	NWI Habitat Type*	Total Number of Each Habitat Type Preferred/ Alternate
Freshwater Emergent Wetland	PEM1A	Palustrine Emergent Persistent Temporarily Flooded	11 – Preferred 11 – Alternate
Freshwater Emergent Wetland	PEM1C	Palustrine Emergent Persistent Seasonally Flooded	2 – Preferred 2 – Alternate
Freshwater Forested Wetland	PFO1A	Palustrine Forested Broad-Leaved Deciduous Temporarily Flooded	5 – Preferred 6 – Alternate
Freshwater Shrub/Emergent Wetland	PSS1/EM1C	Palustrine Scrub-Shrub Broad-Leaved Deciduous/Emergent Persistent Seasonally Flooded	1 – Preferred 1 – Alternate
Freshwater Shrub	PSS1A	Palustrine Scrub-Shrub Broad-Leaved Deciduous Temporarily Flooded	2 – Preferred 2 – Alternate
Freshwater Pond	PUBGH	Palustrine Unconsolidated Bottom Intermittently Exposed Diked/Impounded	8 – Preferred 8 – Alternate
Freshwater Pond	PUBGx	Palustrine Unconsolidated Bottom Excavated	5 – Preferred 5 – Alternate
Riverine	R4SBC	Riverine Intermittent Streambed Seasonally Flooded	7 – Preferred 7 – Alternate
Riverine	R5UBH	Riverine Unknown Perennial Unconsolidated Bottom Permanently Flooded	6 – Preferred 6 – Alternate
Total Number of Preferred Route NWI Wetlands:			47
Total Number of Alternate Route NWI Wetlands:			48

Notes:

Total number of PEM = 26, PFO = 11, PSS = 6, PUB = 26, R4SBC = 14, R5UBH = 12

* USFWS, 2017

(ii) Field-Delineated Wetlands

A total of 20 wetlands (totaling 3.39 acres) were delineated within the Field Survey Area. A total of 0.52-acre of wetlands were delineated within the Preferred Route ROW and 0.52-acre within the Alternate Route ROW. These field-delineated wetlands for the Preferred and Alternate Route are mapped on Figures 8-2A through 8-2E.

Detailed information on each wetland is provided in Table 8-2. The anticipated temporary construction impacts, where unavoidable, on these wetlands are included in Table 8-2 and further discussed in Section 4906-05-08(B)(3)(b).

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route of the Environmental Field Survey Area and Potential Disturbance Area/ROW

Wetland Name	Route	Figure	Cowardin Wetland Type ^a	ORAM Score	ORAM Category	Length Crossed by Centerline (feet)	Acreage within Field Survey Area ^b	Acreage within Potential Disturbance Area/ROW ^c
Preferred Route Wetlands								
W001-PEM-CAT2	Preferred	8-2B	PEM	46	2	—	0.03	—
W002-PUB-CAT1	Preferred	8-2B	PUB	29	1	—	0.53	—
W003-PEM-CAT1	Preferred	8-2B	PEM	27.5	1	25	0.04	0.03
W004-PUB-CATMOD2	Preferred	8-2C	PUB	35	Modified 2	—	0.20	—
W005-PEM-CAT1	Preferred	8-2C/D	PEM	21	1	14	0.19	0.02
W006-PUB-CAT2	Preferred	8-2E	PUB	33.5	2	—	0.02	—
W007-PUB-CATMOD2	Preferred	8-2E	PUB	35.5	Modified 2	152	0.79	0.33
W008-PEM-CAT1	Preferred	8-2E	PEM	27.5	1	—	0.13	—
W009A-PEM-CAT1	Preferred	8-2E	PEM	18.5	1	—	0.04	0.02
W009B-PEM-CAT1	Preferred	8-2E	PEM	18.5	1	39	0.10	0.09
W009C-PEM-CAT1	Preferred	8-2E	PEM	18.5	1	—	0.01	0.01
W010-PEM-CAT1	Preferred	8-2A	PEM	14	1	—	0.15	0.02
W011-PEM-CAT1	Preferred	8-2A	PEM	21	1	—	0.16	—
W012-PEM-CAT1	Preferred	8-2C	PEM	25	1	—	0.01	—
W013-PEM-CATMOD2	Preferred	8-2C	PEM	41	Modified 2	—	0.18	—
W013-PUB-CATMOD2	Preferred	8-2C	PUB	41	Modified 2	—	0.38	—
W014-PEM-CAT1	Preferred	8-2C	PEM	20	1	—	0.06	—
W015-PEM-CATMOD2	Preferred	8-2C	PEM	38	Modified 2	—	0.11	—
W015-PUB-CATMOD2	Preferred	8-2C	PUB	38	Modified 2	—	0.22	—
W016-PEM-CAT1	Preferred	8-2C/D	PEM	19	1	—	0.04	—
Total						230	3.39	0.52
Alternate Route Wetlands								
W001-PEM-CAT2	Alternate	8-2B	PEM	46	2	—	0.03	—
W002-PUB-CAT1	Alternate	8-2B	PUB	29	1	—	0.53	—
W003-PEM-CAT1	Alternate	8-2C	PEM	27.5	1	18	0.04	0.03
W004-PUB-CATMOD2	Alternate	8-2C	PUB	35	Modified 2	—	0.20	—
W005-PEM-CAT1	Alternate	8-2C/D	PEM	21	1	—	0.19	0.01
W006-PUB-CAT2	Alternate	8-2E	PUB	33.5	2	—	0.02	—

TABLE 8-2

Delineated Wetlands within the Preferred and Alternate Route of the Environmental Field Survey Area and Potential Disturbance Area/ROW

Wetland Name	Route	Figure	Cowardin Wetland Type ^a	ORAM Score	ORAM Category	Length Crossed by Centerline (feet)	Acreage within Field Survey Area ^b	Acreage within Potential Disturbance Area/ROW ^c
W007-PUB-CATMOD2	Alternate	8-2E	PUB	35.5	Modified 2	152	0.79	0.33
W008-PEM-CAT1	Alternate	8-2E	PEM	27.5	1	—	0.13	—
W009A-PEM-CAT1	Alternate	8-2E	PEM	18.5	1	—	0.04	0.02
W009B-PEM-CAT1	Alternate	8-2E	PEM	18.5	1	39	0.10	0.09
W009C-PEM-CAT1	Alternate	8-2E	PEM	18.5	1	—	0.01	0.01
W010-PEM-CAT1	Alternate	8-2A	PEM	14	1	—	0.15	—
W011-PEM-CAT1	Alternate	8-2A	PEM	21	1	—	0.16	0.03
W012-PEM-CAT1	Alternate	8-2C	PEM	25	1	—	0.01	—
W013-PEM-CATMOD2	Alternate	8-2C	PEM	41	Modified 2	—	0.18	—
W013-PUB-CATMOD2	Alternate	8-2C	PUB	41	Modified 2	—	0.38	—
W014-PEM-CAT1	Alternate	8-2C	PEM	20	1	—	0.06	—
W015-PEM-CATMOD2	Alternate	8-2C	PEM	38	Modified 2	—	0.11	—
W015-PUB-CATMOD2	Alternate	8-2C	PUB	38	Modified 2	—	0.22	—
W016-PEM-CAT1	Alternate	8-2C/D	PEM	19	1	—	0.04	—
Total						209	3.39	0.52

Note

- ^a Wetland Type: PEM = palustrine emergent, PUB = palustrine unconsolidated bottom.
- ^b The width of the Field Survey Area was 400 feet centered on the existing Berlin-Ross 69 kV transmission line and 300 feet centered on the Preferred and Alternate Routes within the Londonderry Focus Area where the routes deviate from the existing centerline.
- ^c The width of the potential disturbance area and the final maintained ROW is planned to be 100 feet.

(c) Waterbodies

(i) Field-Delineated Streams

Streams and drainage channels were delineated and assessed during the ecological survey of the Preferred and Alternate Route. The OEPA's Headwater Habitat Evaluation Index ("HHEI") is used to evaluate streams with a drainage area less than or equal to one square mile, and maximum pools depths less than or equal to 40 centimeters ("cm") (OEPA, 2012). The HHEI is generally used to assess Primary Headwater Habitat ("PHWH") streams that typically fall under the classification of first or second-order streams. The HHEI rates a stream based on its physical habitat and uses that information to determine the biological potential of the stream. The physical habitats scored for the HHEI are substrate type, pool depth, and bank full width. Scores for Class I PHWH Streams range from 0 to 29.9; scores for Class II PHWH Streams range from 30 to 69.9; and scores for Class III PHWH Streams range from 70 to 100. A "Modified" qualifier may be added as a prefix to any of these classes if evidence of anthropogenic alterations, such as channelization and bank stabilization, are observed. A higher PHWH class corresponds with a more continuous flow regime. The flow regime determines the physical habitat of the stream, and is therefore indicative of the biological communities it can support. Streams with scores between 30 and 69 may be classified as potential rheocrene habitat, depending on substrate type, watershed size, and stream flow. The PHWH class for these potential rheocrene streams is then identified by evaluating the biology (fish, salamanders, and benthic macroinvertebrates). Per AEP Ohio Transco's consultant's standard operating procedures, it was not necessary to perform a biotic evaluation, and no potential rheocrene streams were identified within the Field Survey Area.

A total of 37 streams were identified within the Field Survey Area. Of these streams, 33 were evaluated using the HHEI method and one was evaluated using OEPA's Qualitative Habitat Evaluation Index ("QHEI") method for streams with drainage areas greater than one (1.0) square mile or maximum pool depths of greater than 40 cm.

Streams identified during the ecological survey on the Preferred and Alternate Route are shown on Figures 8-2A through 8-2E. Detailed information on each delineated stream is included in Table 8-3. Aquatic life use designations within the Scioto River drainage basin obtained from O.A.C. 3745-1-09 are also provided. The Scioto River, located approximately 4.0 miles west of the Preferred and Alternate Route, is a traditionally navigable waterway as defined by USACE.

Approximately 2,254 linear feet of streams are located within the Preferred Route ROW, while approximately 2,148 linear feet are located within the Alternate Route ROW.

The Preferred Route centerline has 16 stream crossings with all the streams being crossed once. The Alternate Route centerline has 18 stream crossings with all the streams being crossed once. The total length of streams located within the Field Survey Area is approximately 14,006 linear feet. Construction impacts on these features are included in Table 8-3 and further discussed in Section 4906-05-08(B)(3)(c).

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
Preferred Route												
S001 Walnut Creek	Preferred	8-2A	Perennial	50	72	—	—	EWB	—	Yes	648	180
S002 UNT to Walnut Creek	Preferred	8-2B	Perennial	25	10	QHEI	55.5	—	Good	Yes	537	109
S003 UNT to Walnut Creek	Preferred	8-2B	Ephemeral	4	6	HHEI	34	—	Class II PHWH	Yes	320	128
S004 UNT to Walnut Creek	Preferred	8-2A/B	Perennial	7	6	HHEI	47	—	Class II PHWH	Yes	469	102
S005 UNT to Walnut Creek	Preferred	8-2A/B	Ephemeral	3	4	HHEI	23	—	Class I PHWH	No	95	NC
S006 UNT to Walnut Creek	Preferred	8-2B	Ephemeral	4	4	HHEI	31	—	Class II PHWH	No	323	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S007 UNT to Walnut Creek	Preferred	8-2B	Ephemeral	3	4	HHEI	21	—	Class I PWH	No	160	NC
S008 UNT to Walnut Creek	Preferred	8-2B	Ephemeral	4	4	HHEI	31	—	Class II PWH	No	390	NC
S009 UNT to Walnut Creek	Preferred	8-2B	Ephemeral	4	4	HHEI	28	—	Class I PWH	No	161	NC
S010 UNT to Walnut Creek	Preferred	8-2B	Intermittent	5	10	HHEI	48	—	Class II PWH	No	300	3
S011 UNT to Walnut Creek	Preferred	8-2B	Intermittent	3	8	HHEI	35	—	Class II PWH	Yes	582	130
S012 Sugar Run	Preferred	8-2B	Perennial	20	12		—	WWH	—	Yes	462	104
S013 UNT to Sugar Run	Preferred	8-2B	Ephemeral	2	2	HHEI	13	—	Class I PWH	No	92	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S014 UNT to Sugar Run	Preferred	8-2B	Ephemeral	4	6	HHEI	30	—	Class II PHWH	No	181	NC
S015 UNT to Sugar Run	Preferred	8-2B	Ephemeral	4	8	HHEI	35	—	Class II PHWH	Yes	635	136
S016 UNT to Walnut Creek	Preferred	8-2B/C	Ephemeral	3	6	HHEI	20	—	Class I PHWH	No	298	19
S017 UNT to Walnut Creek	Preferred	8-2B/C	Ephemeral	4	10	HHEI	31	—	Class II PHWH	No	239	NC
S018 UNT to Sugar Run	Preferred	8-2B	Ephemeral	3	4	HHEI	20	—	Class I PHWH	No	150	46
S019 UNT to Sugar Run	Preferred	8-2B	Ephemeral	3	6	HHEI	21	—	Class I PHWH	No	171	33
S020 UNT to Walnut Creek	Preferred	8-2C	Perennial	7	10	HHEI	54	—	Class II PHWH	Yes	571	145

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation *	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline *	Length (linear feet) within Field Survey Area *	Length (linear feet) within Potential Disturbance Area/ROW *
S021 UNT to Walnut Creek	Preferred	8-2C	Intermittent	6	6	HHEI	54	—	Class II PHWH	Yes	678	133
S022 UNT to Walnut Creek	Preferred	8-2C	Ephemeral	3	4	HHEI	24	—	Class I PHWH	No	144	42
S023 UNT to Mulgee Run	Preferred	8-2D	Perennial	6	12	HHEI	66	—	Class II PHWH	Yes	679	102
S024 UNT to Mulgee Run	Preferred	8-2D	Ephemeral	5	4	HHEI	35	—	Class II PHWH	Yes	806	114
S025 UNT to Mulgee Run	Preferred	8-2D	Ephemeral	4	6	HHEI	29	—	Class I PHWH	Yes	738	102
S026 UNT to Mulgee Run	Preferred	8-2D	Ephemeral	3	4	HHEI	20	—	Class I PHWH	Yes	529	108

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PWHH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S027 UNT to Mulgee Run	Preferred	8-2D	Ephemeral	3	4	HHEI	20	—	Class I PWHH	No	35	NC
S028 UNT to Mulgee Run	Preferred	8-2D	Ephemeral	4	4	HHEI	30	—	Class II PWHH	No	68	NC
S029 UNT to Mulgee Run	Preferred	8-2D/E	Ephemeral	2	3	HHEI	20	—	Class I PWHH	Yes	540	274
S030 Mulgee Run	Preferred	8-2D/E	Perennial	12	8	—	—	WWH	—	Yes	410	102
S031 UNT to Mulgee Run	Preferred	8-2D/E	Ephemeral	4	6	HHEI	31	—	Class II PWHH	No	609	NC
S032 UNT to Mulgee Run	Preferred	8-2E	Ephemeral	3	3	HHEI	21	—	Class I PWHH	No	236	NC

TABLE 8-3
Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation *	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S033 UNT to Mulgee Run	Preferred	8-2E	Ephemeral	4	4	HHEI	30	—	Class II PHWH	No	88	NC
S034 UNT to Mulgee Run	Preferred	8-2E	Ephemeral	5	6	HHEI	36	—	Class II PHWH	Yes	484	142
S035 UNT to Mulgee Run	Preferred	8-2E	Intermittent	7	4	HHEI	44	—	Class II PHWH	No	84	NC
S036 UNT to Walnut Creek	Preferred	8-2A	Ephemeral	2	1	HHEI	29	—	Class I PHWH	No	251	NC
S037 UNT to Mulgee Run	Preferred	8-2C/D	Intermittent	6	4	HHEI	48	—	Class II PHWH	No	843	NC
Total											14,006	2,254
Alternate Route												
S001 Walnut Creek	Alternate	8-2A	Perennial	50	72	—	—	EWB	—	Yes	648	121

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S002 UNT to Walnut Creek	Alternate	8-2B	Perennial	25	10	QHEI	55.5	—	Good	Yes	537	113
S003 UNT to Walnut Creek	Alternate	8-2B	Ephemeral	4	6	HHEI	34	—	Class II PHWH	Yes	320	144
S004 UNT to Walnut Creek	Alternate	8-2A/B	Perennial	7	6	HHEI	47	—	Class II PHWH	Yes	469	101
S005 UNT to Walnut Creek	Alternate	8-2A/B	Ephemeral	3	4	HHEI	23	—	Class I PHWH	No	95	NC
S006 UNT to Walnut Creek	Alternate	8-2B	Ephemeral	4	4	HHEI	31	—	Class II PHWH	No	323	NC
S007 UNT to Walnut Creek	Alternate	8-2B	Ephemeral	3	4	HHEI	21	—	Class I PHWH	No	160	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S008 UNT to Walnut Creek	Alternate	8-2B	Ephemeral	4	4	HHEI	31	—	Class II PHWH	No	390	23
S009 UNT to Walnut Creek	Alternate	8-2B	Ephemeral	4	4	HHEI	28	—	Class I PHWH	No	161	NC
S010 UNT to Walnut Creek	Alternate	8-2B	Intermittent	5	10	HHEI	48	—	Class II PHWH	Yes	300	57
S011 UNT to Walnut Creek	Alternate	8-2B	Intermittent	3	8	HHEI	35	—	Class II PHWH	Yes	582	118
S012 Sugar Run	Alternate	8-2B	Perennial	20	12		—	WWH	—	Yes	462	103
S013 UNT to Sugar Run	Alternate	8-2B	Ephemeral	2	2	HHEI	13	—	Class I PHWH	No	92	NC
S014 UNT to Sugar Run	Alternate	8-2B	Ephemeral	4	6	HHEI	30	—	Class II PHWH	No	181	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S015 UNT to Sugar Run	Alternate	8-2B	Ephemeral	4	8	HHEI	35	—	Class II PHWH	Yes	635	140
S016 UNT to Walnut Creek	Alternate	8-2B/C	Ephemeral	3	6	HHEI	20	—	Class I PHWH	Yes	298	74
S017 UNT to Walnut Creek	Alternate	8-2B/C	Ephemeral	4	10	HHEI	31	—	Class II PHWH	No	239	NC
S018 UNT to Sugar Run	Alternate	8-2B	Ephemeral	3	4	HHEI	20	—	Class I PHWH	No	150	NC
S019 UNT to Sugar Run	Alternate	8-2B	Ephemeral	3	6	HHEI	21	—	Class I PHWH	No	171	NC
S020 UNT to Walnut Creek	Alternate	8-2C	Perennial	7	10	HHEI	54	—	Class II PHWH	Yes	571	138
S021 UNT to Walnut Creek	Alternate	8-2C	Intermittent	6	6	HHEI	54	—	Class II PHWH	Yes	678	133

TABLE 8-3
Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation *	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S022 UNT to Walnut Creek	Alternate	8-2C	Ephemeral	3	4	HHEI	24	—	Class I PHWH	No	144	42
S023 UNT to Mulgee Run	Alternate	8-2D	Perennial	6	12	HHEI	66	—	Class II PHWH	Yes	679	102
S024 UNT to Mulgee Run	Alternate	8-2D	Ephemeral	5	4	HHEI	35	—	Class II PHWH	Yes	806	114
S025 UNT to Mulgee Run	Alternate	8-2D	Ephemeral	4	6	HHEI	29	—	Class I PHWH	Yes	738	132
S026 UNT to Mulgee Run	Alternate	8-2D	Ephemeral	3	4	HHEI	20	—	Class I PHWH	Yes	529	101
S027 UNT to Mulgee Run	Alternate	8-2D	Ephemeral	3	4	HHEI	20	—	Class I PHWH	No	35	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID/ Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S028 UNT to Mulgee Run	Alternate	8-2D	Ephemeral	4	4	HHEI	30	—	Class II PHWH	No	68	NC
S029 UNT to Mulgee Run	Alternate	8-2D/E	Ephemeral	2	3	HHEI	20	—	Class I PHWH	Yes	540	102
S030 Mulgee Run	Alternate	8-2D/E	Perennial	12	8	—	—	WWH	—	Yes	410	103
S031 UNT to Mulgee Run	Alternate	8-2D/E	Ephemeral	4	6	HHEI	31	—	Class II PHWH	No	609	34
S032 UNT to Mulgee Run	Alternate	8-2E	Ephemeral	3	3	HHEI	21	—	Class I PHWH	No	236	11
S033 UNT to Mulgee Run	Alternate	8-2E	Ephemeral	4	4	HHEI	30	—	Class II PHWH	No	88	NC

TABLE 8-3

Streams within the Preferred and Alternate Route Environmental Field Survey Area and Potential Disturbance Area/ROW

Stream ID Waterbody Name	Route	Figure	Flow Regime	Top of Bank Width (feet)	Maximum Pool Depth (inches)	Form	Score	OEPA Aquatic Life Use Designation ^a	PHWH Class (HHEI)/ Narrative Rating (QHEI)	Crossed by Centerline ^b	Length (linear feet) within Field Survey Area ^c	Length (linear feet) within Potential Disturbance Area/ROW ^d
S034 UNT to Mulgee Run	Alternate	8-2E	Ephemeral	5	6	HHEI	36	—	Class II PHWH	Yes	484	142
S035 UNT to Mulgee Run	Alternate	8-2E	Intermittent	7	4	HHEI	44	—	Class II PHWH	No	84	NC
S036 UNT to Walnut Creek	Alternate	8-2A	Ephemeral	2	1	HHEI	29	—	Class I PHWH	No	251	NC
S037 UNT to Mulgee Run	Alternate	9-2C/D	Intermittent	6	4	HHEI	48	-	Class II PHWH	No	843	NC
Total											14,006	2,148

Notes:

- ^a EWH = Exceptional Warmwater Habitat, WWH = Warm Water Habitat
 - ^b NC = Not crossed by proposed ROW.
 - ^c The width of the Field Survey Area was 400 feet centered on the existing Berlin-Ross 69 kV transmission line and 300 feet centered on the Preferred and Alternate Routes within the Londonderry Focus Area where the routes deviate from the existing centerline.
 - ^d The width of the potential disturbance area and the final maintained ROW is planned to be 100 feet.
- UNT = unnamed tributary

(ii) Lakes, Ponds, and Reservoirs

No major lakes, ponds, or reservoirs were observed within the Field Survey Area. Therefore, impacts from construction, operation, or maintenance of the proposed transmission line are not anticipated.

(2) Map of Facility, Right-of-Way, and Delineated Resources

Detailed maps at 1:12,000 scale depicting the delineated features and proposed ROW for the Preferred and Alternate Route are provided as Figure 8-2.

(3) Construction Impacts on Vegetation and Surface Waters**(a) Construction Impacts on Vegetation**

The construction impacts on woody and herbaceous vegetation along both the Preferred and Alternate Route will be limited to the initial clearing of vegetation within the 100-foot wide ROW for the proposed transmission line and access roads. Preliminary locations for access roads have been identified and will be confirmed at the time of AEP Ohio Transco's transmission line easement acquisition process. Trees adjacent to the ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe construction and operation of the transmission line. Vegetation waste (e.g., tree limbs and trunks) generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests. The approximate vegetation impacts along the Preferred and Alternate Route ROWs are provided in Table 8-4.

TABLE 8-4**Approximate Vegetation Impacts Along the Potential Disturbance Area/ROW**

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Preferred Route			
Agricultural	9,308	1.8	24.2
Industrial / Commercial	0	0.0	<0.1
Open Land / Pasture	9,606	1.8	21.0
Road / Railroad ROW	204	<0.1	0.5
Utility ROW	11,479	2.2	26.0
Water	72	<0.1	0.2
Woodlot	6,605	1.3	13.1
Alternate Route			
Agricultural	1,223	0.2	14.7
Industrial/Commercial	0	0.0	<0.1
Open Land / Pasture	41	<0.1	23.1
Road / Railroad ROW	51	<0.1	0.4
Utility ROW	36,324	6.9	42.2
Water	0	0.0	0.1

TABLE 8-4

Approximate Vegetation Impacts Along the Potential Disturbance Area/ROW

Land Use Type	Length of Route (in feet)	Length of Route (in miles)	Acreage within ROW
Woodlot	0	0.0	2.9

(b) Construction Impacts on Wetlands

Preferred Route: During wetland and waterbody delineations, seven wetlands were identified within the proposed ROW, totaling 0.52-acre. The delineated wetlands are shown on Figures 8-2A through 8-2E. Detailed information about each feature can be found in Table 8-2 in Section 4906-05-08(B)(b)(ii). Four of these wetlands are crossed by the Preferred Route centerline, totaling 230 linear feet. Impacts to the wetlands will be avoided by placing transmission line structures outside of wetland boundaries. Where temporary construction access through a wetland cannot be avoided, the crossing will occur during dry conditions and protective construction matting will be used to minimize impacts from construction vehicles.

ORAM categories for wetlands delineated in the Preferred Route ROW are detailed below:

- **Category 1 wetlands:** Six Category 1 wetlands with ORAM scores ranging from 14 to 27.5 were identified within the Preferred Route ROW, totaling 0.19-acre. All Category 1 wetlands are PEM wetlands and will not be impacted through the clearing of trees and shrubs during construction.
- **Category 2 wetlands:** One Category Modified 2 wetland with an ORAM score of 35.5 was identified within the Preferred Route ROW, totaling 0.33-acre. This wetland is a PUB wetland and will not be impacted through the clearing of trees and shrubs during construction.
- **Category 3 wetlands:** No Category 3 wetlands will be crossed; therefore, no construction impacts are anticipated.

Alternate Route: During wetland and waterbody delineations, seven wetlands were identified within the proposed Alternate Route ROW, totaling 0.52-acre. The delineated wetlands are shown on Figures 8-2A through 8-2E. Detailed information about each feature can be found in Table 8-2 in Section 4906-05-08(B)(b)(ii). Three of these wetlands are crossed by the centerline, totaling 209 linear feet. Impacts to wetlands will be avoided by placing transmission line structures outside wetland boundaries. Where temporary construction access through a wetland cannot be avoided, the crossing will occur during dry conditions or matting will be used to minimize impacts.

ORAM categories for wetlands delineated in the Alternate Route ROW are detailed below:

- **Category 1 wetlands:** Six Category 1 wetlands with ORAM scores ranging from 18.5 to 27.5 were identified within the proposed Alternate Route ROW, totaling 0.19-acre. All Category 1 wetlands are PEM wetlands and will not be impacted through the clearing of

trees and shrubs during construction.

- Category 2 wetlands: One Category Modified 2 wetland with an ORAM score of 35.5 was identified within the Alternate Route ROW, totaling 0.33-acre. This wetland is a PUB wetland and will not be impacted through the clearing of trees and shrubs during construction.
- Category 3 wetlands: For the Alternate Route, no Category 3 wetlands will be crossed; therefore, no construction impacts are anticipated.

Through appropriate planning and permitting, care will be taken near wetlands to avoid or minimize filling and sedimentation during construction. AEP Ohio Transco will avoid the placement of pole structures within wetlands to the extent practical. Selective clearing will be required to remove specific types of woody vegetation in wetlands that might impede construction or interfere with operation of the transmission line. Where wooded or forested wetlands occur within the ROW, the trees will be removed.

To minimize soil erosion and sedimentation during construction, best management practices ("BMPs") such as utilization of silt fences and construction matting will be implemented as required during construction. Sedimentation potential at wetlands is unlikely because of the plans for structure placement outside of wetlands, and the fact that construction equipment will only cross wetlands if necessary, and will do so using construction matting if wet conditions require.

Disturbance of soils in wetland areas during construction will be minimized. Temporary fill material (in the form of construction matting) may be placed in a wetland area utilized for access. Although not anticipated, if it is necessary to place a pole or guy wires within a wetland, they will be accessed using construction matting if wet conditions exist at the time of construction. No excavation other than the boring of a hole for pole installation will be performed within the wetland. In the event that pole placement is required within a wetland, no additional fill will be placed in the wetlands beyond the placement of the pole structure and borehole backfill.

Wetland areas will be clearly staked prior to the commencement of any clearing in order to minimize incidental vehicle impacts. Other than the remote possibility of pole locations within wetlands discussed above, operation of heavy mechanized equipment is not planned within any identified wetland areas, although some construction equipment may need to cross wetland areas on construction matting if wet conditions exist at the time. Woody vegetation in wetlands will be hand-cut by chain saws or other non-mechanized techniques. When necessary, rubber-wheeled vehicles, or vehicles equipped with tracks, will be used to remove vegetation debris. AEP Ohio Transco will perform all construction work in accordance with the conditions and requirements of regulatory permits obtained for the Project.

(c) Construction Impacts on Waterbodies

The Preferred Route centerline crosses 16 streams. The Alternate Route centerline crosses

18 streams. All streams are crossed by the centerline once. Detailed information about each feature can be found in Table 8-3 in Section 4906-05-08(B)(c)(i).

Approximately 2,254 linear feet of streams are located within the Preferred Route ROW, while approximately 2,148 linear feet are located within the Alternate Route ROW.

AEP Ohio Transco will not conduct mechanized clearing within 25 feet of any stream, and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe construction and operation of the line. No streams will be filled or permanently impacted. Some streams may have to be crossed by construction vehicles. Exact pole locations have not been fully determined to date. Access paths to proposed pole locations will be evaluated when more detailed engineering is performed and landowner negotiations progress. If a new stream crossing were necessary, it would comply with one of the following two proposed methods to cross streams:

- Temporary culvert stream crossings
- Temporary access bridge

Culvert stream crossings are proposed for crossing marginal quality perennial, ephemeral, and intermittent streams with a drainage basin of less than one-mile. These crossings may be removed or remain in place in order to provide maintenance access to the line (critical if service is to be reliable).

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand-cutting techniques rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff controlled to minimize from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.
- Culvert pipes will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas rather than pools.
- Culverts will be sized to be at least three times the depth of the normal stream flow at the crossing location. The minimum diameter culvert that will be used is 18 inches.
- There will be a sufficient number of culvert pipes to cross the stream completely with no more than a 12-inch space between each one.

- Stone, rock, or aggregate of ODOT number 1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts, larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.
- After completion of construction, some rock aggregate and structures such as culvert pipes used for the crossing will be left in place if approved by the landowner. Care will be taken so that aggregate does not create an impoundment or impede fish passage. Structures such as gabion mattresses will be removed.
- Stream banks will be stabilized and woody species planted as appropriate.

Temporary access bridges or culvert stream crossings will be used for high quality perennial, ephemeral, and intermittent streams and streams with a drainage basin greater than one square mile.

- Disturbance of the stream will be kept to a minimum, stream bank vegetation will be preserved to the maximum extent practical, and the stream crossing width will be kept as narrow as possible. Clearing will be done by hand cutting rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff will be controlled to minimize flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence will be used as needed according to local topographic conditions.
- Bridges will be constructed to span the entire channel. If the channel width exceeds eight feet, then a floating pier or bridge support may be placed in the channel. No more than one pier, footing, or support will be allowed for every eight feet of span width. No footings, piers, or supports will be allowed for spans of less than eight feet.
- No fill other than clean stone, free from soil, will be placed within the stream channel.

These crossings will be addressed in the Project Stormwater Pollution Prevention Plan ("SWPPP"). Some of the access routes may be left in place for maintenance activity. Details regarding the *proposed access road stream crossing methods* will be provided to the OPSB separately.

(4) Operation and Maintenance Impacts on Vegetation and Surface Water

During operation of the transmission line along either the Preferred or Alternate Route, the impacts on vegetation are anticipated to be minor. Undeveloped non-forested land not significantly disturbed by construction should retain its current vegetative composition. Periodic cutting along the proposed 100-foot-wide transmission line ROW is not expected to result in a significant environmental impact to the vegetation in these types of areas, particularly due to the proposed use of a portion of the existing ROW for the Preferred and Alternate Route.

The potential impacts on woody and herbaceous vegetation along either of the proposed routes will be limited to maintenance activities along the proposed transmission line ROW and access roads for safe and reliable operation of the transmission line. Trees adjacent to the proposed transmission line ROW, that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require clearing to allow for safe operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on individual landowner requests.

Once the transmission line is in operation, no significant impacts to streams or drainage channels are anticipated. Only periodic selective removal of vegetation that interferes with the operation of the transmission line will be required. No major lakes, ponds, or reservoirs should be affected by the operation or maintenance of the Preferred or Alternate Route, as none of these features were identified within the Field Survey Area.

AEP Ohio Transco does not anticipate significant wetland impacts from the operation or maintenance of the Preferred and Alternate Route. Vegetation that occurs within wetland areas may require periodic cutting. It is not anticipated that such activities would result in erosion or water quality degradation. Maintenance cutting of woody vegetation in wetland areas would be hand-cut by chain saws or other non-mechanized techniques.

(5) Mitigation Procedures

The following mitigation procedures will be used during construction, operation, and maintenance of the proposed Project to minimize the impact on vegetation and surface waters. A SWPPP will also be prepared and implemented, and will be made available onsite during Project construction.

(a) Site Restoration and Soil Stabilization

A SWPPP will be developed specifically for the Project and specified BMPs will be implemented during construction to control erosion and sedimentation. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation. Experience shows that seeding in non-wetland and non-agricultural areas is advantageous to control erosion on areas disturbed by construction activities. In lightly disturbed wetland areas, existing seed banks are quite often capable of quickly reestablishing vegetation that is compatible with the surrounding wetland. If any unanticipated significant disturbance occurs in wetlands, topsoil will be segregated and replaced so that the existing seed banks will be allowed to revegetate the areas initially. Additional seeding will only take place if the existing seed bank does not repopulate an area. These measures should preserve the aesthetic qualities along the ROW, prevent erosion, and promote habitat diversity.

Construction access routes and staging areas will be selected to minimize impacts to wetlands and streams to the extent practical. Following construction, pole locations, material storage sites, and temporary access roads will be seeded with a suitable grass seed mixture as specified in the

SWPPP for restoring these disturbed areas.

(b) Contingency Plan Stream and Wetland Crossings

The Project does not include a stream or wetland crossing by horizontal direction drill. Therefore, a detailed frac-out contingency plan will not be required for the Project.

(c) Demarcation and Protection Methods

Wetlands, streams, and any other environmentally sensitive areas will be clearly staked, flagged, or fenced in accordance with the SWPPP prior to the commencement of any clearing in order to minimize incidental impacts. BMPs such as utilization of silt fences and construction matting will be implemented as required during construction.

(d) Procedures for Inspection and Repair of Erosion Control Measures

Procedures for inspection and repair of erosion control measures, especially after rainfall events will be outlined in the SWPPP.

(e) Stormwater Runoff Measures

BMPs, including utilization of silt fence or filter socks, will be used as appropriate during construction to minimize runoff and sedimentation of streams and wetlands. Measures to divert stormwater runoff away from fill slopes and other exposed surfaces will be outlined in the SWPPP.

(f) Vegetation Protection Methods

Vegetation that occurs within wetland areas may require periodic cutting. Maintenance cutting of woody vegetation in wetland areas would be hand-cut by chain saws or other non-mechanized techniques. Cutting of woody vegetation in wetlands and near stream banks will be limited to removal of only the cut back required to safely perform construction and continue operation of the transmission line. AEP Ohio Transco will adhere to regulatory permit requirements and conditions that will be obtained or authorized for the Project, including specifying that no mechanized clearing of vegetation be performed within the prescribed distance of a wetland or waterbody as discussed below.

(g) Clearing Methods

AEP Ohio Transco will not conduct mechanized clearing within 25 feet of any stream, and will only clear (using hand cutting techniques) those trees in this area that are tall enough to or have the potential to interfere with safe and reliable construction and operation of the transmission line. Selective clearing will be required to remove woody vegetation in wetlands that might impede construction, or interfere with operation of the transmission line. Where wooded wetlands occur within the ROW, the trees will be removed. Trees adjacent to the proposed transmission line ROW that are dead, dying, diseased, leaning, significantly encroaching, or prone to failure may require

clearing to allow for safe and reliable operation of the transmission line. Vegetative waste (such as tree limbs and trunks) that is generated during the construction phase will be windrowed or chipped and disposed of appropriately depending on landowner requests.

(h) Expected Use of Herbicides

AEP Ohio Transco does not anticipate the use of herbicides on the Project.

(C) Literature Survey of Plant and Animal Life Potentially Affected

The Project area is primarily comprised of a rural setting with few residences located on typically larger lots. The developed areas primarily consist of residences and existing utility or road ROW. The undeveloped areas are mostly comprised of agricultural fields, open land, and woodlots. Both the Preferred and Alternate Route have potential habitat for wildlife species. Lists of commercial and recreational species were created utilizing professional experience and the ODNR-DOW 2017-2018 Hunting and Trapping Regulations (ODNR-DOW, 2017a).

Lists of protected species are typically based on their range within Ross County, as reported in correspondence from the ODNR-DOW and the review of USFWS county species distribution lists. Details on the expected impacts of construction, operation, maintenance, and mitigation procedures can be found following the threatened and endangered, commercial, and recreational species descriptions as follows.

(1) Project Vicinity Species Descriptions

(a) Protected Species

Coordination with ODNR-DOW was initiated to obtain Ohio Natural Heritage Database records within a one (1.0)-mile buffer area around the Preferred and Alternate Route. ODNR records of state- and federally listed species, provided in August 2017, indicated one fish species has been identified within a one (1.0)-mile radius of the Project. Habitat for this state Species of Concern was not identified within the Preferred or Alternate Route ROW and therefore impacts to this species are not anticipated. Current information provided through consultation with the USFWS and ODNR-DOW Ohio Natural Heritage Database is provided in Table 8-5.

A consultation request was submitted to the USFWS on May 16, 2017 and their e-mail response was received on May 18, 2017. USFWS stated there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the Project. USFWS also confirmed that two federally listed bat species listed in Table 8-5 may occur in the Project area and recommended winter tree clearing (October 1 through March 31) to avoid adverse effects to these species. AEP Ohio Transco proposes to adhere to this seasonal tree clearing restriction.

A consultation request was submitted to the ODNR on May 16, 2017, and their e-mail response was received on August 23, 2017. The ODNR-DOW indicated that if suitable habitat occurs in the Project area for the Indiana bat and trees must be cut, it is recommended that tree cutting occurs

between October 1 and March 31, which AEP Ohio Transco proposes to adhere to. The ODNR-DOW also identified a list of freshwater mussel and fish species that may occur in the Project area, however, habitat for these species is either not present or in-stream impacts to waterbodies where the species may occur are not proposed to occur. Furthermore, the ODNR-DOW indicated that the Project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis*), mud salamander (*Pseudotriton montanus*) and black bear (*Ursus americanus*), but due to the location of the Project, the type of habitat present at the Project, or the mobility of the species, impacts to these species is not likely. Lastly, the ODNR-DOW indicated that the Project is within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species and federal species of concern, and recommended a habitat suitability survey be conducted by a DOW approved herpetologist to determine if suitable habitat exists within the Project area. AEP Ohio Transco will retain a DOW approved herpetologist to complete the survey.

AEP Ohio Transco will utilize a 100-foot-wide permanent ROW for the Project to allow for safe and reliable construction and operation of the transmission line and prevent encroachment. AEP Ohio Transco will not conduct mechanized clearing within 25 feet of any stream, and will only clear (using hand cutting techniques) those trees in this area that are tall enough to have the potential to interfere with safe construction and reliable operation of the line. Once the final route is approved, AEP Ohio Transco's consultant will review the habitat along the route, based on observations recorded during the completed ecological survey, and coordinate with the USFWS and ODNR for survey plans if necessary.

TABLE 8-5
ODNR and USFWS Rare, Threatened or Endangered Species and Critical Habitat

Common Name	Scientific Name	Habitat Type	Listing Status	Habitat Type Present within the Project Area	Impacts to Habitat/Species Anticipated	Restricted Construction Dates
Amphibians						
Eastern hellbender ²	<i>Cryptobranchus alleganiensis</i>	Medium to large, rocky streams that are not excessively silty	E, FSC	Yes	No; In-stream work is not proposed and the ODNR-DOW states the Project is not likely to impact this species	-
Mud salamander ²	<i>Pseudotriton montanus</i>	Springs, seeps and creeks under large, flat stones	T	Yes	No; In-stream work is not proposed and the ODNR-DOW states the Project is not likely to impact this species	-
Mammals						
Indiana bat ^{2,4}	<i>Myotis sodalis</i>	Trees >3" dbh	E, FE	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Northern long-eared bat ⁴	<i>Myotis septentrionalis</i>	Roost in cavities or in crevices of both live trees and snags; Hibernates in caves and mines with constant temperatures, high humidity, and no air currents	FT	Yes	No; Avoided with winter tree clearing	April 1 to September 30
Black bear ²	<i>Ursus americana</i>	Thick understory vegetation and large quantities of edible material	E	Yes	No; Impacts are not anticipated due to the migratory nature of this species	-
Fishes						
Spotted darter ²	<i>Etheostoma maculatum</i>	Medium sized rivers and streams with swift current at the top or bottom end of a riffle, large boulders or flat slabs of rock	E	No	No; Known habitat types are not present within the Project area	April 15 to June 30

Common Name	Scientific Name	Habitat Type	Listing Status	Habitat Type Present within the Project Area	Impacts to Habitat/Species Anticipated	Restricted Construction Dates
Ohio lamprey ²	<i>Ichthyomyzon bdellium</i>	The Ohio River and the lower portion of its tributaries	E	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Shortnose gar ²	<i>Lepisosteus platostomus</i>	Lower Scioto and Ohio River	E	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Northern madtom ²	<i>Noturus stigmosus</i>	Swift currents along sand, silt, or rocky substrates	E	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Shovelnose sturgeon ²	<i>Scaphirhynchus platyrhynchus</i>	Open or main channel areas of large rivers, often in areas with swift current and sand or gravel bottom	E	No	No; Known habitat types are not present within the Project area	April 15 to June 30
American eel ²	<i>Anguilla rostrata</i>	Moderate or large rivers with continuous flow and moderately clear water	T	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Blue sucker ²	<i>Cycleptus elongatus</i>	Deep swiftly flowing chutes or channels of large rivers; In fast gravel bottomed chutes of the lower Scioto River from around Piketon downstream to the Ohio River	T, FSC	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Lake chubsucker ²	<i>Erimyzon sucetta</i>	Natural lakes and very sluggish streams or marshes with dense aquatic vegetation and clear waters	T	No	No; Known habitat types are not present within the Project area	April 15 to June 30

Common Name	Scientific Name	Habitat Type	Listing Status	Habitat Type Present within the Project Area	Impacts to Habitat/Species Anticipated	Restricted Construction Dates
Tippecanoe darter ²	<i>Etheostoma tippecanoe</i>	Medium to large streams and rivers in the Ohio River Drainage; Found in riffles of moderate current with a substrate of gravel and small cobble sized rocks	T	Yes	No; In-stream work is not proposed	April 15 to June 30
Channel darter ²	<i>Percina copelandi</i>	Large coarse sand or fine gravel bars in large rivers	T	No	No; Known habitat types are not present within the Project area	April 15 to June 30
River darter ²	<i>Percina shumardi</i>	Very large rivers with swift current with gravel or rocky bottom in depths of three feet or more	T	No	No; Known habitat types are not present within the Project area	April 15 to June 30
Eastern sand darter ³	<i>Ammacrypta pellucida</i>	Found in slow moving portions of streams and rivers where the bottom is composed of clean sand; Very intolerant of silt or mud covering up clean sand	SC, FSC	No	No; Known habitat types are not present within the Project area	-
Mussels						
Fanshell ²	<i>Cyprogenia stegaria</i>	Substrates including sand, gravel, cobble and mixed materials on the bottoms of streams and rivers; Free flowing, clean and well oxygenated water	E, FE	No	No; Known habitat types are not present within the Project area	-
Northern riffleshell ²	<i>Epioblasma torulosa rangiana</i>	Large to small streams, with sand and gravel substrates	E, FE	Yes	No; In-stream work is not proposed	-
Snuffbox ²	<i>Epioblasma triquetra</i>	Sand, gravel, or cobble substrates in swift small and medium-sized rivers; Individuals are often	E, FE	No	No; Known habitat types are not present within the Project area	-

Common Name	Scientific Name	Habitat Type	Listing Status	Habitat Type Present within the Project Area	Impacts to Habitat/Species Anticipated	Restricted Construction Dates
		buried deep in the sediment				
Long-solid ²	<i>Fusconaia maculata</i>	Small to large rivers in gravel with strong current	E	No	No; Known habitat types are not present within the Project area	-
Sharp-ridged pocketbook ²	<i>Lampsilis ovata</i>	Large rivers in coarse sand or gravel	E	No	No; Known habitat types are not present within the Project area	-
Sheepnose ²	<i>Plethobasus cyphus</i>	Large rivers and streams; Found in shallow areas with moderate to swift currents flowing over coarse sand and gravel	E, FE	Yes	No; In-stream work is not proposed	-
Clubshell ²	<i>Pleurobema clava</i>	Clean, loose sand and gravel in medium to small rivers and streams	E, FE	No	No; Known habitat types are not present within the Project area	-
Rabbitsfoot ²	<i>Quadrula cylindrical</i>	Small to medium sized rivers of moderate current with clear, relatively shallow water and a mixture of sand and gravel substrates	E, FC	No	No; Known habitat types are not present within the Project area	-
Rayed bean ²	<i>Villosa fabalis</i>	Smaller, headwater creeks, found in large rivers and wave washed areas; Gravel or sand substrates and in roots of aquatic vegetation	E, FE	No	No; Known habitat types are not present within the Project area	-
Little spectaclecase ²	<i>Villosa lienosa</i>	Small to medium streams in sand or gravel	E	Yes	No; In-stream work is not proposed	-

Common Name	Scientific Name	Habitat Type	Listing Status	Habitat Type Present within the Project Area	Impacts to Habitat/Species Anticipated	Restricted Construction Dates
Black sandshell ²	<i>Ligumia recta</i>	Rivers with strong currents and lakes with a firm substrate of gravel or sand	T	No	No; Known habitat types are not present within the Project area	-
Threehorn wartyback ²	<i>Obliquaria reflexa</i>	Medium to large rivers, substrates include gravel, gravel-sand, or gravel-mud with a moderate current	T	No	No; Known habitat types are not present within the Project area	-
Fawnsfoot ²	<i>Truncilla donaciformis</i>	Large rivers or the lower reaches of medium-sized streams in sand or gravel	T	Yes	No; In-stream work is not proposed	-
Reptiles						
Timber rattlesnake ²	<i>Crotalus horridus</i>	Wooded areas	E, FSC	Potentially	Unknown; A habitat suitability survey will be conducted, as requested by the ODNR-DOW	-

Notes:

- ¹ E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; FE = federal endangered; FT = federal threatened; FSC = federal species of concern; FC = federal candidate.
- ² ODNR, Division of Wildlife (DOW) comments included in the ODNR response, dated August 23, 2017.
- ³ ODNR, Natural Heritage Database (NHD) review results indicate a record of this species has been identified within a one-mile radius of the Project area.
- ⁴ Federally-listed species, migratory bird, or species of concern comments included in the USFWS response, dated May 18, 2017.

(b) Commercial Species

The commercially important species along the proposed routes consist of those hunted or trapped for fur or other by-products, including the following species. This information was obtained from ODNR-DOW Species Guide Index (ODNR-DOW, 2017).

Beaver (*Castor canadensis*): Beavers occur in forested ponds, lakes, and rivers. In rivers, beavers make burrows with an underwater entrance in the riverbank. However, in streams, lakes and ponds, beavers usually build dams that incorporate a lodge. Based on the habitat present along the routes, beavers are not likely to inhabit any areas along the Preferred or Alternate Route.

Coyote (*Canis latrans*): Historically, coyotes prefer open territory, but in Ohio, they have adapted to various habitat types. Coyotes are a very adaptable species that has prospered despite the expanding presence of human impact. This species is likely found near or within the project area, but was not observed during field investigations.

Gray Fox (*Urocyon cinereoargenteus*): The gray fox prefers wooded areas and partially open brush land with little human presence. Based on habitat present along the routes, this species is likely found near or within the Project, but was not observed during field investigations. However, they are nocturnal animals.

Long-tailed weasel (*Mustela frenata*): The long-tailed weasel is an adaptable animal that can be found in terrestrial habitats near water. Based on habitat present along the routes, this species is likely found near or within the Project, but was not observed during field investigations. However, they are generally nocturnal animals.

Mink (*Mustela vison*): Mink are usually found near water, both running and standing. Minks prefer wooded or brushy areas. This species was not observed during the field investigations.

Muskrat (*Ondatra zibethicus*): The muskrat is a large freshwater rodent. This species was not observed during the field investigations and is not likely to inhabit any areas along the Preferred or Alternate Route.

Raccoon (*Procyon lotor*): The raccoon is widespread in Ohio, even in many suburban and urban areas. Raccoons prefer wooded areas with water nearby. This nocturnal species was not observed during the field investigations, but it is likely present throughout the area.

Red fox (*Vulpes vulpes*): The red fox inhabits a wide range of habitats. This species was not observed during field surveys.

River otter (*Lontra canadensis*): River otters live in aquatic habitats such as rivers, lakes, and marshes. They prefer tributaries of large, clean drainages where there is minimal human disturbance. This species was not observed during field surveys.

Striped skunk (*Mephitis mephitis*): The skunk is an adaptable animal that occupies both rural and suburban areas. Their dens may be located under buildings, in open fields, on hillsides, or under logs in

the woods, which may have been self-created or formerly used by other animals. This primarily nocturnal species was not observed during the field investigations, but it likely exists along the route.

Virginia opossum (*Didelphis virginiana*): This marsupial's preferred habitat is an area interspersed with woods, wetlands, and farmland; however, they are an adaptable animal that can also be found in urban and suburban areas. This species was not observed during the field investigations, but it likely exists along the route.

(c) Recreational Species

Recreational terrestrial species consist of those hunted as game. Recreational species expected to inhabit areas along the ROW include the following. This information was obtained from ODNR-DOW Species Guide Index (ODNR-DOW, 2017).

(i) Fowl

American Crow (*Corvus brachyrhynchos*): The American crow is found in all Ohio counties. They prefer habitats with open fields and trees. American crows were observed during the field investigations along the majority of the Preferred and Alternate Route.

American Woodcock (*Scolopax minor*): Woodcock prefer open, interspersed, early successional habitats with moist loam soils, which provide earthworms. The largest populations occur in northeast, north-central, and central regions of Ohio. This species was not observed during field surveys.

American Coot (*Fulica americana*): Coots inhabit the shallows of freshwater lakes, ponds, or marshes. It is unlikely that this species would exist along the proposed routes because they are found mostly in Lake Erie marshes. This species was not observed during surveys.

Goose: Several goose species can be found in Ohio, although typically during migration: Snow Goose (*Anser caerulescens*), Greater White-fronted Goose (*Anser albifrons*), Cackling Goose (*Branta hutchinsii*), and Brant (*Branta bernicla*). The Canada Goose (*Branta canadensis*) is commonly found throughout Ohio, both as residents and migrants. Habitat for Canada Goose was observed along the routes and Canada geese were the only wild goose species observed during field surveys.

Mourning Dove (*Zenaida macroura*): Mourning Doves are found near rural and suburban residences, nesting in shrubs and trees. They are also frequent in rural farmlands nesting in fencerows and edge habitats. Habitat for this species is present throughout the routes. This species was observed frequently during field surveys.

Mergansers: Several merganser species can be found in Ohio, such as the Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), and Hooded Merganser (*Lophodytes cucullatus*). Habitat for these species is present along the routes in select areas. This species was not observed during field surveys.

Northern Bobwhite Quail (*Colinus virginianus*): The Northern Bobwhite Quail is a forest edge species. This species could exist in select locations along the routes; however, it was not observed during field surveys.

Ring-necked Pheasant (*Phasianus colchicus*): This species can be found primarily along agricultural edges. Pheasants succeed where farming is intensive if there is adequate undisturbed cover for nesting, and sufficient food and cover during winter. This species likely inhabits select locations along the routes; however, no pheasants were observed during field surveys.

Ruffed Grouse (*Bonasa umbellus*): Grouse habitat includes mixed hardwood shrub and forest stands. Although the ruffed grouse was not observed during field surveys, there are select locations along the proposed routes that contain appropriate habitat.

Teal: Several teal species could be found in Ohio. The Cinnamon Teal (*Anas cyanoptera*), Green-winged Teal (*Anas crecca*), and Blue-winged Teal (*Anas discors*) are waterfowl. They are usually birds of fresh, shallow marshes and rivers instead of large lakes and bays. No habitat for these species was identified along the proposed routes.

Various duck species: Various duck species can be found in Ohio, most of which are present only during migration. The American Black Duck (*Anas rubripes*), Redhead (*Aythya americana*), Greater Scaup (*Aythya marila*), Lesser Scaup (*Aythya affinis*), Canvasback (*Aythya valisineria*), and Northern Pintail (*Anas acuta*) are usually only found in Ohio during migration and could be found near the proposed routes at that time. The Mallard (*Anas platyrhynchos*) and Wood Duck (*Aix sponsa*) are two duck species that regularly reside and migrate through Ohio.

- Mallard: Most mallards occupy extensive wetlands; however, they are very adaptable. Mallards can be found inhabiting small farm ponds, ditches with flowing water, streams, lakes, and ponds in urban areas. Habitat for this species does exist throughout the project area. This species was not observed during field surveys.
- Wood Duck: The Wood Duck prefers mature riparian corridors, quiet backwaters of lakes, ponds bordered by large trees, and secluded wooded swamps. Habitat for this species is present in select locations along the routes. This species was not observed during field surveys.

Wild Turkey (*Meleagris gallopavo*): Wild Turkeys are adaptable animals. Although they prefer mature forests, they can thrive in areas with as little as 15 percent forest cover. This species was not observed during the field surveys, but likely occurs along the Preferred and Alternate Route.

(ii) Mammals

Eastern cottontail rabbit (*Sylvilagus floridanus*): This species is found in both rural and urban areas. They prefer open areas bordered by thickets or brush areas. This species prefers habitat found throughout the routes. While the species was not observed during the field surveys, its habitat is present along the Preferred and Alternate Route.

Gray, red, and fox squirrels (*Sciurus carolinensis*, *Tamiasurus hudsonicus*, and *Sciurus niger*, respectively):

The fox squirrel is primarily an inhabitant of isolated woodlots 10 to 20 acres in size with a sparse understory. The eastern gray squirrel prefers more extensive woodland areas. The red squirrel prefers coniferous and mixed forests. Squirrels were observed during the field surveys along the Preferred and Alternate Route.

White-tailed deer (*Odocoileus virginianus*): White-tailed deer are found in rural and suburban areas. Indirect evidence, although no sightings of this species, was observed during the field surveys along the Preferred and Alternate Route.

Woodchuck (*Marmota monax*): Woodchucks live in open grasslands, pastures, and woodlands. This species was not observed during field surveys, but is likely present throughout the Preferred and Alternate Route.

(iii) Game Fish

Based upon the hydrologic connectivity and the nature of the surface water habitats known to occur within the project area, diverse game fish species are anticipated to inhabit some of the streams that are crossed by the Routes. A list of game fish known to occur in Ohio was obtained from ODNR-DOW's Sport Fish of Ohio Identification Guide (ODNR-DOW, 2012). The list was narrowed to fish most likely to be found within the project area based on professional judgment and experience, and as such, the list of species presented in this section is not an exhaustive list of all species potentially present in the project area. The listed species are known to be regionally common and likely to occur on a case-by-case basis, within the surface water features proposed to be crossed or encroached. Neither aquatic species nor habitat surveys were completed as part of the field surveys.

Bluegill (*Lepomis macrochirus*): Bluegill are found throughout the state, preferring clear ponds and lakes with rooted vegetation. This species is not likely to occur in streams or PUB wetlands identified along the Preferred and Alternate Route.

Bullhead Catfish (*Ameiurus* sp.): Bullhead catfish are common throughout the state. Brown bullheads prefer clean, clear water, while black bullheads can tolerate more turbid water. Yellow bullheads prefer areas with heavy vegetation. Bullhead catfish are not likely to be found within the Project area.

Common Carp (*Cyprinus carpio*): Carp can be found in throughout the state, preferring turbid waters rich in organic matter. It is unlikely that common carp are present in streams along the Preferred and Alternate Route.

Channel Catfish (*Ictalurus punctatus*): Channel catfish are found throughout the state in large streams and lakes. Channel catfish prefer areas with deep water, clean gravel, and boulder substrates with low to moderate current. This species is not likely to occur in streams along the Preferred and Alternate Route.

Flathead Catfish (*Pylodictis olivaris*): Flathead catfish are found in large rivers, a few inland lakes, and some reservoirs that are outside the project area in Ohio. They prefer deep pools with slow current and cover. Flathead catfish are not likely to be found along the Preferred and Alternate Route.

Freshwater Drum (*Aplodinotus grunniens*): This species can be found in large, shallow lakes and big rivers, typically in deeper pools. Freshwater drum are not likely to be found in the Project area.

Green Sunfish (*Lepomis cyanellus*): Green sunfish are present in most lakes and streams throughout the state and are tolerant of turbid water. They are regularly associated with some type of structure such as brush, vegetation, or rocks. This species is not likely to occur in streams along the Preferred and Alternate Route.

Largemouth Bass (*Micropterus salmoides*): Largemouth bass are found in ponds, lakes, and slow sluggish streams throughout the state. This species is not likely to be found in the Project area.

Longear Sunfish (*Lepomis megalotis*): Longear sunfish are found in streams and lakes throughout the state. They prefer sluggish, clear streams of moderate size with beds of aquatic vegetation. This species is not likely to be found in the Project area.

Longnose Gar (*Lepisosteus osseus*): Longnose gar are a common Ohio fish. This species is not likely to occur in streams along the Preferred and Alternate Route.

Rock bass (*Ambloplites rupestris*): Rock bass are widespread throughout the state. They prefer clear streams with coarse gravel and boulders. This species is not likely to be found in streams along the Preferred and Alternate Route.

Smallmouth Bass (*Micropterus dolomieu*): Smallmouth bass are often abundant in quarries and thrive in streams with gravel or rock bottoms with a visible current. This species is not likely to occur in streams along the Preferred and Alternate Route.

Spotted Bass (*Micropterus punctulatus*): Spotted bass occur in low gradient streams in southern Ohio. Spotted bass are not likely to be found in the Project area.

White Crappie (*Pomoxis annularis*): White crappie can be found in larger ponds, lakes, and rivers. White crappie can tolerate a wide variety of habitats and conditions. This species is regularly found near structures such as fallen trees, stumps, docks, rocks, and aquatic vegetation. This species is not likely to occur in streams along the Preferred and Alternate Route.

(2) Construction Impacts on Identified Species

Based on the nature of the proposed Project activities and habitat characteristics of the surrounding vicinity, construction impacts to protected species are not anticipated. AEP Ohio Transco will conduct winter tree clearing, and no in-water work in perennial streams from April 15 through June 30 is proposed to reduce impacts to indigenous aquatic species and their habitat. AEP Ohio Transco will coordinate with USFWS and ODNR regarding specific construction requirements, if required by these agencies. The construction impact on other specific identified species (recreational and commercial) is expected to be minor because equivalent habitat that would be impacted during construction exists immediately adjacent to the construction ROW, and the identified species are mobile.

(3) Operation and Maintenance Impacts on Identified Species

Minimal impacts are anticipated to protected wildlife during operation and maintenance of the transmission line. Clearing of secondary growth vegetation will be required along most of the Preferred Route ROW and additional supplemental ROW along the Alternate Route; however, approximately 25 feet of existing ROW along the Alternate Route will be allowed to return to an early successional vegetative community. Operational activities and periodic maintenance of the ROW are not anticipated to impact wildlife significantly because of the minimal permanent ground disturbance and available adjacent habitat available.

(4) Mitigation Procedures

If areas are identified during the informal consultation process with USFWS and ODNR that are of special concern, AEP Ohio Transco will coordinate with these agencies to develop appropriate mitigation measures. The mitigation measure will be implemented if the area of special concern is located within the route approved by the OPSB.

(D) Site Geology**(1) Site Geology**

Both routes are located within the Shawnee-Mississippian Plateau region of the Appalachian Plateaus physiographic province to the south and the Illinoian Glaciated Allegheny Plateau region of the Glaciated Allegheny Plateaus physiographic province in the northern most extents (ODNR, 1998). The Shawnee-Mississippian Plateau region is characterized by elevations between 400 and 1,340 feet above sea level. This region consists of highly dissected plateaus of coarse and fine-grained rock sequences, and remnants of ancient lacustrine clay-filled Teays drainage system are extensive in lowlands, though absent in uplands. The Illinoian Glaciated Plateau region is characterized by elevations between 600 and 1,400 feet above sea level, with moderate relief (up to 200 feet) between the valleys and rugged hills. This region is hilly and characterized by streams that flow in deep, narrow valleys. A few locations along the Preferred and Alternate Route may encounter a high water table according to the Web Soil Survey of Ross County, OH.

In the northern Illinoian Glaciated Allegheny Plateau, soils are mostly Illinoian-age till found on upland terraces. These deeply weathered terraces consist mostly of silty clay loams in upper elevated areas with additional loess and older drift on the ridgetops, and more gravelly clay loams in the lowland areas. Soil depths are considerable in most locations, but absent on bedrock slopes according to the Web Soil Survey of Ross County, OH. Soils in the Shawnee-Mississippian Plateau are mostly Pleistocene-age sandy outwash in Scioto River, Teays-age Minford Clay, silt-loam, and channery colluvium.

Devonian to Mississippian-age shales, siltstones, and sandstones characterize the geology of the area (USGS, 2005). The bedrock underlying the northern and southern portions of the routes is Maxville Limestone, with a small portion of the Preferred and Alternate Route crossing the Sudbury Shale of Lower Mississippian age in between (USGS, 2017). Approximately 14 percent of the area within 1,000 feet of the Preferred Route occurs within the Sunbury Shale, Berea Sandstone, and Bedford Shale, and 86 percent within the Maxville Limestone; Rushville, Logan, and Cuyahoga Formations. Approximately 14 percent of the area within 1,000 feet of the Alternate Route occurs within the Sunbury Shale, Berea Sandstone, and Bedford Shale, and 86 percent within the Maxville Limestone; Rushville, Logan, and Cuyahoga Formations (USGS, 2005).

(2) Slopes and Foundation Soil Suitability

Slopes exceeding 12 percent, obtained from the NRCS, are identified on Figure 8-1. Approximately 33 percent of the area within 1,000 feet of the Preferred Route occurs where slopes exceed 12 percent. Similarly, slopes exceeding 12 percent occur within approximately 33 percent of the area within 1,000 feet of the Alternate Route. During construction, AEP Ohio Transco will implement a SWPPP and associated BMPs as necessary to control erosion and sedimentation in areas with slopes exceeding 12 percent. Once construction is complete, soils will be revegetated and stabilized. As a result, no erosional impacts resulting from slopes exceeding 12 percent are expected.

The bedrock geologies consisting primarily of shales and siltstones and overlaying soils consisting of primarily silt loams and silty clay loams, present along both routes, are generally expected to be suitable for foundation construction. To obtain further site-specific details on the suitability of the soils for foundation construction, AEP Ohio Transco will conduct detailed engineering design and geotechnical soil borings. Engineering design and geotechnical test drilling will likely be completed soon after the Project is certificated by OPSB and engineering plans and boring logs will be provided to the staff shortly thereafter.

At a minimum, geotechnical soil borings will provide the following information to be utilized for structure placement and foundation design engineering as needed:

- (1) Subsurface Soil Properties
- (2) Static Water Level
- (3) Rock Quality Description

(4) Percent Recovery

(5) Depth and Description of Bedrock Contact

AEP Ohio Transco anticipates that foundations will only be required at some angle structures that will be ultimately determined during the engineering design. When required, foundations will be engineered based on the results of geotechnical soil boring and laboratory test results to ensure they are sited in locations considered suitable based on soil and rock properties and surface slope.

(E) Environmental and Aviation Regulation Compliance

(1) Licenses, Permits, and Authorizations Required for the Facility

AEP Ohio Transco anticipates submitting a Notice of Intent for coverage under the OEPA General National Pollutant Discharge Elimination System ("NPDES") Permit. Coverage under USACE's Nationwide Permit 12 for wetland and waterbody impacts associated with Utility Line Activities may be required, but will be determined once the construction plan is finalized and therefore impacts to waters can be determined. It is also anticipated that multiple road crossing permits will be required.

(2) Construction Debris

The site will be kept clean of debris resulting from the work. Debris associated with construction of the proposed transmission line will likely include conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. Construction debris will be disposed of in accordance with state and federal requirements in an OEPA-approved landfill or other appropriately licensed and operated facility. Where vegetation must be cleared, the resulting brush will be removed or windrowed along the edge of the ROW or as requested by individual property owners. Marketable timber will generally be cut into appropriate lengths for sale or disposition by the landowner.

(3) Stormwater and Erosion Control

A SWPPP will be prepared, BMPs implemented to minimize soil erosion and sedimentation and other pollutant discharges, and these will be made available onsite during Project construction. The SWPPP will include the following General Conditions, at a minimum:

Erosion and Sediment Controls

Implementation of erosion and sediment control practices will be based on the methods and standards described in the ODNR Rainwater and Land Development Manual (ODNR, 2014); and the OEPA NPDES Permit Program for the discharge of stormwater from construction sites.

Wetlands, streams, and other environmentally sensitive areas will be clearly marked before the start of clearing or construction. No construction or access will be permitted in these areas unless clearly

specified in the SWPPP.

No permanent impacts to streams or headwaters are anticipated. No poles are anticipated to be located in streams and no permanent stream crossings are anticipated. Streams, including beds and banks, if disturbed during construction, will be re-stabilized immediately after in-channel work is completed.

Grubbing activities are not anticipated. Sediment basins, traps, and perimeter sediment controls will be implemented within seven days of grubbing activities. Sediment controls will continue to function until disturbed areas are permanently stabilized.

Silt Fence: Silt fencing or other appropriate BMPs for erosion control will be installed as needed before ground-disturbing work begins. Silt fence will be installed according to the methods recommended in the Rainwater and Land Development Manual (ODNR, 2014) before upslope land disturbance begins. In general, silt fence will be used where there is the possibility that sheet flow will carry sediment-laden water into downstream creeks or wetlands. Other methods will be used where flow in ditches, channels or gullies is anticipated. The following installation guidelines will be followed:

- Silt fence will be constructed before upslope land disturbance begins;
- All silt fences will be placed as close to the contour as possible so that water will not concentrate at low points in the fence and so that small swales or depressions that may carry small concentrated flows to the silt fence are dissipated along its length;
- Ends of the silt fences will be brought upslope slightly so that water ponded by the silt fence will be prevented from flowing around the ends;
- Silt fences will be placed on the flattest area available;
- Where possible, vegetation will be preserved for five feet (or as much as possible) upslope from the silt fence. If vegetation is removed, it will be reestablished within seven days from the installation of the silt fence;
- The height of the silt fence will be a minimum of 16 inches above the original ground surface;
- The silt fence will be placed in an excavated or sliced trench cut a minimum of six inches deep. The trench will be made with a trencher, cable laying machine, slicing machine, or other suitable device that will ensure an adequately uniform trench depth;
- The silt fence will be placed with the stakes on the downslope side of the geotextile. A minimum of eight inches of geotextile will be below the ground surface. Excess material will lay on the bottom of the six-inch deep trench. The trench will be backfilled and compacted on both sides of the fabric; and

- Seams between sections of silt fence will be spliced together only at a support post with a minimum six-inch overlap prior to driving into the ground.

Soil Stabilization: Disturbed areas that remain unworked for more than 21 days will be stabilized with seed and mulch no later than 14 days after the last construction in that area.

Maintenance and Inspection: Erosion and sediment control practices will be inspected at least once every seven days and within 24 hours after any storm event greater than 0.5-inch of rain per 24-hour period.

AEP Ohio Transco will maintain erosion control measures in good working order. If a repair is necessary, it will be initiated within 24 hours of report. Silt fencing will be inspected for depth of sediment, for tears, for assurance fabric is securely attached to the fence posts, and to ensure that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

(4) Disposition of Contaminated Soil and Hazardous Materials

All materials stored onsite will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure. Products will be kept in their original containers with the original manufacturer's label. Manufacturer's recommendations for proper use and disposal will be followed. Material Safety Data Sheets ("MSDS") or Safety Data Sheets will be retained and available onsite at all times.

The following General Conditions will also be included in the SWPPP to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

Spill Prevention

The following spill prevention methods and procedures are proposed:

- All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled;
- Secondary containment will be provided for all onsite fuel storage tanks required during construction;
- All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations;

- All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area onsite;
- Spills will be reported to the appropriate government agency as required; and
- Suspected hazardous materials encountered during construction will be reported to the regional environmental coordinator by the transmission construction representative. In addition, the Project manager will be notified.

The Project requires a Spill Prevention Plan to be created and available for review onsite. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. AEP Ohio Transco also requires its employees and contractors to follow all federal and state-mandated material-handling requirements.

AEP Transmission follows an internal Spill Prevention Notification Plan that is closely aligned to AEP Ohio Transco's Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

- Oil/Polychlorinated Biphenyl ("PCB") Spill Response and Cleanup Procedure;
- When to Report an Oil/PCB Spill to the Region Environmental Coordinator;
- Hazardous Substance Spill Response Procedure; and
- Region Environmental Coordinator Contact List.

This field guide outlines spill response and cleanup procedures as well as the reporting that is required. The Spill Response and Cleanup – Field Guide will be available upon request.

(5) Maximum Height of Aboveground Structures

The height of the tallest anticipated aboveground structure and construction equipment is designed to be approximately 100 feet. The nearest airport, Pike County Airport, is located approximately 8.1 miles southwest of the southern terminus of the Project. The Ross County Airport is located approximately 12 miles northwest of the northern terminus of the Project. The VA Hospital Heliport and ODOT District 9 Heliports are located approximately 8.0 miles and 4.2 miles, respectively, northwest of the proposed Project.

The Federal Aviation Administration ("FAA") Form 7460-1, "Notice of Proposed Construction or Alteration," is used for FAA notification. This can be filed electronically or by standard U.S. mail. A 7.5-minute quadrangle topographic map showing the proposed construction must be attached to the completed Form 7460-1. The Form 7460-1 must be submitted 45 days prior to the proposed start of construction.

Additionally, a permit from the ODOT, Office of Aviation, must be obtained prior to the start of any construction on or near airports in Ohio that are open to the public. A duplicate of the federal filing fulfills the state permit application requirements as set forth in O.A.C. 5501:1-10-06.

(a) Filing Criteria

The FAA Form 7460-1 must be filed for any construction or alteration of more than 200 feet in height. Additionally, any construction or alteration extending outward and upward in excess of specific slope angles in reference to aircraft take-off or landings on airport runways may require filing with the FAA. Upon completion of the final design, AEP Ohio Transco will review the need for any permitting with the FAA and will follow recommendations made by the FAA.

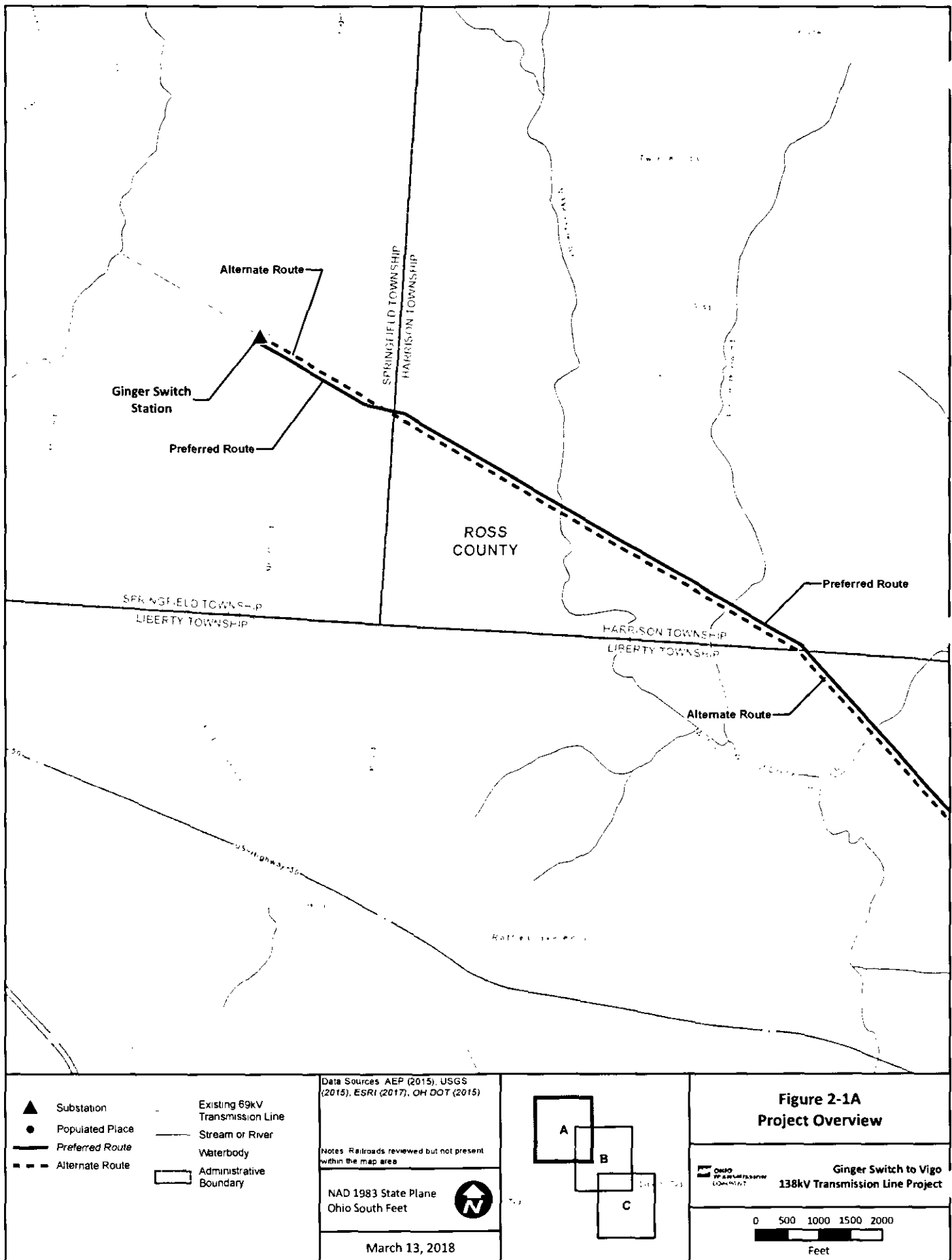
(6) Dusty or Muddy Conditions Plan

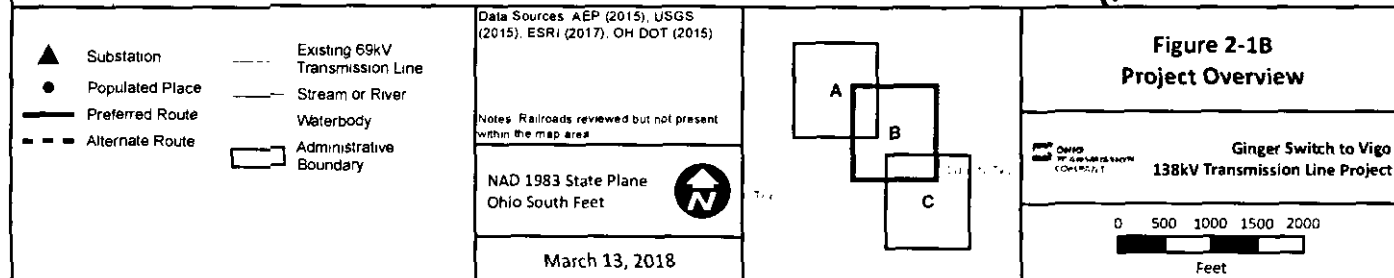
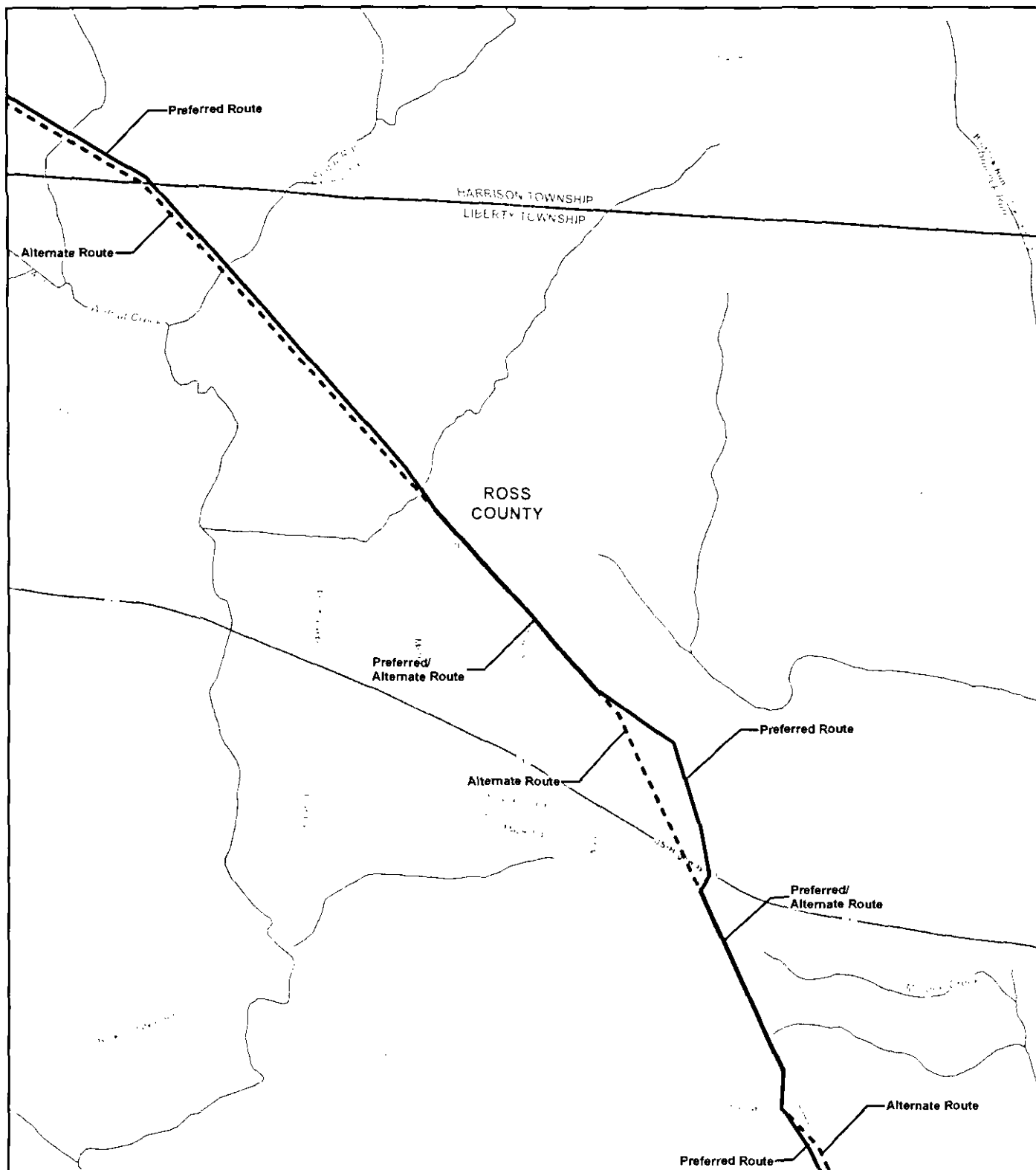
(a) Dust Control

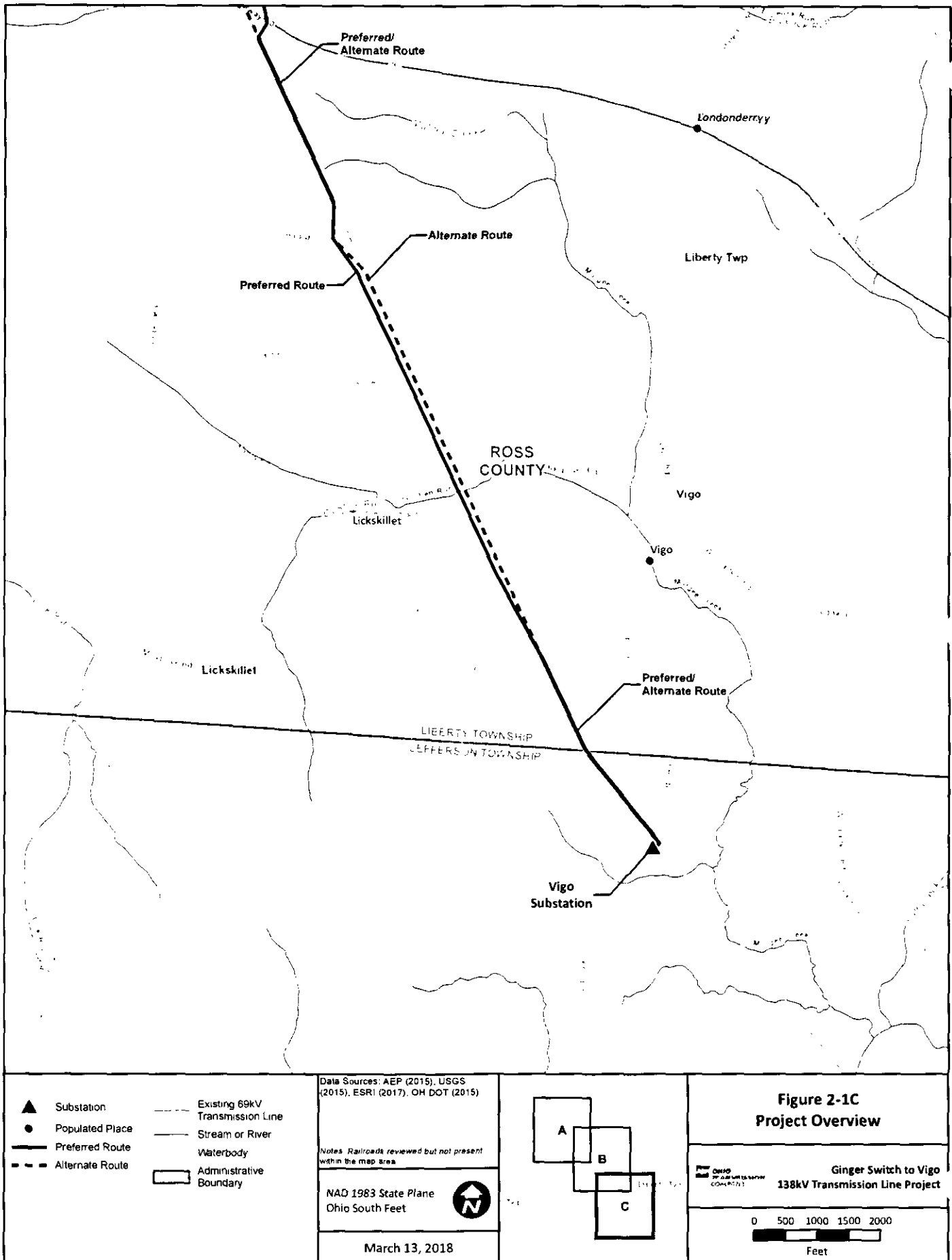
The site and surrounding areas will be kept free from dust nuisance resulting from site activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

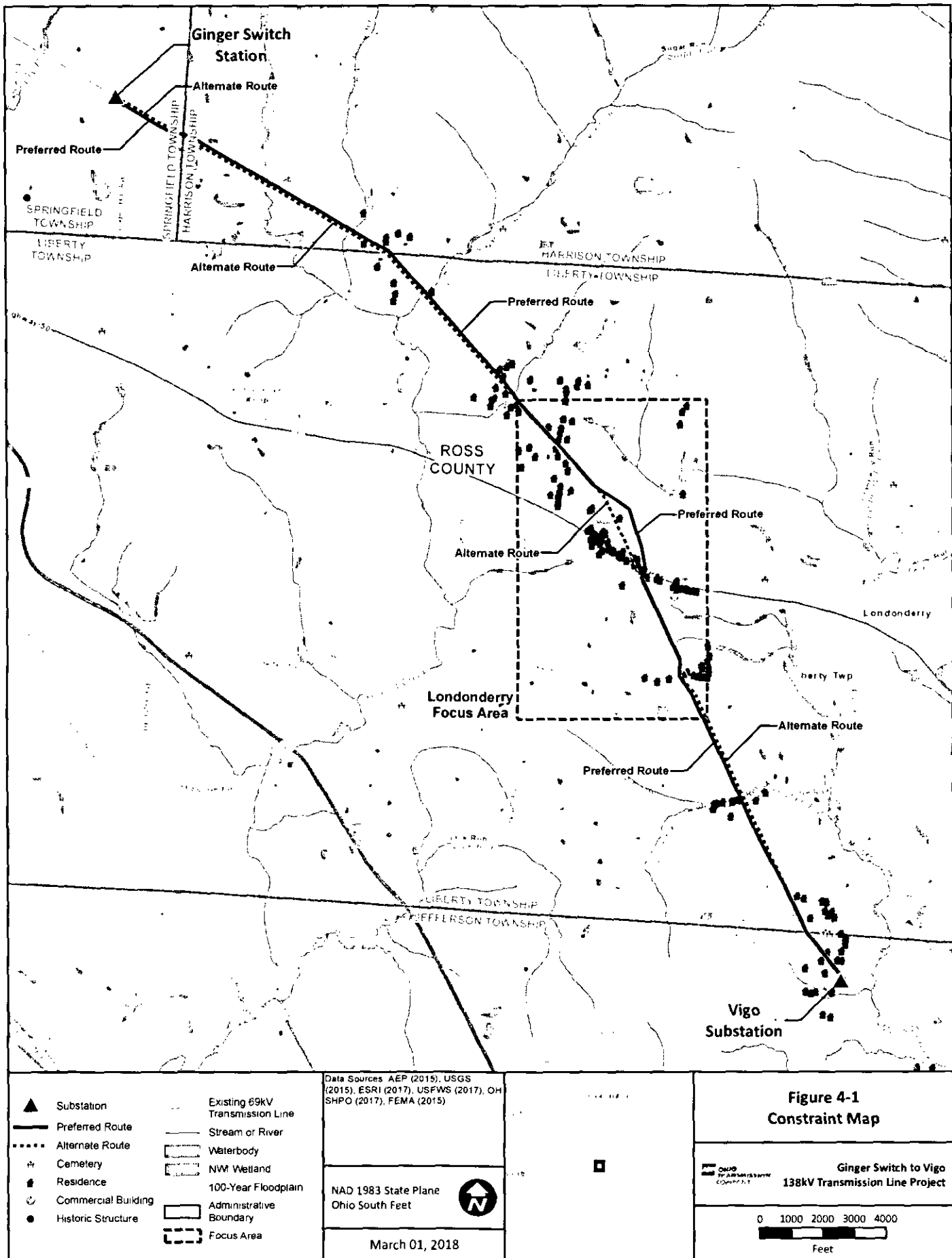
(b) Excessive Muddy Soil Conditions

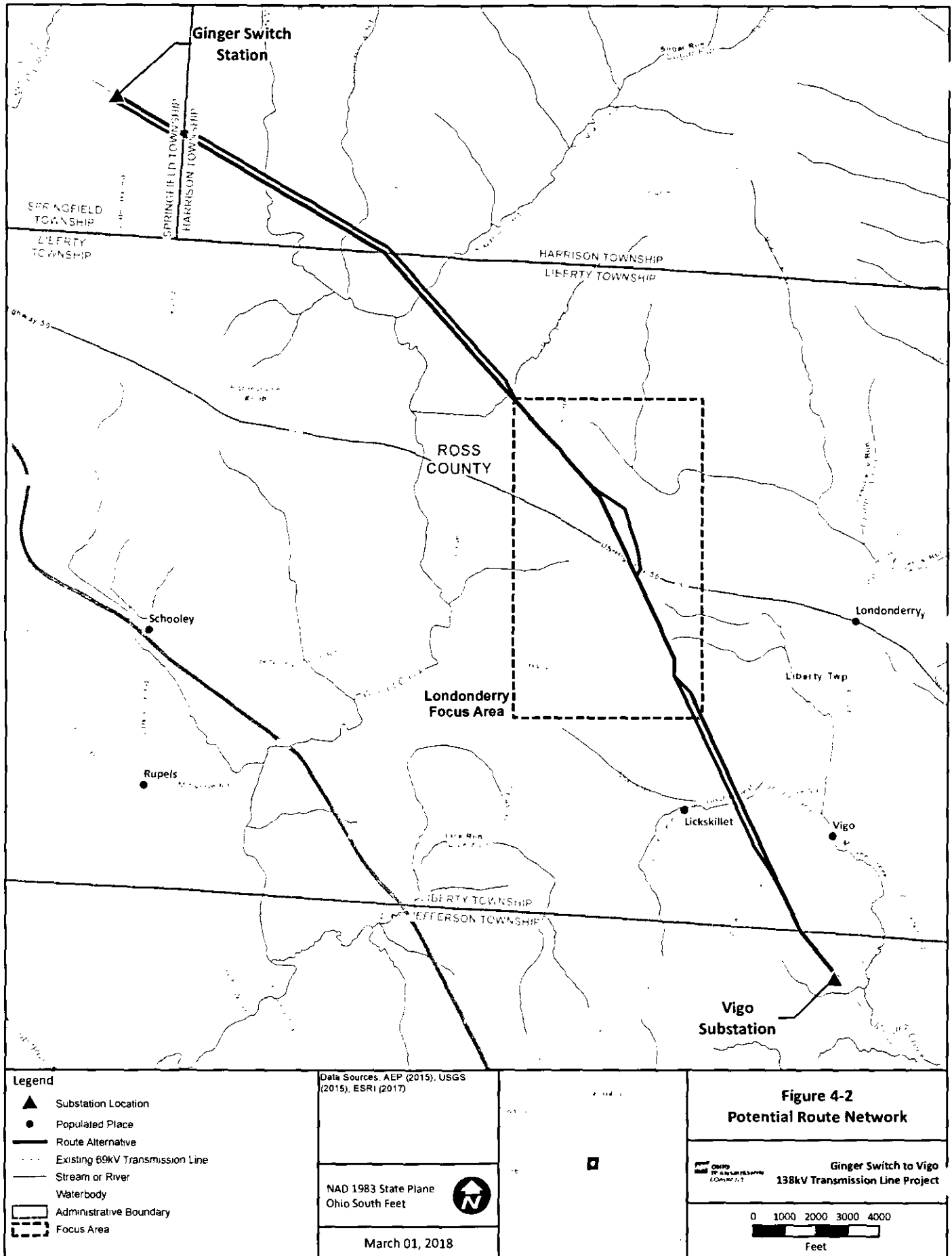
Construction entrances will be established and maintained to a condition that will prevent tracking or flowing of sediment onto public ROW. Accumulated sediment spilled, dropped, washed, or tracked onto public ROWs will be removed as soon as practical.

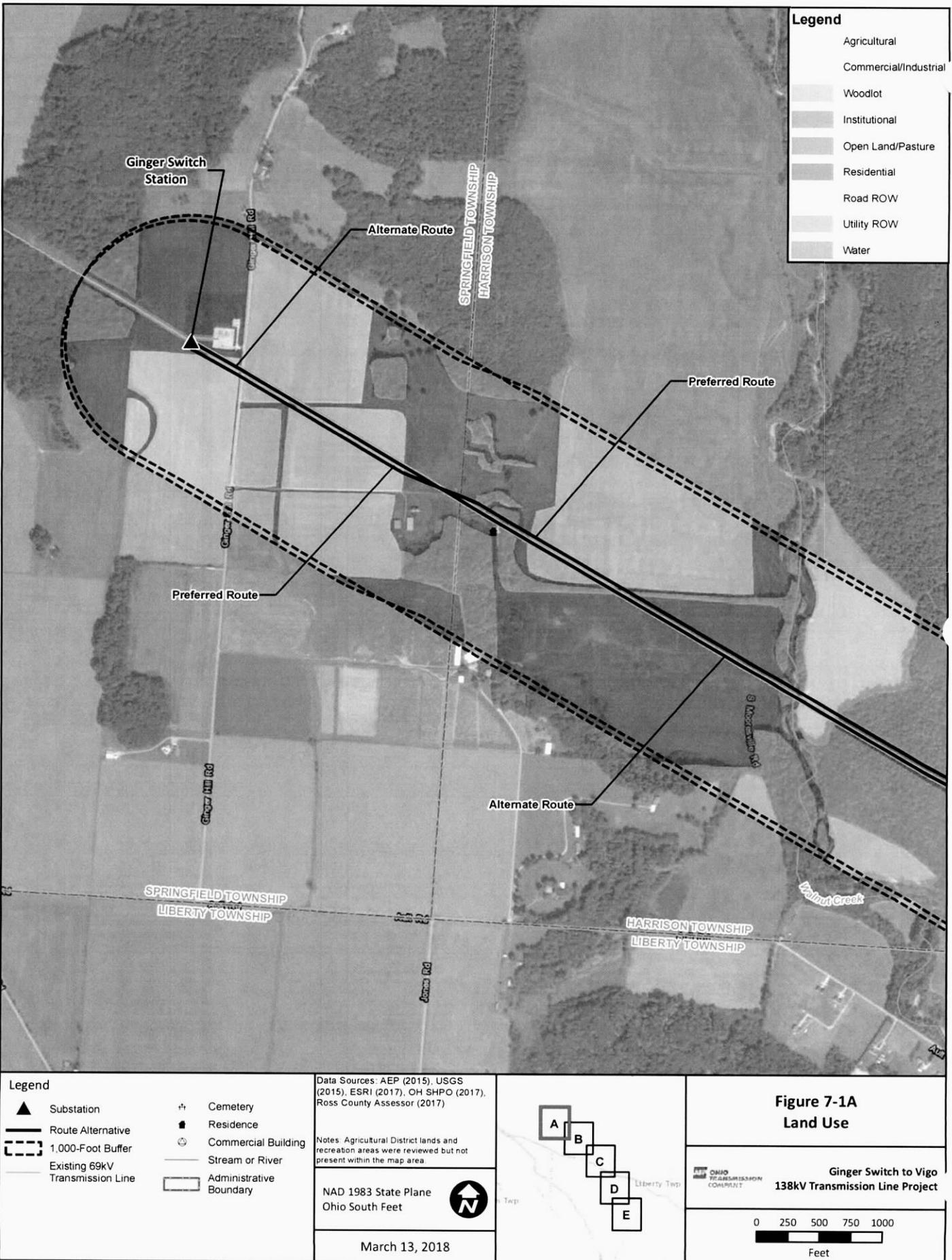


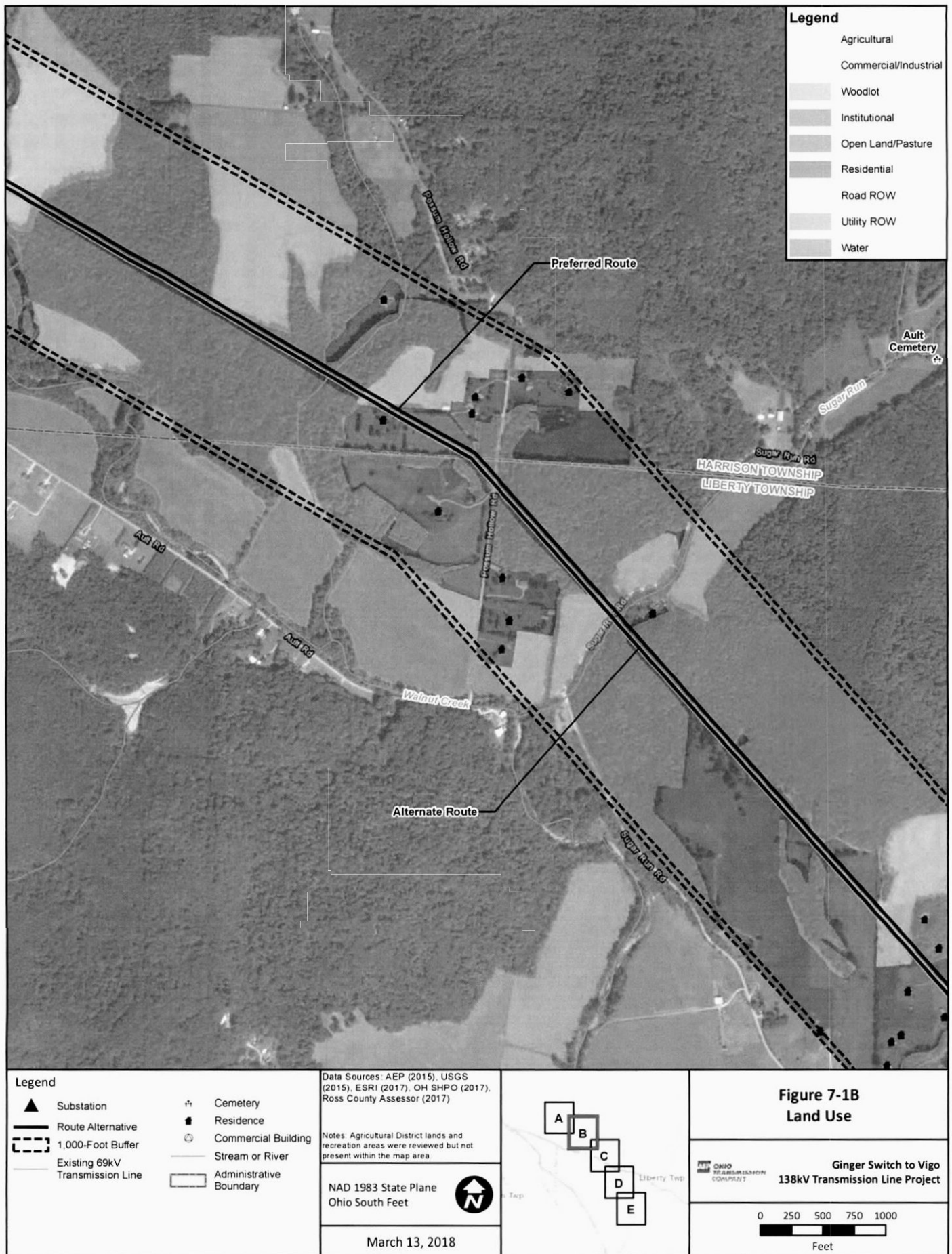


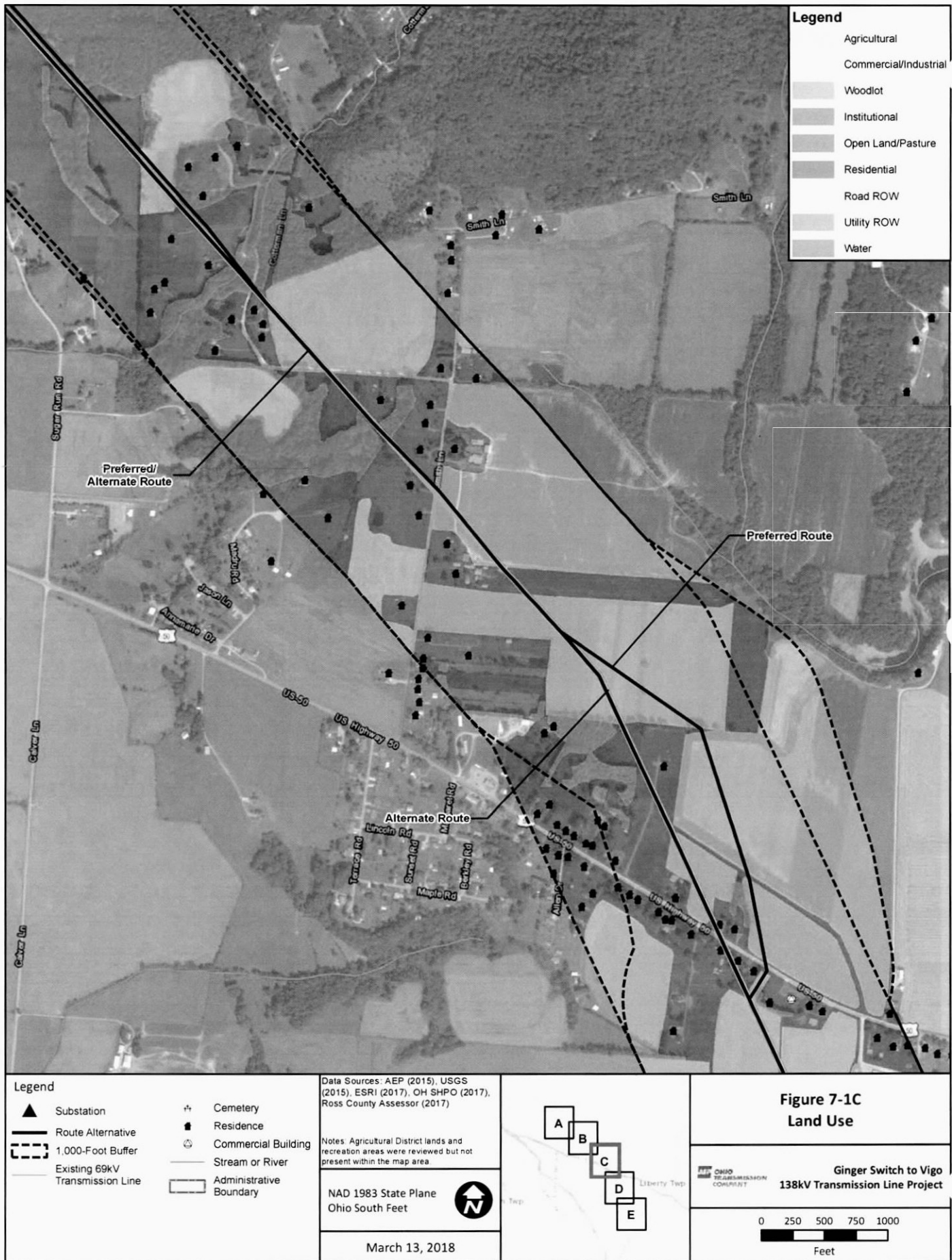


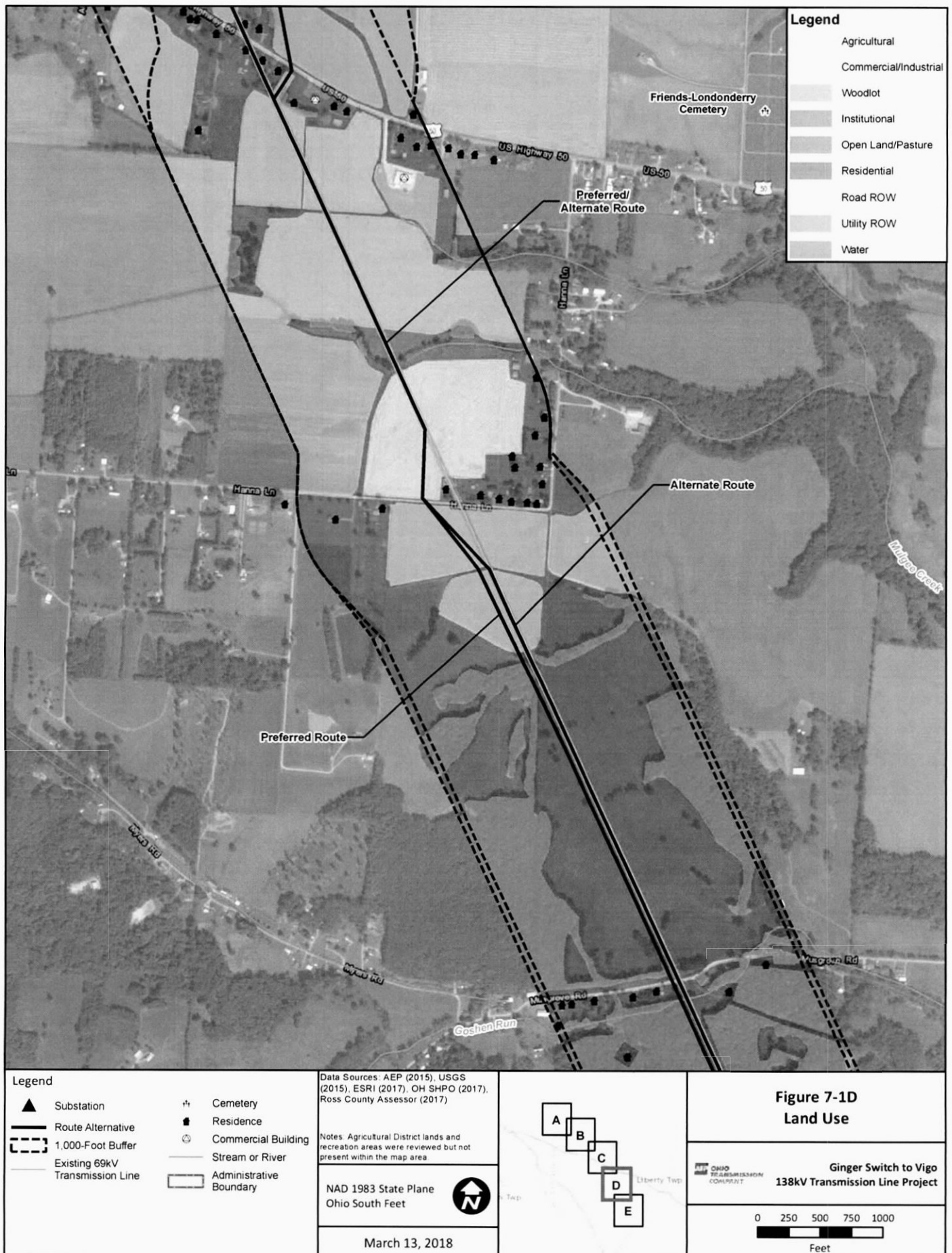


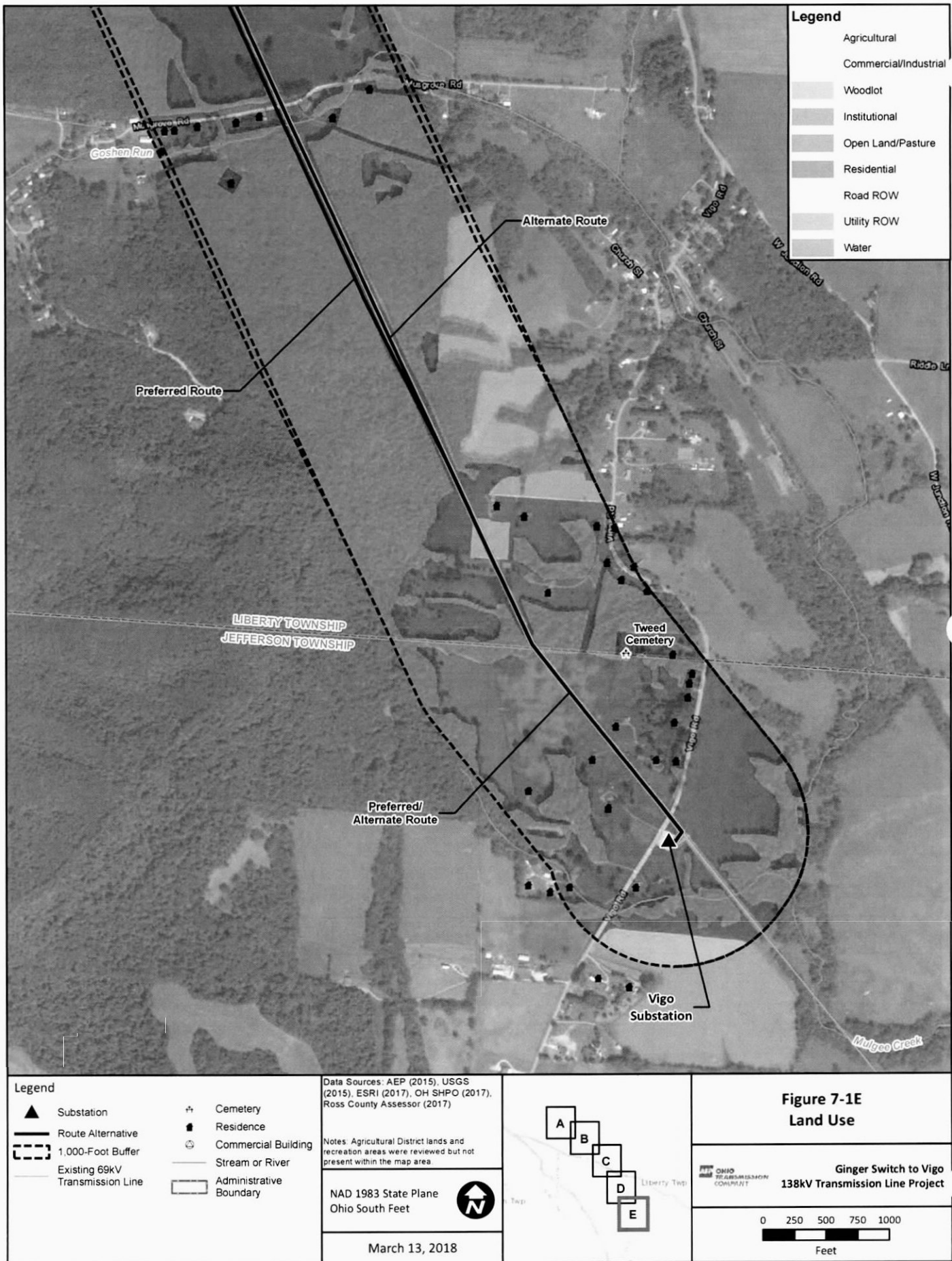


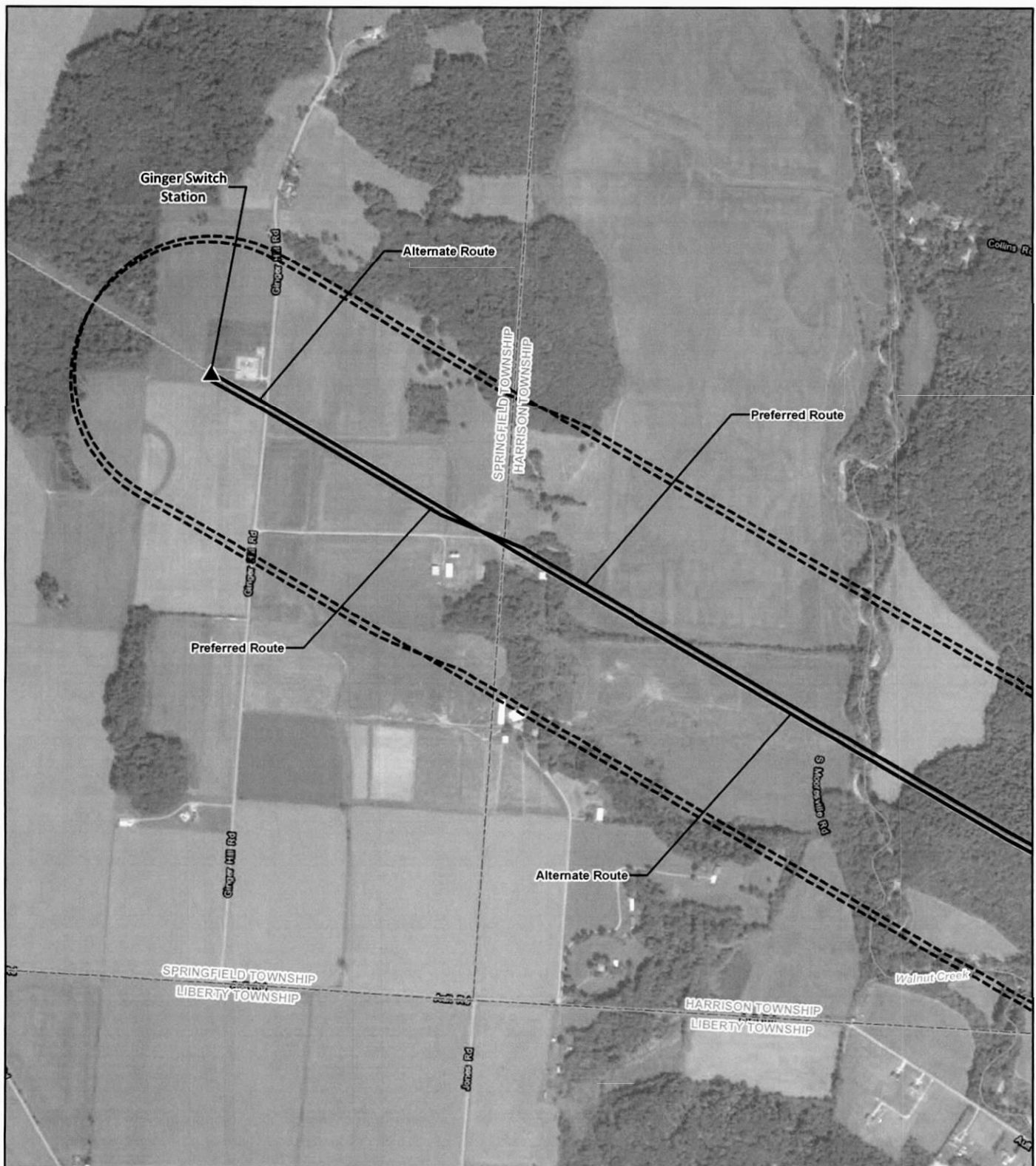












- Legend**
- ▲ Substation
 - Route Alternative
 - 1,000-Foot Buffer
 - Existing 69kV Transmission Line
 - ⛔ Cemetery
 - Stream or River
 - Administrative Boundary

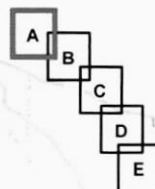
Data Sources: AEP (2015), USGS (2015), ESRI (2017), OH SHPO (2017), ODNR (2014)

Notes: State lands and historic structures reviewed but not present within the map area.

NAD 1983 State Plane
Ohio South Feet

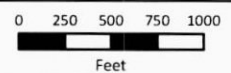


March 13, 2018



**Figure 7-2A
Recreational and
Cultural Resources**

Ginger Switch to Vigo
138kV Transmission Line Project





Legend

- | | |
|---------------------------------|-------------------------|
| Substation | Cemetery |
| Route Alternative | Stream or River |
| 1,000-Foot Buffer | Administrative Boundary |
| Existing 69kV Transmission Line | |

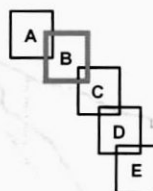
Data Sources: AEP (2015), USGS (2015), ESRI (2017), OH SHPO (2017), ODNR (2014)

Notes: State lands and historic structures reviewed but not present within the map area

NAD 1983 State Plane
Ohio South Feet



March 13, 2018



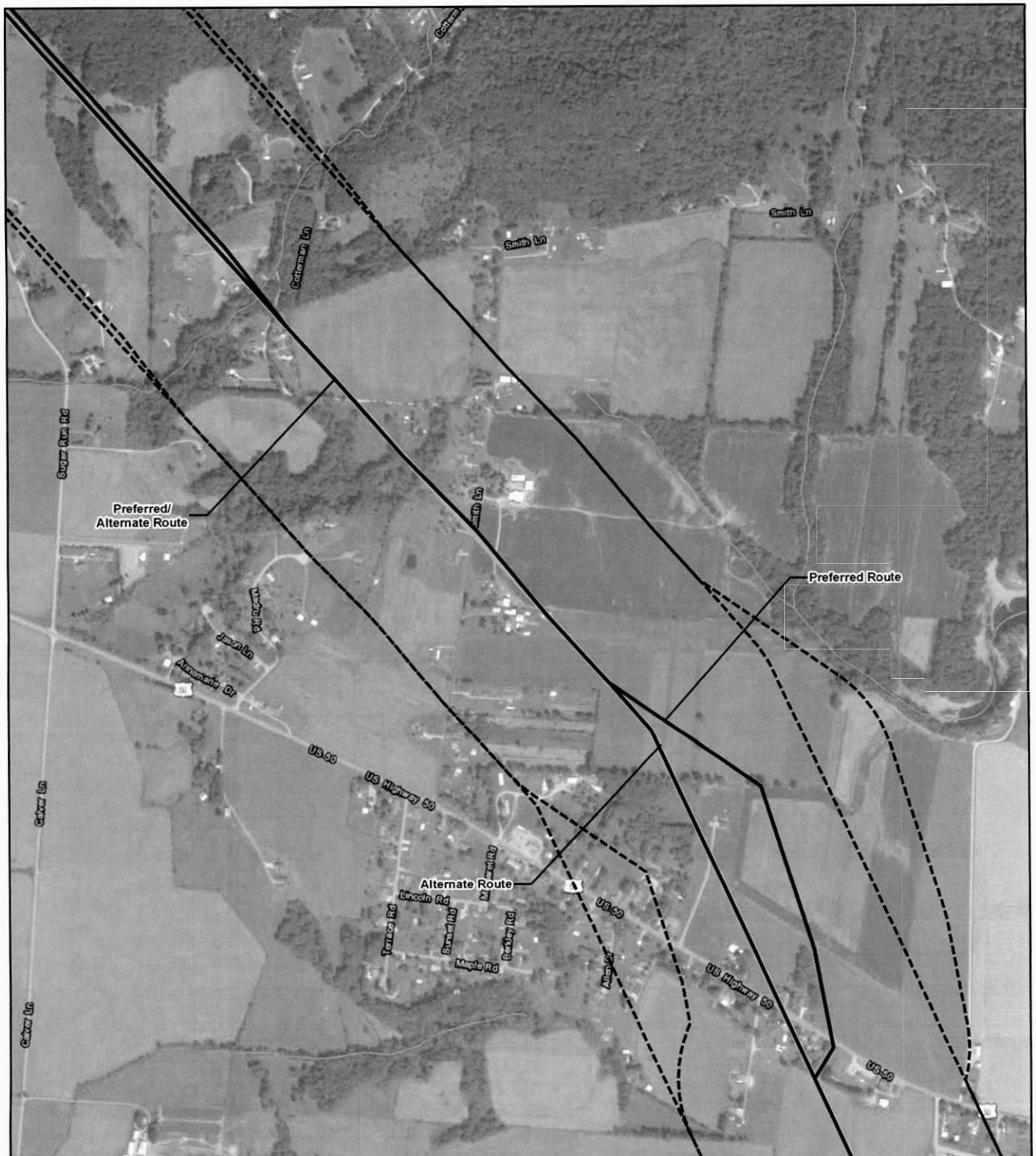
Liberty Twp

Figure 7-2B Recreational and Cultural Resources

OHIO
TRANSMISSION
COMPLIANT

Ginger Switch to Vigo
138kV Transmission Line Project

0 250 500 750 1000
Feet



Legend

- | | | | |
|--|---------------------------------|--|-------------------------|
| | Substation | | Cemetery |
| | Route Alternative | | Stream or River |
| | 1,000-Foot Buffer | | Administrative Boundary |
| | Existing 69kV Transmission Line | | |

Data Sources: AEP (2015), USGS (2015), ESRI (2017), OH SHPO (2017), ODNR (2014)

Notes: State lands and historic structures reviewed but not present within the map area

NAD 1983 State Plane
Ohio South Feet



March 13, 2018

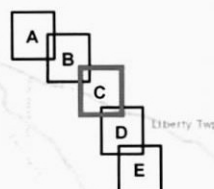
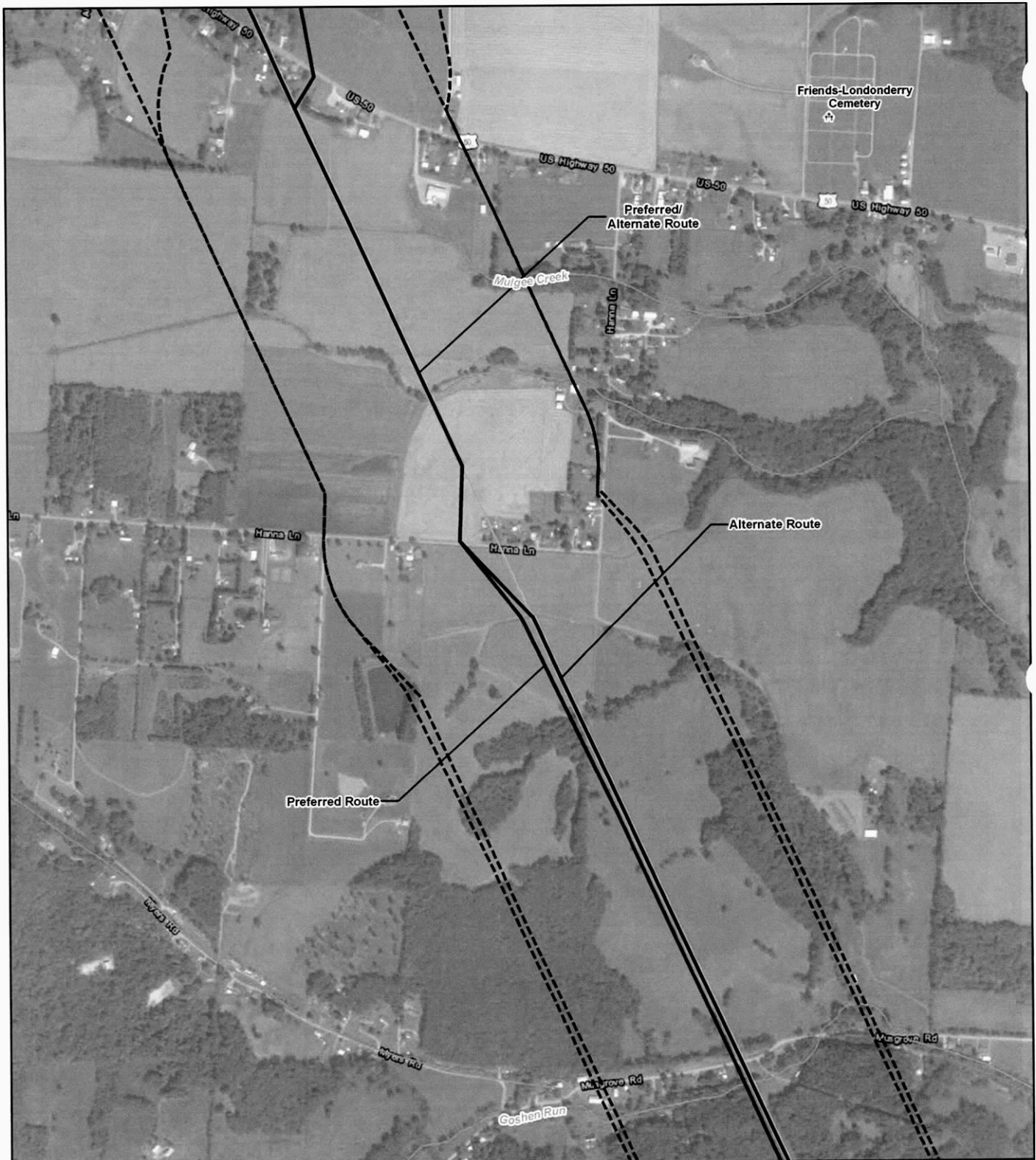


Figure 7-2C Recreational and Cultural Resources

Ginger Switch to Vigo
138kV Transmission Line Project

0 250 500 750 1000
Feet



Legend

- | | | | |
|--|---------------------------------|--|-------------------------|
| | Substation | | Cemetery |
| | Route Alternative | | Stream or River |
| | 1,000-Foot Buffer | | Administrative Boundary |
| | Existing 69kV Transmission Line | | |

Data Sources: AEP (2015), USGS (2015), ESRI (2017), OH SHPO (2017), ODNr (2014)

Notes: State lands and historic structures reviewed but not present within the map area

NAD 1983 State Plane
Ohio South Feet



March 13, 2018

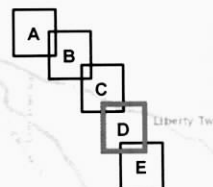
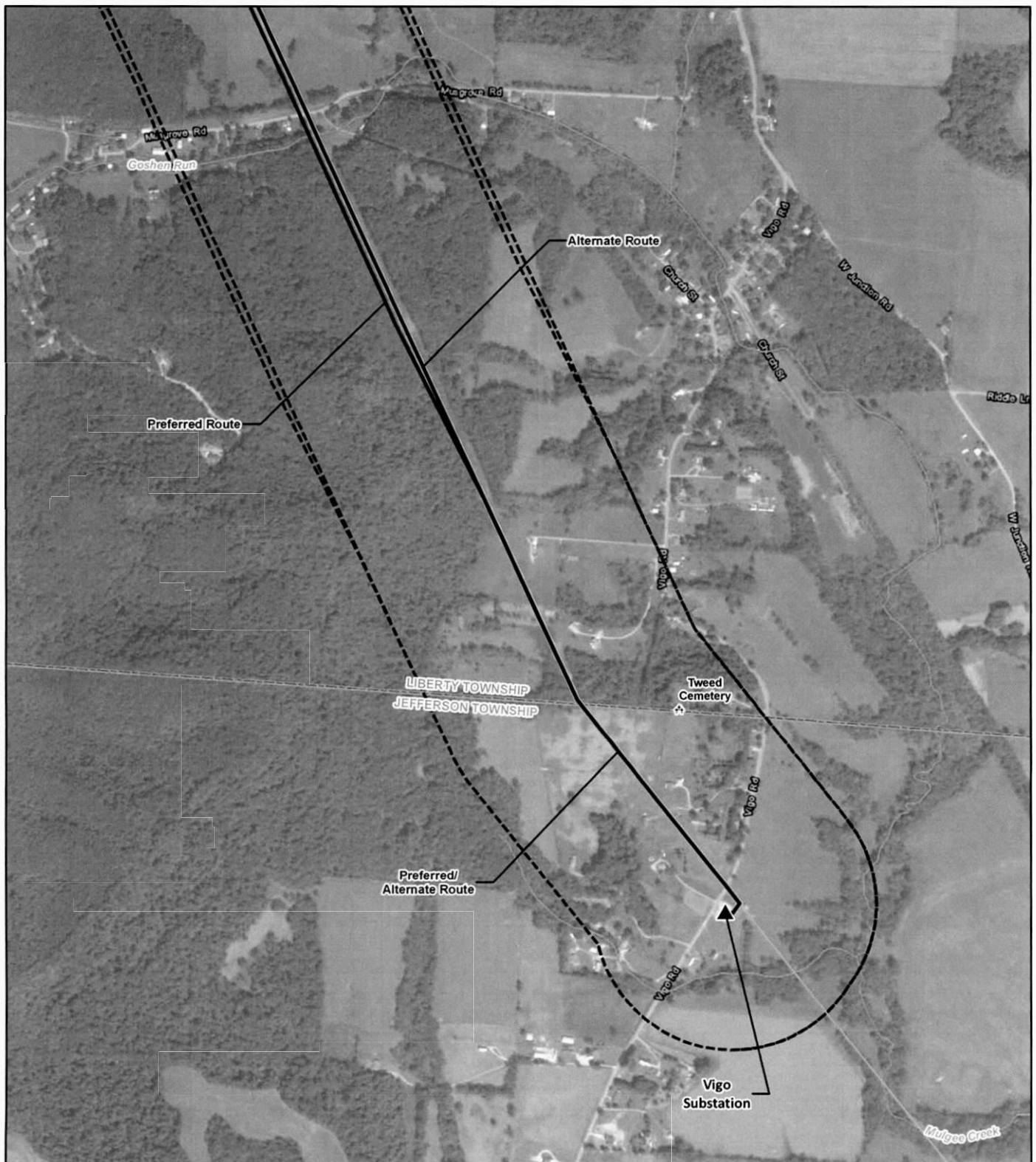


Figure 7-2D
Recreational and
Cultural Resources

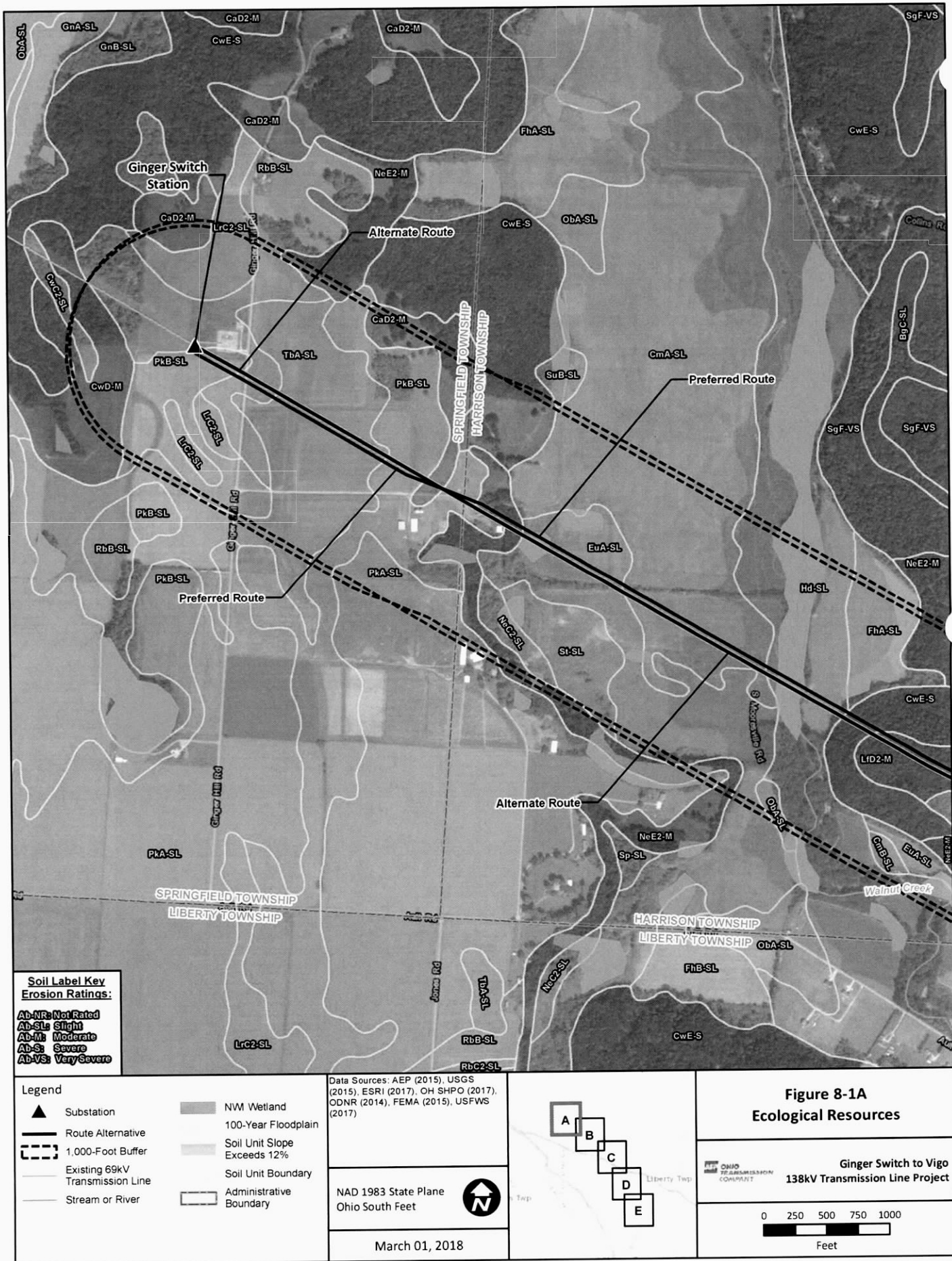
OHIO
TRANSMISSION
COMPLINT

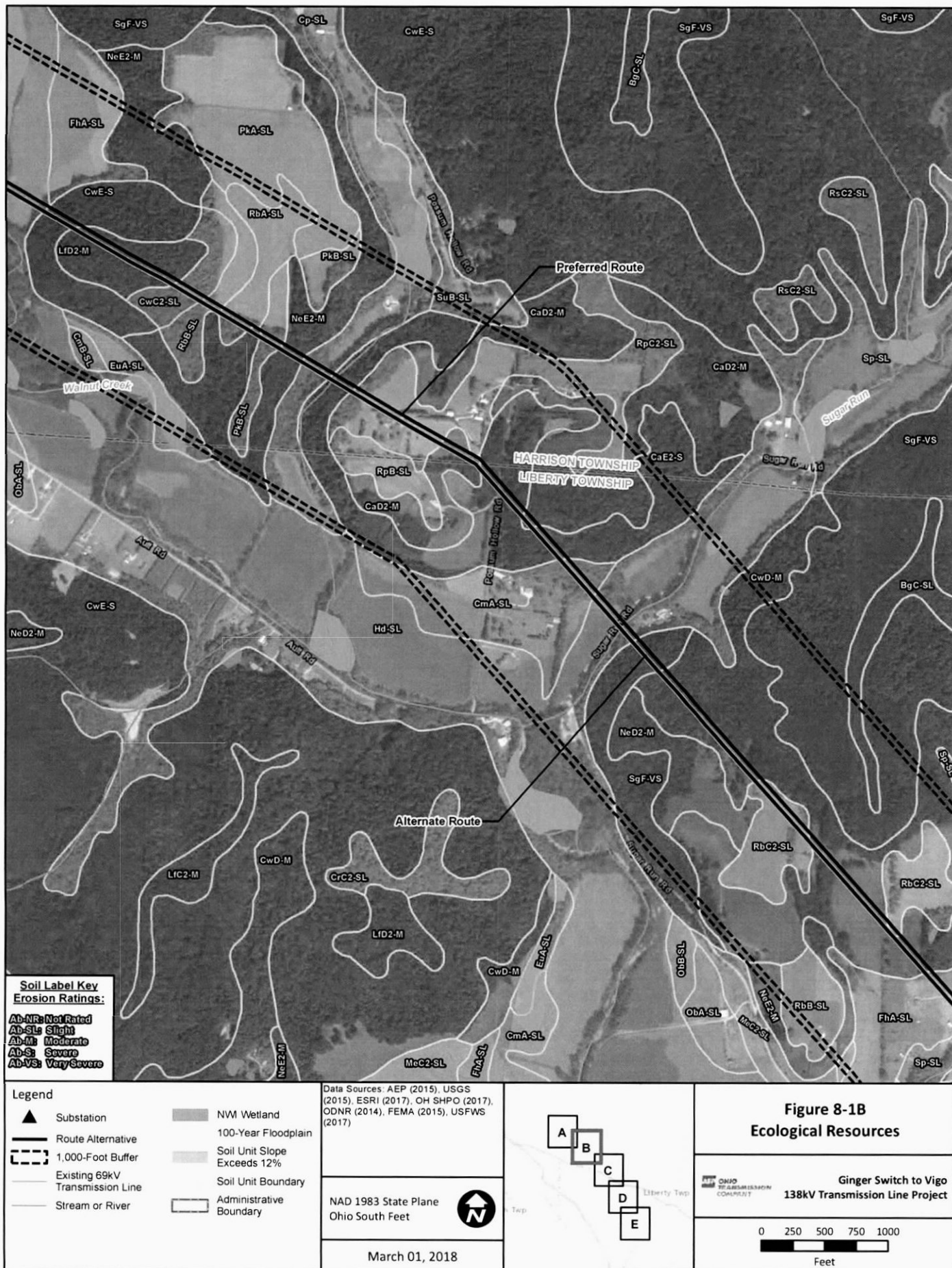
Ginger Switch to Vigo
138kV Transmission Line Project

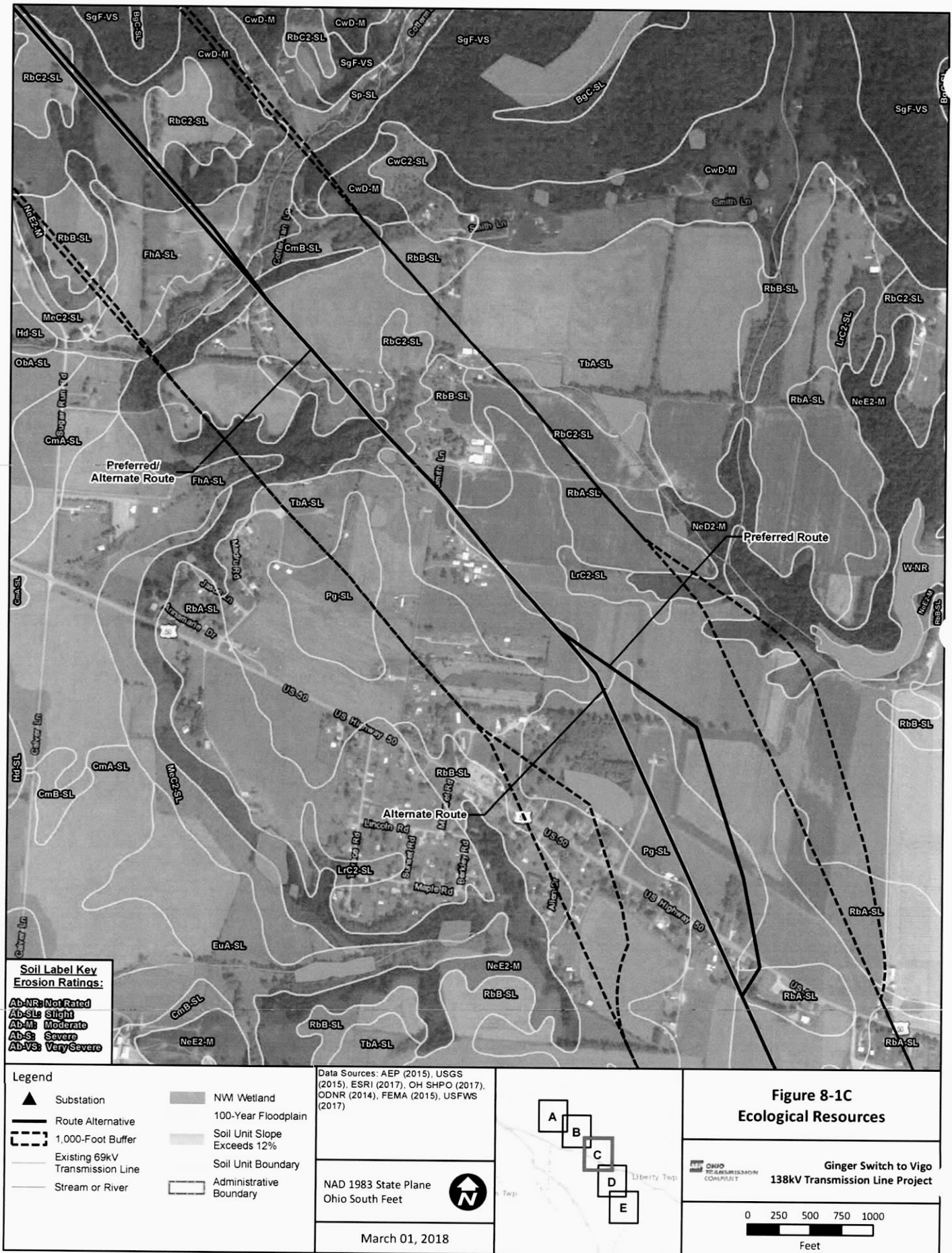
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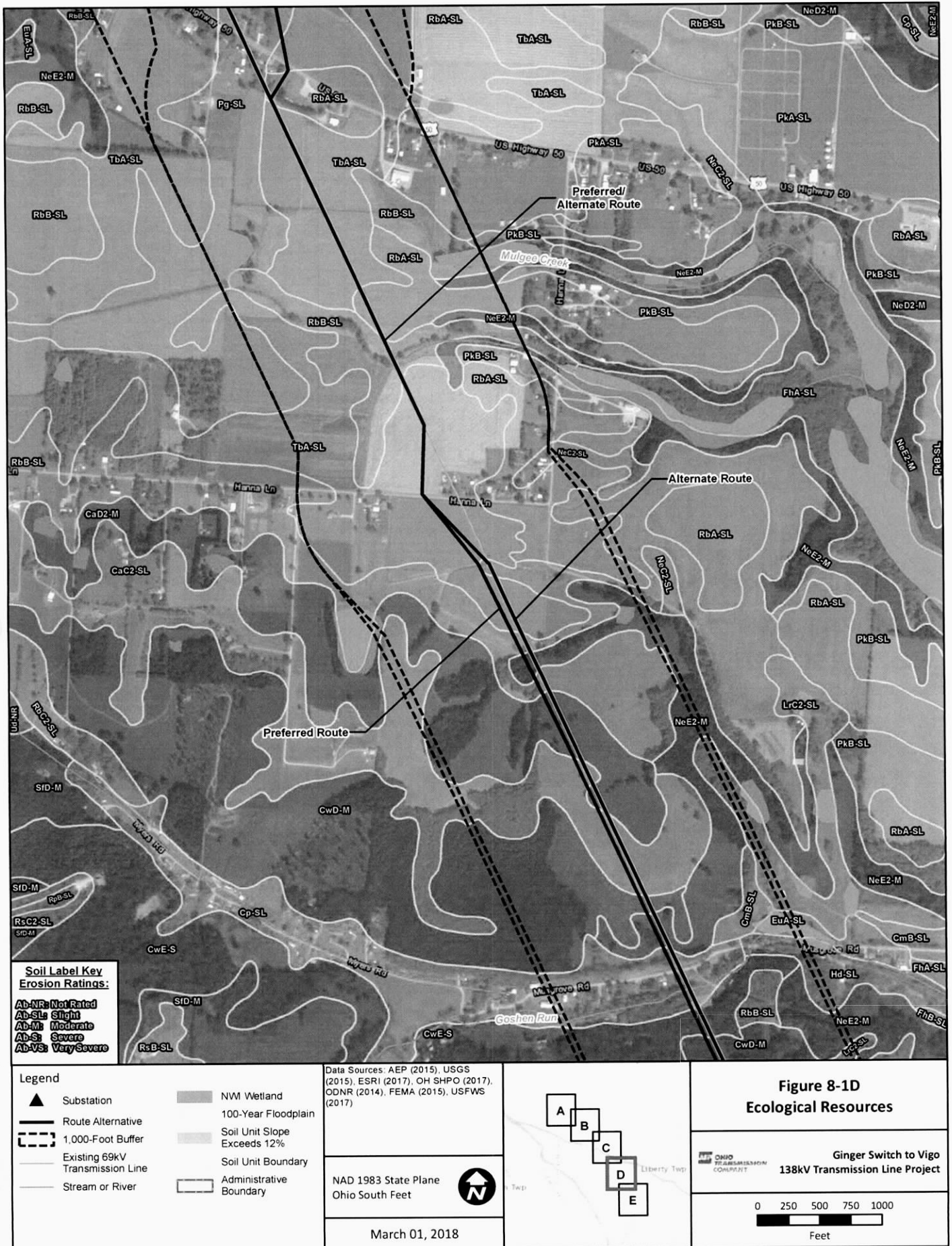


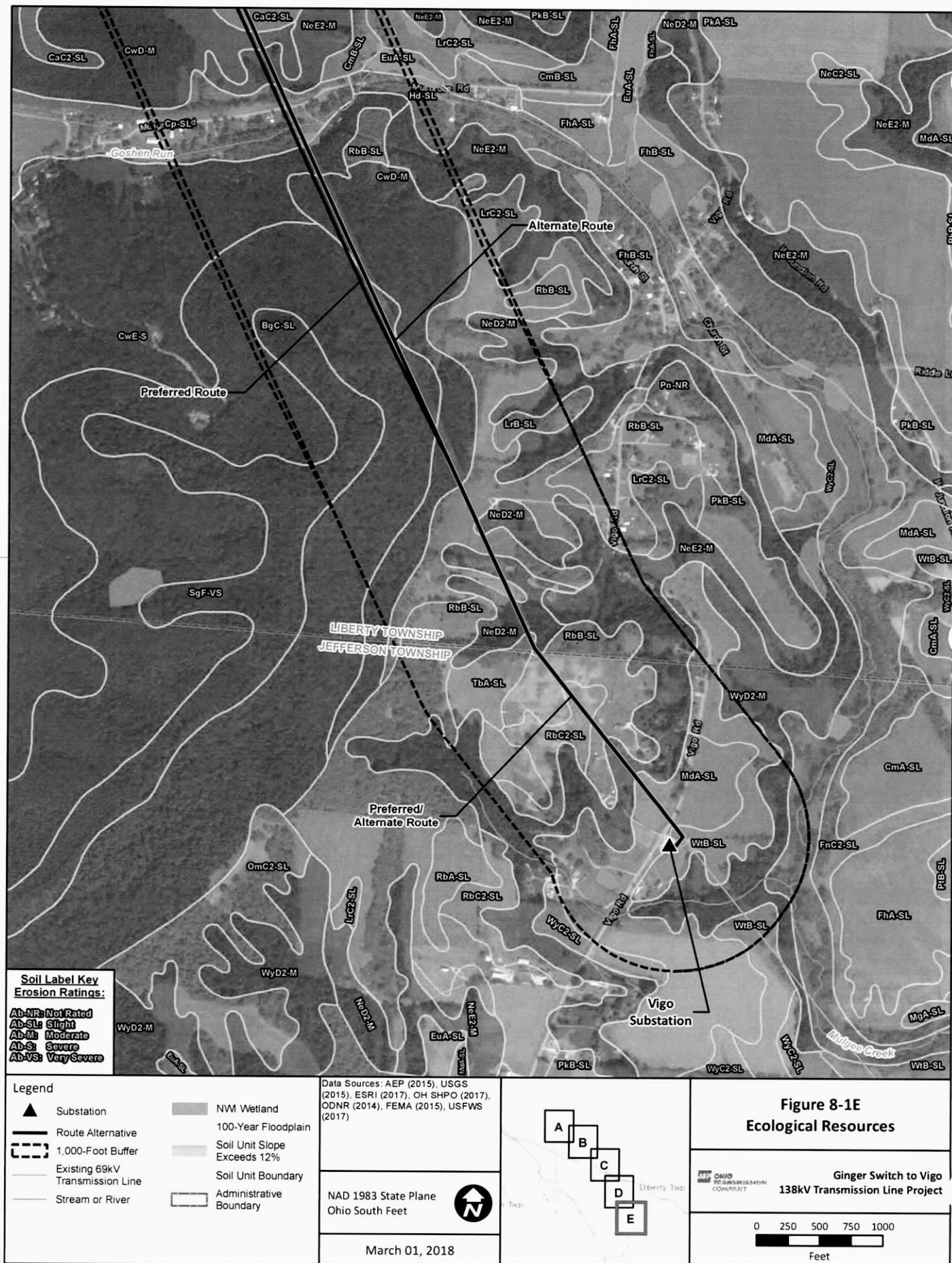
<p>Legend</p> <ul style="list-style-type: none"> Substation Route Alternative 1,000-Foot Buffer Existing 69kV Transmission Line Cemetery Stream or River Administrative Boundary 	<p>Data Sources: AEP (2015), USGS (2015), ESRI (2017), OH SHPO (2017), ODNR (2014)</p> <p>Notes: State lands and historic structures reviewed but not present within the map area</p> <p>NAD 1983 State Plane Ohio South Feet</p> <p>March 13, 2018</p>		<p align="center">Figure 7-2E Recreational and Cultural Resources</p> <p align="center">Ginger Switch to Vigo 138kV Transmission Line Project</p> <p align="center"> </p>
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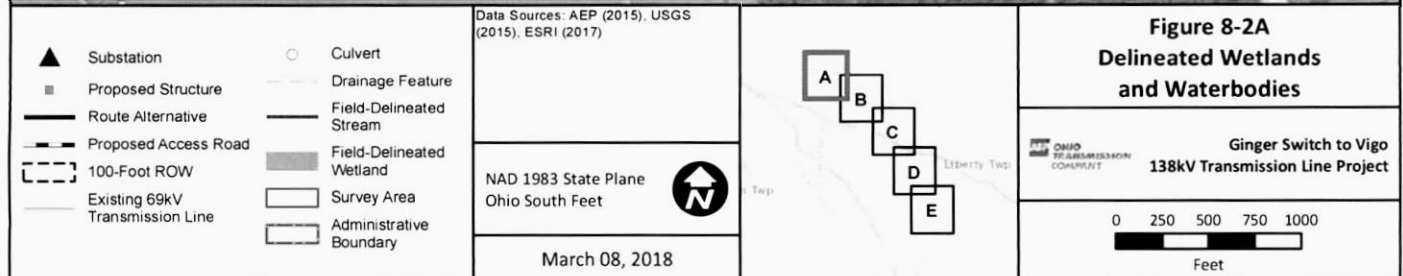
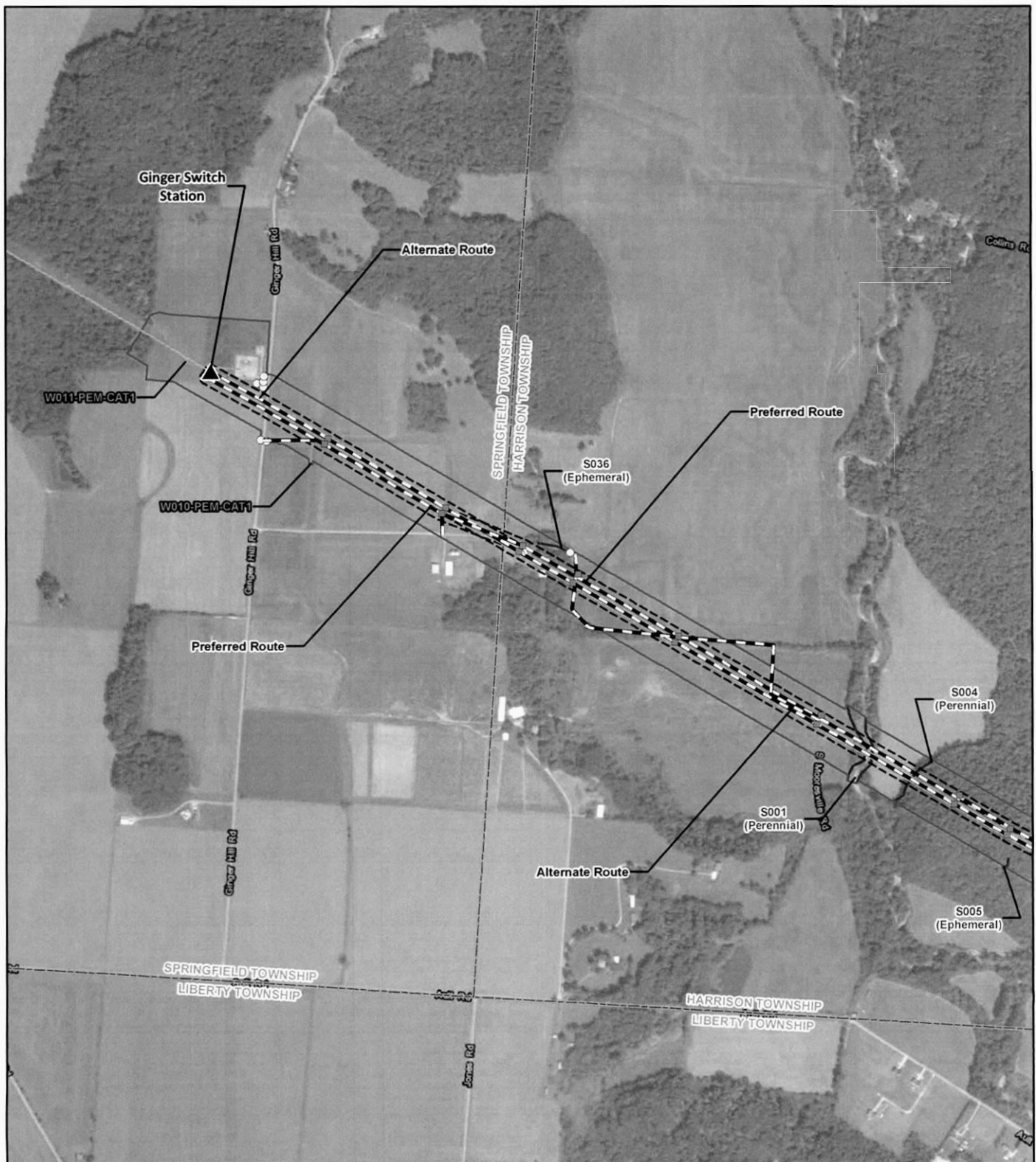


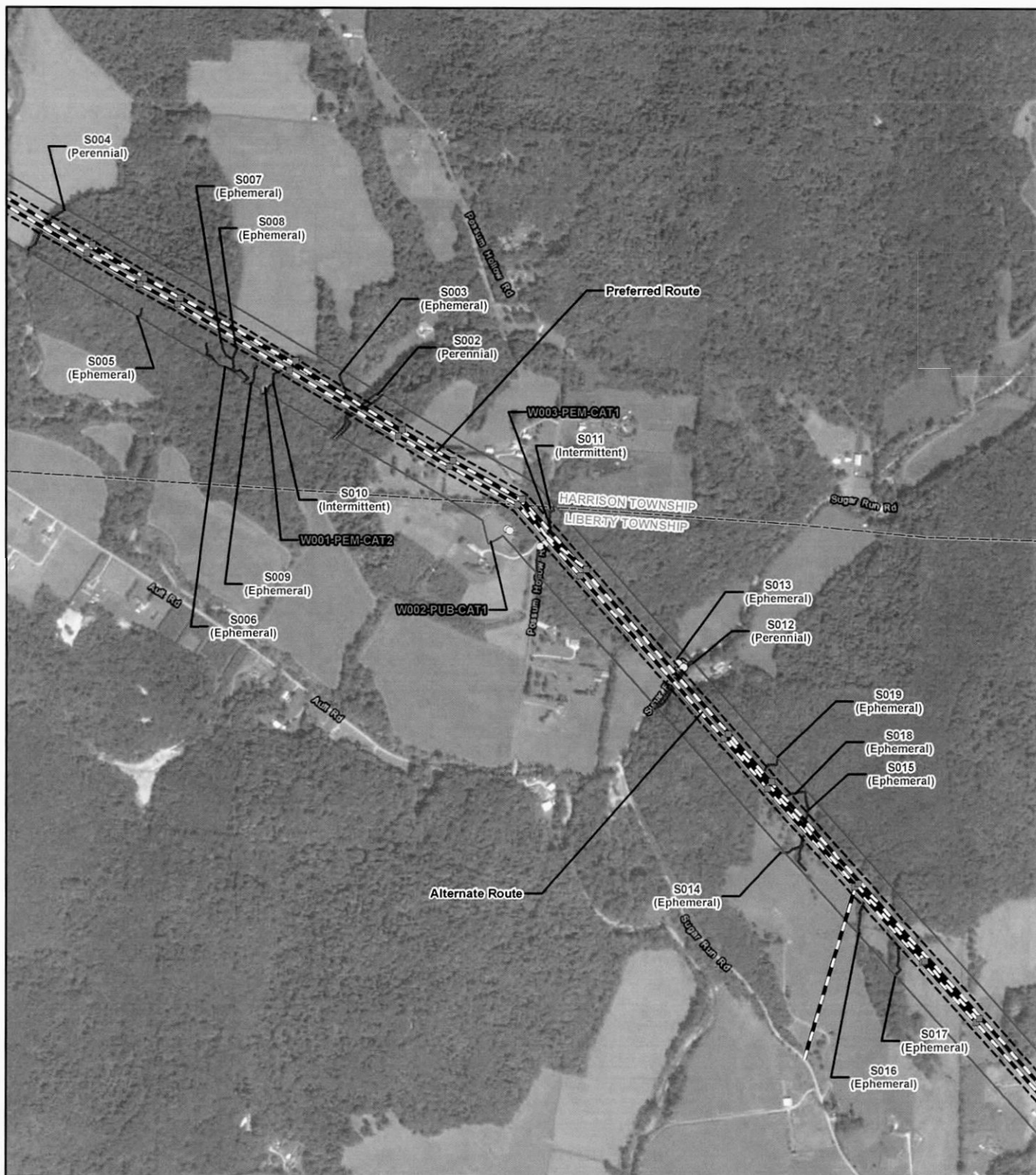












Data Sources: AEP (2015), USGS (2015), ESRI (2017)

NAD 1983 State Plane
Ohio South Feet

March 08, 2018

Figure 8-2B
Delineated Wetlands
and Waterbodies

OHIO
TRANSMISSION
COMMITTEE

Ginger Switch to Vigo
138kV Transmission Line Project

0 250 500 750 1000
Feet

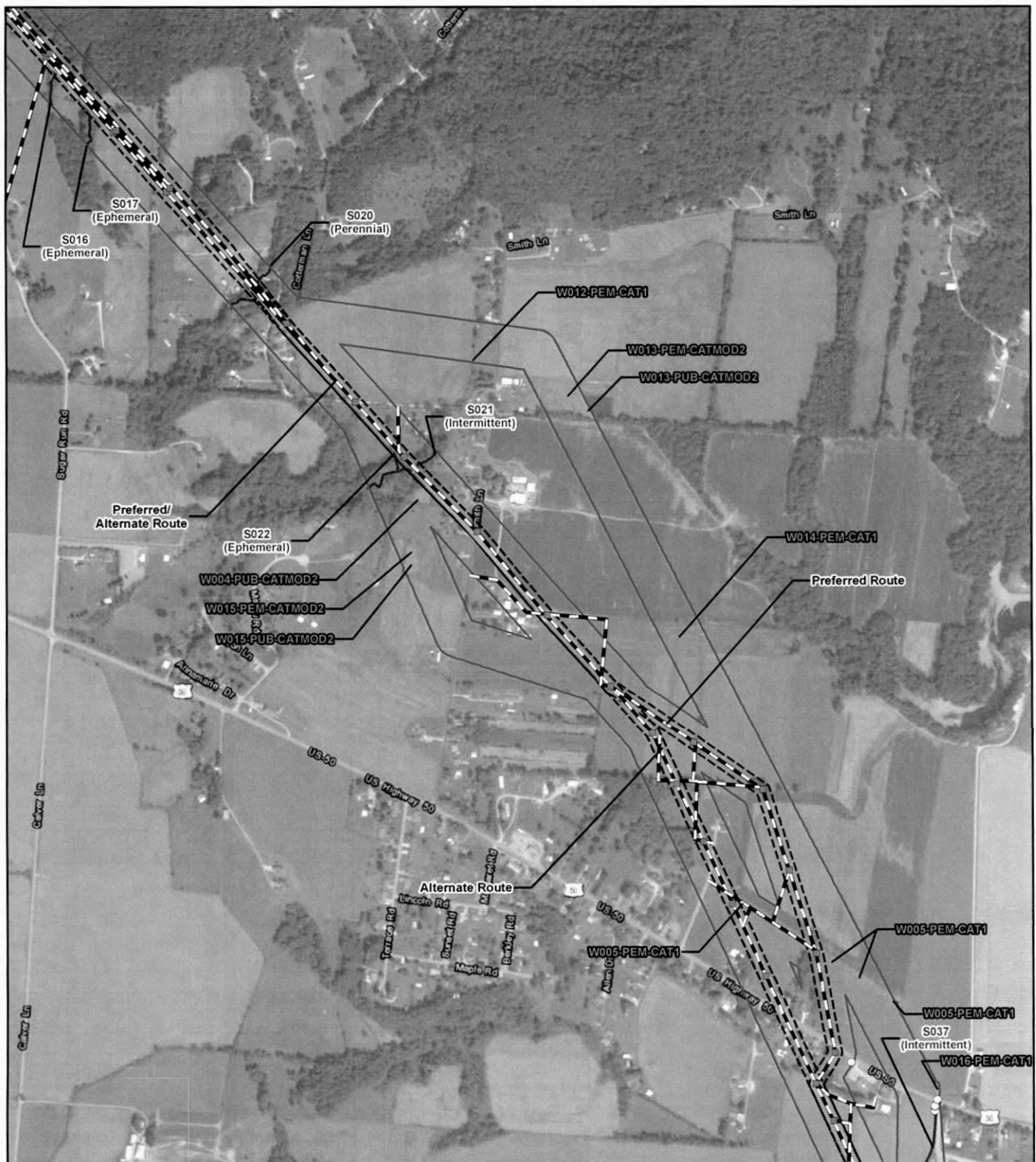
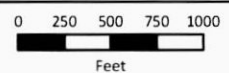


Figure 8-2C
Delineated Wetlands
and Waterbodies

OHIO
DEPARTMENT OF
TRANSPORTATION
LIBERTY TWP.

Ginger Switch to Vigo
138kV Transmission Line Project



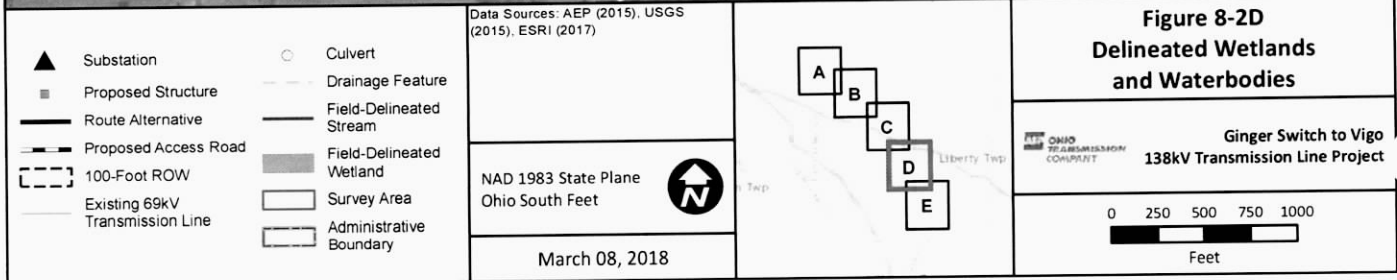
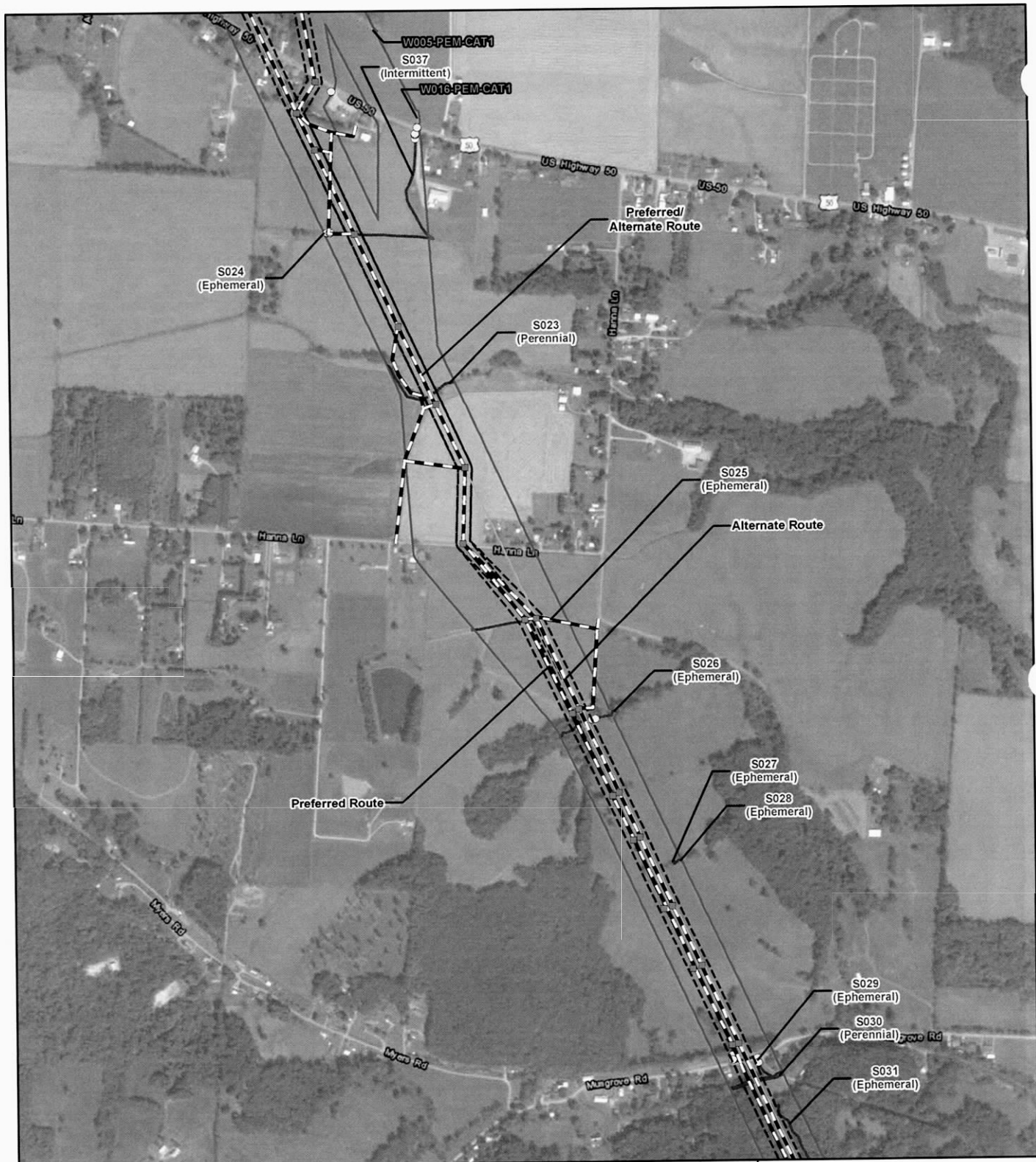
- ▲ Substation
- Proposed Structure
- Route Alternative
- Proposed Access Road
- 100-Foot ROW
- Existing 69kV Transmission Line
- Culvert
- Drainage Feature
- Field-Delineated Stream
- Field-Delineated Wetland
- Survey Area
- Administrative Boundary

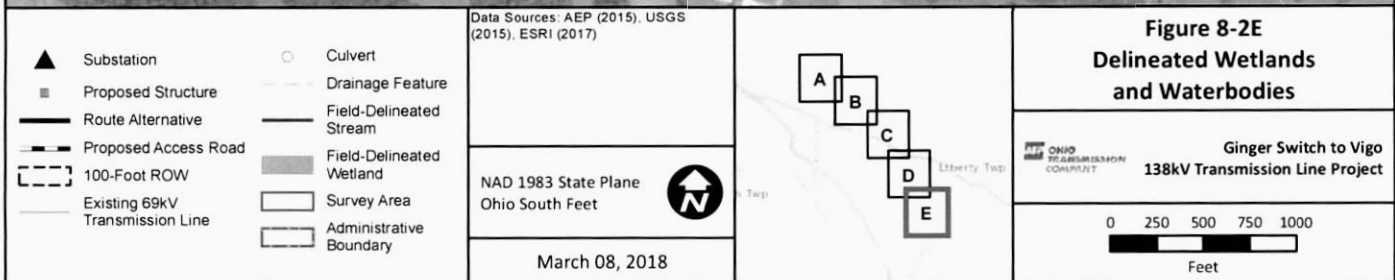
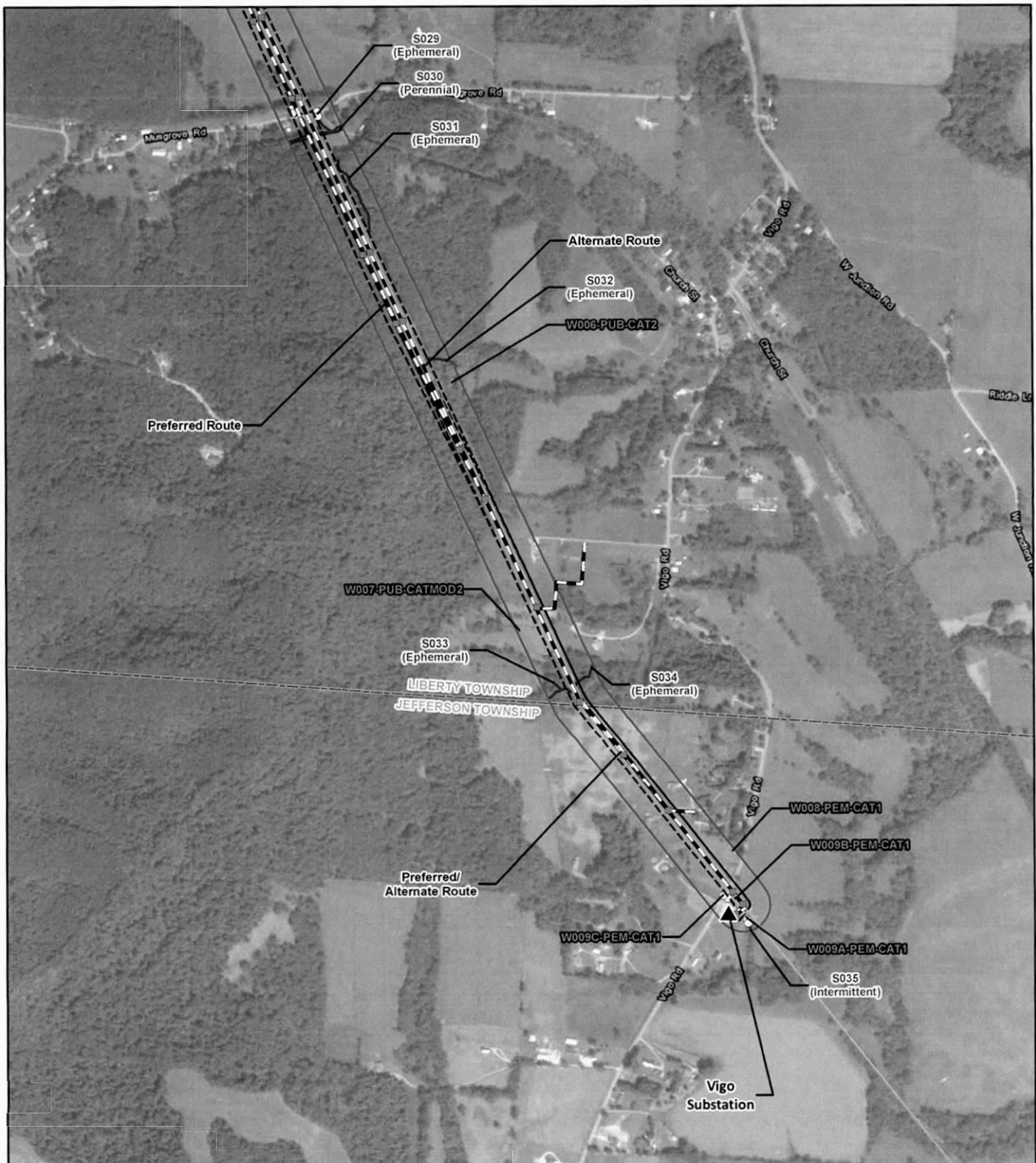
Data Sources: AEP (2015), USGS (2015), ESRI (2017)

NAD 1983 State Plane
Ohio South Feet



March 08, 2018





APPENDIX 4-1

Rebuild Siting Study

Ginger Switch to Vigo 138 kV Transmission Line Project OPSB Case No. 17-0638-EL-BTX

Prepared for:



Submitted to:

Ohio Power Siting Board

Prepared by:

GAI Consultants, Inc.
3720 Dressler Road NW
Canton, OH 15120-2700

March 2018

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Attachment A. Maps

- Map 1. Focus Area
- Map 2. Study Segment Network
- Map 3. Natural Resource Constraints
- Map 4. Land Use
- Map 5. Preferred Route

Attachment B. GIS Data Sources

Attachment C. Agency Correspondence

Key Terminology

Alternate Routes	Assemblage of routes for analysis and comparison.
Constraints	Specific areas that should be avoided to the extent reasonably practical during the route development and site selection process.
Focus Area	Areas along the existing route where rebuilding may not be feasible due to the presence of constraints.
Opportunity Feature	Areas where the transmission line may have less disruption to area land uses and the natural and cultural environment.
Preferred Route	The alignment on which the applicant/Siting Team proposes to construct a transmission line. The Preferred Route (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe, and reliable manner.
Project Endpoint	The project starting and ending point(s), which may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers.
Segment Endpoint	The intersection of two or more Study Segments.
Siting Team	A multidisciplinary team of experts in transmission line routing, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management.
Study Segments	Study Segments are partial alignments that when combined form a complete route.
Substation	An enclosed assemblage of equipment, e.g., switches, circuit breakers, buses, and transformers, through which electric energy is passed for the purpose of switching or modifying its characteristics.
Switching Station	A particular type of substation without transformers and operating only at a single voltage level.
Tap Point	The location where power is tapped from an existing transmission line to source a substation or customer.
Transmission Line	An electric line that moves bulk electric power from a generating plant to a substation or between substations.

ACRONYMS

AEP Ohio Transco	American Electric Power Ohio Transmission Company
DOW	Division of Wildlife
ESRI	Environmental Systems Research Institute
GAI	GAI Consultants, Inc.
GIS	Geographic information system
GPS	Global positioning system
kV	Kilovolt
NERC	North American Electric Reliability Corporation
NCED	National Conservation Easement Database
NESC	National Electric Safety Code
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NRCS	<i>National Resources Conservation Service of the U.S. Department of Agriculture</i>
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
ODNR	Ohio Department of Natural Resources
OPSB	Ohio Power Siting Board
ROW	Right-of-way
SHPO	State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Weller	Weller & Associates, Inc.

1.0 PROJECT OVERVIEW

American Electric Power Ohio Transmission Company (AEP Ohio Transco) is proposing to rebuild approximately 7 miles of electric transmission line from the Ginger Switch Station to the Vigo Substation, located in Ross County, Ohio. The Project is referred to as the Ginger Switch to Vigo 138 kilovolt (kV) Transmission Line Project (Project; Figure 1). The Project is part of the overall Ross-Jackson Area Improvements Project to improve reliability and address performance issues, and involves upgrading the existing Berlin-Ross 69 kV electric transmission line to 138 kV standards. The Project requires an Application for a Certificate of Environmental Compatibility and Public Need (Application) from the Ohio Power Siting Board (OPSB), which is part of the Ohio Public Utilities Commission. As an initial step in the development of the Project, AEP Ohio Transco retained GAI Consultants, Inc. (GAI) to identify Focus Areas and evaluate route alternatives for overall environmental suitability and feasibility. These efforts have resulted in a final "Preferred" and "Alternate" Route for the Project. This process is further described in this Rebuild Siting Study.

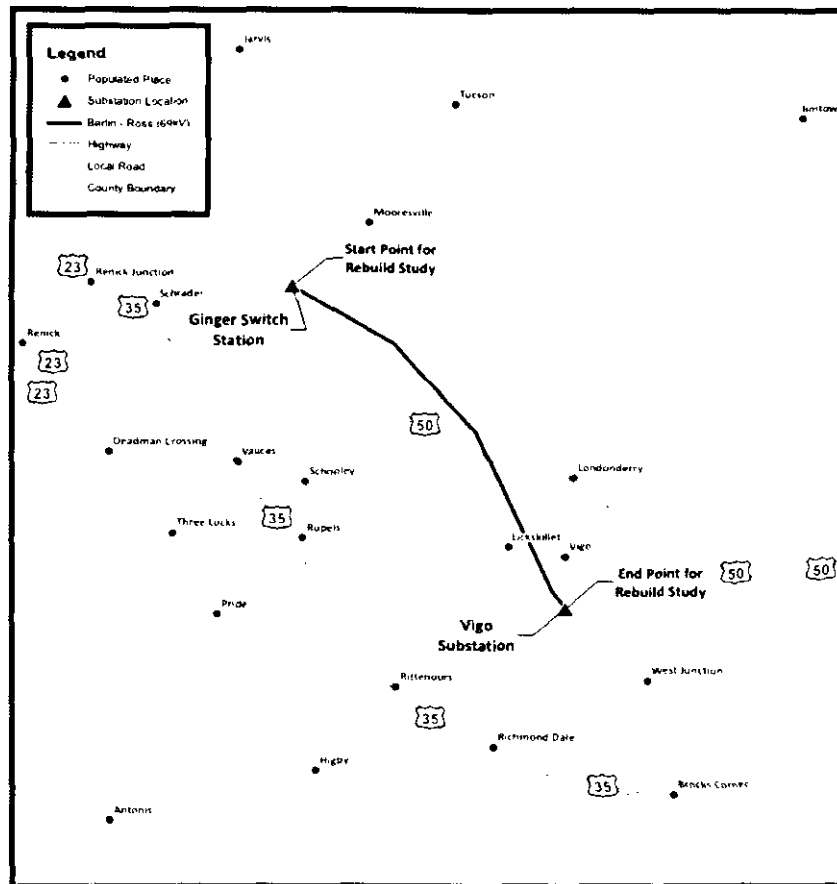


Figure 1. Project Location Map

1.1 Project Purpose and Need Summary

The purpose of the Project is to update aging infrastructure to improve its condition and address performance issues. This will improve the reliability of the electric transmission grid in Ross and Jackson Counties, Ohio, as part of the overall Ross-Jackson Area Improvements Project. The existing Berlin-Ross 69 kV transmission line was constructed in 1926 and will be retired and replaced with a new 138 kV transmission line, which will initially be energized at 69 kV. The Ross-Jackson Area Improvement Project serves several distribution customers, which may not immediately be able to incur the cost burden of upgrading their facilities. Therefore, by constructing the line to 138 kV standards, it enables AEP Ohio Transco to energize the line at 138 kV in an expedited fashion when necessary and once the proper funding has been secured by the distribution customers. The benefits of this Project include faster recovery of service after outages, fewer service interruptions and overall improved service to customers.

1.2 Project Characteristics

1.2.1 Project Endpoints and Improvement Description

The Project starts just west of the existing Ginger Switch Station located west of County Road 213A (Ginger Hill Road)(Latitude 39.3125, Longitude -82.8727) and continues approximately seven (7.0) miles southeast to the existing Vigo Substation located east of County Road 207 (Vigo Road)(Latitude 39.2352, Longitude -82.7927). The Project is located within Springfield, Harrison, Liberty, and Jefferson Townships in Ross County, Ohio. The study corridor utilized for this siting study does not cross any designated communities or otherwise incorporated municipalities. Costs for the Project are anticipated to be approximately \$17 million including both construction and right-of-way (ROW) expenses.

1.2.2 Transmission Line and Substation Design and ROW Requirements

The existing Berlin-Ross 69 kV transmission line is a single circuit line constructed in 1926 on wood H-frame structures within an approximately 50-foot-wide ROW. The existing structures are approximately 60 to 70 feet tall. The Project will be constructed as a single 138 kV circuit comprised of conductors staged vertically on several structure types, primarily steel H-frames, averaging 100 feet in height (Figure 2). Due to the potential inability to de-energize long stretches of the existing Berlin-Ross 69 kV transmission line during construction, it is preferable to construct the Project generally parallel to the existing ROW, where feasible, to avoid outage constraints. The Project will require a permanent 100-foot-wide ROW that will utilize a portion of the existing ROW. Improvements to the Ginger Switch Station are required to support this rebuild effort, which were assessed and documented under separate cover.

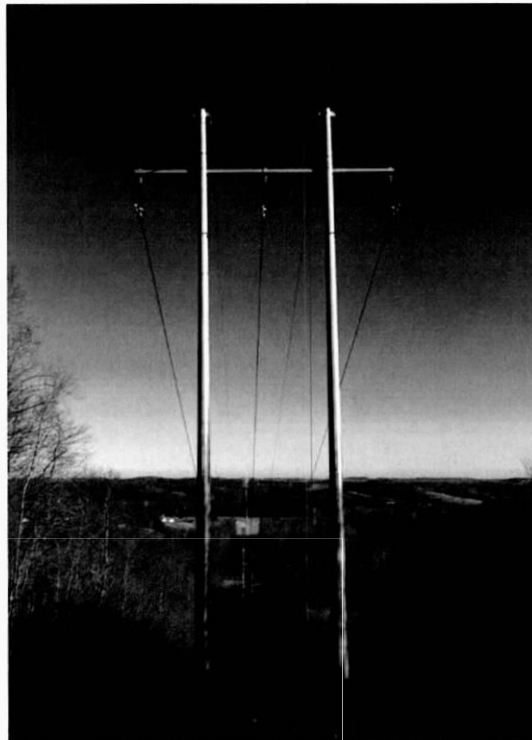


Figure 2. Typical Transmission Structure

1.2.3 Construction and Maintenance Considerations

The proposed transmission line rebuild requires surveying, ROW clearing, foundation installation (if necessary), structure assembly and erection, conductor and shield wire installation, and restoration upon completion. Construction operations will be conducted with attention to the preservation and enhancement of the natural habitat and the conservation of natural resources. Construction activities will be conducted in accordance with any and all local, state, and/or federal permits that are necessary for the Project.

1.3 Project Timeline and Overview of Regulatory Approvals

AEP Ohio Transco initiated the transmission siting process in July 2017, identifying one focus area for the Project. Study segments were developed within the focus area and evaluated in August and September 2017. For segments north and south of the focus area, only route options which parallel the existing line (Preferred Route) or rebuild the existing 69 kV line (Alternate Route) were considered. The study segments, Preferred, and Alternate Routes were presented during a public open house meeting in September 2017. Following the public open house, the siting team met to review landowner feedback and to further evaluate and adjust the study segments. A second public open house meeting was held in January 2018, showing the revised study segments within the focus area, along with the Preferred and Alternate Routes. Following the second open

house meeting, AEP Ohio Transco finalized the routes and prepared an Application to the OPSB, which is scheduled for submittal in March 2018. Pending approval from the OPSB, construction is expected to begin in the first quarter of 2019, with the Project scheduled to be complete in the summer of 2021.

1.4 Goal of the Rebuild Siting Study

The goal of the Siting Study is to gain an understanding of the opportunities and constraints in the Project area and to facilitate the development of Study Segments, evaluate potential impacts associated with the Study Segments, and identify a Preferred Route and an Alternate Route. The Preferred Route is the route that: (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and, (3) can be constructed and operated in a timely, safe and reliable manner. For the purposes of this Project, Study Segments were developed for the Londonderry Focus Area. For segments north and south of Londonderry, only route options which rebuild the existing 69 kV line or parallel the existing line were considered, due to the lack of constraints identified, and the preference to utilize existing ROW wherever practical.

2.0 ROUTE AND SITE DEVELOPMENT PROCESS

2.1 Route Development Process Summary/Methodology

The route development process is inherently iterative with frequent modifications made throughout the study as a result of the identification of new constraints, input from agencies, landowners, and other stakeholders, periodic re-assessment of routes with respect to the siting criteria, and adjustments to the overall route network. As a result of the evolving nature of the route development process, the Siting Team (see **Section 2.2**) uses specific vocabulary to describe the routes at different stages of development.

Initial route review efforts for a rebuild project start with the identification of constraints along the original ROW. These features are typically identified using a combination of readily available public data sources.

The Siting Team uses this information to first develop **Focus Areas**, which are areas along the existing route where rebuilding may not be feasible due to the presence of constraints.

A series of **Potential Study Segments** are developed within each Focus Area. The Potential Study Segments are numbered and compared to one another to determine how well they meet the routing criteria.

As the route development process progresses, the Siting Team continues to evaluate new data and modifies, if necessary, the Study Segments included in the network to develop a **Refined Study Segment Network**.

Eventually, a **Proposed Study Segment** is selected for each Focus Area by choosing the Study Segments that best meet the siting guidelines. Study Segments are assessed and compared with land uses, natural and cultural resources, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of the Study Segments, the Siting Team identifies a **Preferred Route** which can be a combination of rebuild segments and new Proposed Study Segments that deviate from the original ROW, and an Alternate Route for submittal to the OPSB for approval.

Study Segments were developed for the Londonderry Focus Area which were eventually incorporated into an overall Preferred Route and Alternate Route. Figure 3 provides a visual representation of the route development process steps.

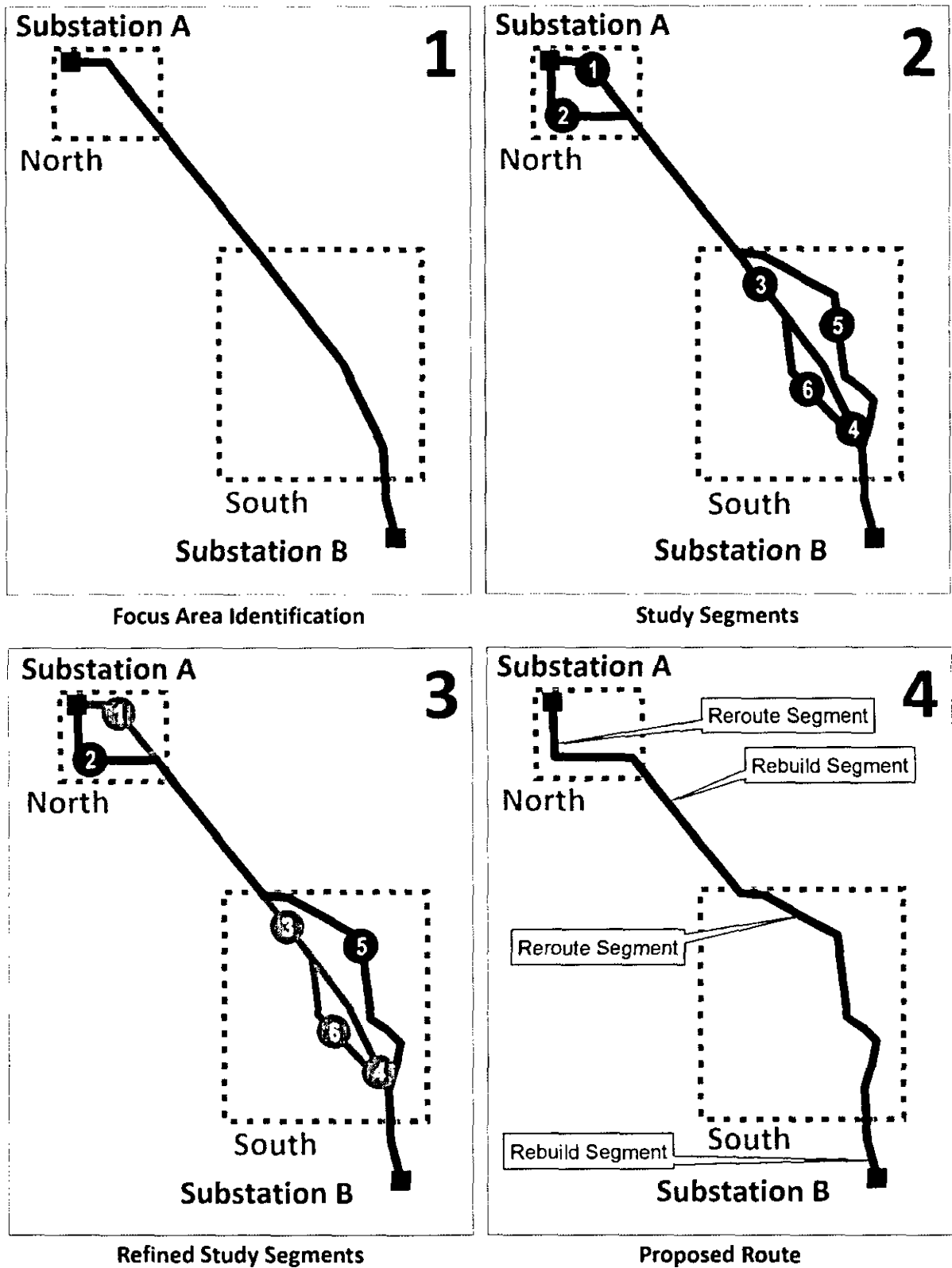


Figure 3. Route Development Process Steps

2.2 Siting Team Members

A multi-disciplinary Siting Team performed the Siting Study. Team members were selected to bring wide experience to the rebuild Siting Study to achieve a thorough review of all aspects of developing the route. Members of the Siting Team have experience in transmission line siting, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management.

The team worked together during the Siting Study to define the Focus Areas, develop siting criteria, identify siting constraints and opportunities, collect and analyze environmental and design data, solicit public input and concerns, consult with natural resource and permitting agencies, develop and revise the siting alternatives, and analyze and report on the selection of a Preferred Route.

2.3 Data Collection

The following sources of information were used to develop data for the Siting Study. A detailed table of data sources is provided in **Attachment B**.

2.3.1 Geographic Information System Data Collection

Aerial photography is an important tool for route selection. The primary sources of aerial imagery used in the route identification, analysis, and selection effort for the Project include:

- Environmental Systems Research Institute (ESRI) ArcGIS Online
- Microsoft
- Google Earth
- Bing

Updated information, such as the location of new residences and other constraints, was annotated to the photography by either paper maps (at the public meeting) and transferred into the Geographic Information System (GIS), or digitized directly into the GIS as identified during field inspections.

The study made extensive use of information in existing GIS data sets, obtained from many sources, including federal, state, and local governments. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and the Siting Team created some by digitizing information from paper-based maps, aerial photo interpretation, interviews with stakeholders, and field inspections.

GIS data sources vary with respect to their accuracy and precision. For this reason, GIS-based calculations and maps presented throughout this study should be considered reasonable approximations of the resource or geographic feature they represent and not absolute measures or counts. The data and calculations presented in this study allow for relative comparisons among project routes, with the assumption that inherent errors or inaccuracies would be generally equal across options. Field reconnaissance was conducted to verify certain features (e.g., locations of residential, commercial, and industrial buildings). **Attachment B** presents a list of the GIS data sources used for this study.

2.3.2 Field Reconnaissance

Siting Team members conducted field inspections along the existing transmission line corridor and throughout the Project area, including select routes within the Londonderry Focus Area. The team members examined route options and Study Segments by automobile from public roads and other points of public access and correlated observed features to information shown on aerial photography, USGS 7.5-minute topographic maps, road maps, and the range of GIS sources compiled. Prior to fieldwork, some key features such as residences, outbuildings, places of worship, cemeteries, and commercial and industrial areas were identified and mapped in GIS using aerial imagery, street view, and other publically available resources.

2.3.3 Federal, State and Local Government Coordination

The Siting Team obtained information from or contacted various federal, state, and local agencies and/or officials to inform them of the Project and requested data for the route planning process. The agencies contacted are listed below. Copies of agency correspondence are included as **Attachment C**.

Federal Agencies

- United States Fish and Wildlife Service (USFWS)

State Agencies

- Ohio Department of Natural Resources (ODNR)
- Ohio State Historic Preservation Office (SHPO)

Local Agencies and/or Officials

AEP Ohio Transco and the Siting Team coordinated with local government agencies/officials to aid the route development process. These entities included:

- Ross County Auditor
- Ross County Planning & Building Departments

2.4 Siting Guidelines

2.4.1 General Guidelines

The primary goal for this siting effort was to identify a Preferred Route for the Project that: (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and, (3) can be constructed and operated in a timely, safe, and reliable manner. Although no Preferred Route can optimally minimize impacts across all area resources, the Siting Team used a series of general siting guidelines to direct the development, evaluation, and selection of routes toward this overall goal.

The following guidelines were considered for this effort:

- Maximize use of the existing 69 kV transmission line corridor.
- Avoid or minimize outages and service disruptions.
- Consider parallel alignments along existing ROWs or other infrastructure.
- Maximize the separation distance from and/or minimize impact on dwellings, schools, daycare facilities, hospitals, and other community facilities.
- Consider stakeholder input as practical.
- Avoid or minimize visibility from populated areas, scenic roadways, and designated scenic resources.
- Minimize interference with economic activities, including agricultural activities.
- Avoid or minimize conflict with existing and proposed future development and land uses.
- Avoid crossing or minimize conflict with designated public resource lands such as national and state forests and parks, large camps and other recreation lands, designated battlefields, nature preserves or other designated historic resources and sites, and conservation areas.

- Avoid or minimize new crossings of large lakes, rivers and large wetland complexes, critical habitat, and other unique or distinct natural resources.
- Minimize habitat fragmentation and impacts on designated areas of biodiversity concern.

2.4.2 Technical Guidelines

Technical guidelines are driven by the physical characteristics and engineering limitations of the structures and lines themselves, and the design criteria necessary to meet AEP design standards, North American Electric Reliability Corporation (NERC) reliability standards, National Electric Safety Code (NESC), and industry best practices for construction. The technical guidelines were informed by: (1) the technical expertise of engineers and other industry professionals responsible for the reliable, safe and economical construction, operation, and maintenance of electric system facilities; (2) NERC reliability standards as implemented by PJM Interconnection, LLC; and, (3) industry best practices.

The Siting Team considered the following technical guidelines during the development, evaluation, and comparison of routes.

- Minimize duration of outages during construction along existing 69 kV transmission line.
- Minimize crossing lines of higher voltage.
- Maintain a minimum of 50 feet of centerline-to-centerline separation when paralleling 138 kV or lower voltage transmission lines.
- Avoid angles greater than 65 degrees and steep slopes (more than 20 degree slopes for angle structures, and more than 30 degrees for tangent structures).

2.5 Public Involvement Process

2.5.1 Public Open House

An initial public Open House was conducted on September 18, 2017, at the God's Community Church located in Chillicothe, Ohio, with a second public Open House held on January 25, 2018, at the Northview Elementary School located in Jackson, Ohio. The Siting Team set up stations at both meetings and provided information related to engineering and design of the structures, Project need, real estate and ROW issues, and the siting process. The community was notified about the time and location of the meetings through the following means:

1. AEP Ohio Transco sent coordination letters to sixty-five (65) property owners along the Project route for the initial public Open House. Twelve (12) additional property owners were notified for the second public Open House. For both public Open Houses,

notification letters were also sent to twenty-three (23) public officials and government agencies in Ross County, the City of Chillicothe, Jefferson Township, Liberty Township, Harrison Township, and Springfield Township. These letters included an overview of the Project and invited each to attend the Open Houses.

2. Notices were placed in local newspapers to inform residents of the Open House dates.
3. Notice was placed on the Project website.

Printed maps at a scale of 1-inch equal 400 feet (1:4,800 scale) were provided at the Open Houses for the public to review and were used to record written comments concerning sensitive resources in their local environment. Members of the Siting Team greeted meeting attendees, answered questions about the Project, and aided attendees in locating their property or other features of concern on aerial maps showing the Preferred Route, Alternate Route, and Study Segments under consideration. Participants were encouraged to document the location of their houses, places of business, property of concern, or other sensitive resources on the printed maps. After the public open houses, handwritten comments were digitized and entered into a GIS database.

Comment sheets were distributed to all meeting attendees. Attendees were asked to fill out the sheet completely, including contact information. The Siting Team read all comment sheets, and scanned and stored them in the Project database as a record of meeting attendance and public comments. A total of nineteen (19) comments were received following the September 18, 2017, public Open House, and three (3) comments were received following the January 25, 2018, public Open House.

2.5.2 Project Website and Virtual Open House

A Project website was launched that includes an overall Project description and map, a fact sheet, an area for Project updates and releases, and contact information. Visitors to the site can also provide comments digitally, or contact the Project Outreach Specialist directly via the listed telephone number. This information can be found at:

<http://aeptransmission.com/ohio/Liberty/index.php>

2.5.3 Consideration of Public Input

Aside from the twenty-two (22) comments submitted on the Project at the public Open Houses, no other comments were received via telephone calls, US mail, or e-mail. Two (2) of the comment cards received at the September 18, 2017, Open House did not include the name or contact information of the individuals who filled it out. Most of the comments received were

concerns about additional tree clearing adjacent to the existing ROW, or potential future restriction of land use based upon the presence of this higher voltage line.

The Siting Team staff reviewed all comments from the public Open Houses and, where applicable, incorporated the information when reviewing, revising, and comparing the route options. While some of the comments were more informational in nature regarding a known resource or constructability concern, others were more specific in regards to preference of one route option over another. Several concerns were noted regarding current land uses (harvesting, wooded areas, etc.) and future land use opportunities/constraints. Several others expressed preference for utilizing the existing ROW. The final Preferred Route that will be submitted to the OPSB includes two (2) route adjustments within the Londonderry Focus Area that were not presented during the public Open Houses, but resulted from the comments received during the Open Houses and discussions with landowners, as well as input from AEP engineers. These adjustments are located near US Route 50 and Township Road 216 (Hanna Lane). A slight adjustment of the final Preferred Route also includes a minor shift along the existing 69 kV transmission line within the Londonderry Focus Area, which maximizes distances between residences along Smith Lane.

3.0 ALTERNATE ROUTE IDENTIFICATION

3.1 Focus Area Identification

One (1) Focus Area (Londonderry) was identified along the existing 69 kV transmission line, which encompassed approximately 2.2 miles of the existing 69 kV transmission line. The Focus Area is identified on **Map 2 of Attachment A**.

3.2 Opportunities and Constraints

The Siting Team identified and mapped siting constraints and opportunities within the Project area.

Siting Constraints

Constraints are specific areas that should be avoided to the extent practical during the route development and selection process. The Siting Team initially identifies larger constraints during the conceptual siting process. The following is a list of general large constraints:

- Urban areas, including towns, small villages, and other high concentrations of residential, commercial and industrial development areas
- National Register Historic Districts and adjacent areas
- Recreational areas such as parks and large recreational reservoirs

- Large streams, wetlands, flood zones or unique natural resource features, and critical habitat areas
- Designated Federal or State Forests, Parks, State Game Lands, and other natural and conservation areas
- Large mining areas

As the Siting Team develops specific siting alignments, smaller constraints are identified. These constraints encompass other feature types found within smaller geographic areas, or site-specific locations. Through the iterative process of route development described above, the routes are adjusted to avoid small constraints, where feasible, including:

- Individual residences (houses, mobile homes, and multi-family buildings)
- Commercial and industrial buildings
- Outbuildings and barns
- Cemeteries
- Churches
- Schools
- Hospitals
- Recorded sites of designated historic buildings and sites
- Small wetlands
- Specific recreational sites, facilities, and trails
- Radio and communications towers
- Designated scenic vista points

Siting Opportunities

The Siting Team defined siting opportunities as locations where the proposed transmission line might be located while reasonably minimizing adverse impacts. Siting opportunities typically include other linear infrastructure and utility corridors, such as the existing electric and gas transmission network, rail lines, and roads, but may also include reclaimed mine lands, or unused portions of industrial or commercial areas. The only significant siting opportunity identified within the Project area is the existing 69 kV transmission line (**Attachment A - Map 2**). There are no other transmission lines, gas lines, or other suitable utility corridors that traverse the region between the existing Ginger Switch Station and Vigo Substation.

3.3 Study Segment Development

Within the Londonderry Focus Area, the Siting Team developed twenty (20) Study Segments. All Study Segments were designed based on the siting process and criteria developed in Section 2.0. As the siting effort evolved, the Study Segments were revised, removed, or added. These revisions were based on the likelihood of impacts on residential areas, agricultural areas, planned and future development, natural areas, and landowner feedback. **Maps 2 through 4** reflect the potential routes and Study Segments evaluated by the Siting Team.

3.3.1 Londonderry Focus Area

The Londonderry Focus Area was identified to evaluate various options through the unincorporated residential community referred to as Londonderry. This Focus Area begins near Cotterman Lane and continues approximately 2.2 miles southeast, between Hanna Lane and Musgrove Road. This portion of the Project is located within a more developed area along the existing Berlin-Ross 69 kV transmission line corridor that required route options to avoid existing encroachments. Portions of the existing centerline contained encroachments that required the Siting Team to develop Study Segments. As a result, twenty (20) Study Segments were identified and evaluated within the Londonderry Focus Area, which are described below.

Study Segment 1

Study Segment 1 is located at the northern edge of the Focus Area and was designed as a segment option that utilizes the existing Berlin-Ross 69 kV transmission line ROW. It follows the existing centerline for approximately 0.2-mile and encompasses mainly agricultural land uses. This study segment has been retained as part of Route Alternatives A, B and D.

Study Segment 2

Study Segment 2 begins at the northern terminus of Study Segment 1 at the northern limit of the Focus Area. This segment extends to the east for approximately 0.4-mile and traverses agricultural land uses. Study Segment 2 has been retained as part of Route Alternative C.

Study Segment 3

Study Segment 3 begins at the eastern terminus of Study Segment 2 and continues southeast for approximately 0.1-mile through agricultural land uses. Study Segment 3 has been retained as part of Route Alternative C.

Study Segment 4

Study Segment 4 also begins at the eastern terminus of Study Segment 2 and continues south for approximately 0.5-mile to the northern terminus of Study Segment 7. This Study Segment traverses agricultural land uses. Study Segment 4 results in a greater encroachment into an active agricultural field compared to Study Segment 5 and thus has not been retained as part of any route alternative.

Study Segment 5

Study Segment 5 begins at the southern terminus of Study Segment 1 and continues southeast along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segment 7. This Study Segment utilizes the existing ROW for approximately 0.5-mile. The segment traverses a mix of forested, agricultural, and residential land uses and is located in close proximity to several residences, with one (1) outbuilding located within the existing ROW. Study Segment 5 has been retained as part of Route Alternatives A and B.

Study Segment 6

Study Segment 6 also begins at the southern terminus of Study Segment 1 and continues southeast for approximately 0.6-mile to the northern terminus of Study Segment 7. This Study Segment traverses a mix of forested, agricultural, and residential land uses and was designed to reduce residential and agricultural impacts within the existing ROW. Study Segment 6 has been retained as part of Route Alternative D.

Study Segment 7

Study Segment 7 begins at the southern terminus of Study Segments 4, 5 and 6, and continues southeast along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segment 12. This Study Segment utilizes the existing ROW for approximately 0.4-mile. Study Segment 7 traverses agricultural and residential land uses. This Study Segment has been retained as part of Route Alternatives A, B and D.

Study Segment 8

Study Segment 8 begins at the southern terminus of Study Segment 3 and continues southeast for approximately 0.9-mile to the northern terminus of Study Segment 10. Study Segment 8 traverses agricultural land uses and has been retained as part of Route Alternative C.

Study Segment 9

Study Segment 9 was added following landowner feedback received at the first public open house meeting. Study Segment 9 begins at the southern terminus of Study Segment 3 and heads east along a tree line for approximately 0.6-mile before turning south and traveling approximately 0.9-mile to the northern terminus of Study Segments 13 and 14. The 0.9-mile section of Study Segment 9 crosses a densely forested area, an open body of water, as well as agricultural land uses. Study Segment 9 was removed from further consideration due to the potential for sensitive environmental resources and landowner feedback received during the second public open house.

Study Segment 10

Study Segment 10 begins at the southern terminus of Study Segment 8 and continues southeast for approximately 0.2-mile to the northern terminus of Study Segments 13 and 14. This Study Segment traverses agricultural land uses. Study Segment 10 has been retained as part of Route Alternatives A and C.

Study Segment 11

Study Segment 11 begins at the southern terminus of Study Segment 7 and continues east for approximately 0.2-mile to the northern terminus of Study Segment 10. Study Segment 11 traverses agricultural land uses and has been retained as part of Route Alternative A.

Study Segment 12

Study Segment 12 begins at the southern terminus of Study Segment 7 and continues southeast along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segment 15. This Study Segment utilizes the existing ROW for approximately 0.6-mile. Study Segment 12 traverses a mix of agricultural and residential land uses, and would require several residences and outbuildings to be within the ROW. Study Segment 12 has been retained as part of Route Alternatives B and D.

Study Segment 13

Study Segment 13 begins at the southern terminus of Study Segment 10 and continues south for approximately 0.3-mile to the northern terminus of Study Segment 15. This Study Segment traverses agricultural land uses and has been retained as part of Route Alternative A.

Study Segment 14

Study Segment 14 also begins at the southern terminus of Study Segment 10 and continues south for approximately 0.4-mile to the northern terminus of Study Segment 16. This Study Segment

traverses agricultural land uses and is an alternative to Study Segment 13. Study Segment 14 has been retained as part of Route Alternative C.

Study Segment 15

Study Segment 15 begins at the southern terminus of Study Segments 12 and 13, and continues southeast along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segment 16. This Study Segment utilizes the existing ROW for approximately 0.1-mile through agricultural land uses. Study Segment 15 has been retained as part of Route Alternatives A, B and D.

Study Segment 16

Study Segment 16 begins at the southern terminus of Study Segments 13 and 15, and continues southeast along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segments 18 and 19. This Study Segment utilizes the existing ROW for approximately 0.2-mile through agricultural land uses. Study Segment 16 has been retained as part of Route Alternatives A and B.

Study Segment 17

Study Segment 17 also begins at the southern terminus of Study Segments 13 and 15, and continues south-southeast for approximately 0.6-mile before terminating at the southern end of the Focus Area. This Study Segment traverses agricultural land uses and is an alternative to utilizing the existing ROW along Study Segments 16, 19 and 20. Study Segment 17 has been retained as part of Route Alternatives C and D.

Study Segment 18

Study Segment 18 begins at the southern terminus of Study Segment 16 and continues southeast for approximately 0.3-mile to the northern terminus of Study Segment 20. This Study Segment traverses agricultural land and was designed to avoid an encroachment within the existing ROW. Study Segment 18 has been retained as part of Route Alternative A.

Study Segment 19

Study Segment 19 also begins at the southern terminus of Study Segment 16 and continues southeast for approximately 0.3-mile along the existing Berlin-Ross 69 kV centerline to the northern terminus of Study Segment 20. Study Segment 19 traverses a mix of agricultural and residential land, and would include a structure within the existing ROW. Study Segment 19 has been retained as part of Route Alternative B.

Study Segment 20

Study Segment 20 begins at the southern terminus of Study Segments 18 and 19, and continues southeast along the existing Berlin-Ross 69 kV centerline before terminating at the southern end of the Focus Area. This study segment utilizes the existing ROW for approximately 0.1-mile and traverses a small forested area along with agricultural land uses. Study Segment 20 has been retained as part of Route Alternatives A and B.

3.3.2 Route Alternatives outside the Londonderry Focus Area

North and south of the Londonderry Focus Area, only two (2) route alternatives were considered. Starting at the Ginger Switch Station, the Preferred Route is offset 50 feet to the south of the existing Berlin-Ross 69 kV transmission line. The southern offset was designed to accommodate the preferred exit of the proposed transmission line from the Ginger Switch Station. The route continues southeast, paralleling the existing 69 kV transmission line for approximately 0.5-mile. At this point, the Preferred Route spans the existing ROW and lands at a point offset 50 feet to the north of the existing 69 kV transmission line. This was designed to avoid two (2) residences that would be located within the expanded 100 foot ROW, in addition to several other structures that would be impacted by continuing to parallel the existing centerline on its southern side. The route continues southeast for approximately 2.6 miles until reaching the Londonderry Focus Area, located just east of Cotterman Lane. South of the Londonderry Focus Area, the Preferred Route begins between Hanna Lane and Musgrove Road, offset 50 feet to the south of the existing centerline. A southern offset was selected due to the location of residences and large outbuildings within the Project area. This route parallels the existing Berlin-Ross 69 kV transmission line for approximately 1.5 miles, ending north of Vigo Road. At this point, the remaining 0.3-mile of proposed transmission line is to be rebuilt on centerline to the Vigo Substation.

The Alternate Route involves rebuilding the new 138 kV transmission line on the existing centerline of the 69 kV transmission line for the entire 3.1-mile stretch from the Ginger Switch Station to the Londonderry Focus Area. Similarly, south of the Londonderry Focus Area, the Alternate Route utilizes the existing centerline of the Berlin-Ross 69 kV transmission line. This route option would involve rebuilding the new 138 kV transmission line on the centerline of the existing 69 kV transmission line for the entire 1.5 miles to the Vigo Substation.

4.0 ROUTE AND STUDY SEGMENT COMPARISON

This section further discusses the route alternatives and provides a quantitative and qualitative analysis of potential impacts to local communities, the environment, and cultural resources. The

route alternatives were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Siting Team. Within the Londonderry Focus Area, the twenty (20) Study Segments were combined into four (4) route alternatives. These route alternatives were lettered (A-D) and are discussed and compared in the tables below along with the route alternatives north and south of the Londonderry Focus Area.

4.1 Natural Resources

Natural resource impacts include potential impacts to vegetation and habitat, surface waters, threatened and endangered species, and conservation and recreation lands. Potential impacts discussed in this section are based on publically available maps and data as well as consultation with federal and state agencies. A comparison of the natural environment considerations for the route alternatives within the Londonderry Focus Area and the Preferred and Alternate Routes north and south of Londonderry are presented in **Tables 1 and 2**. Natural Resource constraints within the Focus Areas are shown in **Attachment A - Map 3**.

Londonderry Focus Area

Natural resource impacts associated with the four (4) route alternatives within the Londonderry Focus Area are minimal. Based on the public data sources utilized to create the comparative analysis, none of the route alternatives cross palustrine forested (PFO), palustrine scrub-shrub (PSS), or palustrine emergent (PEM) wetlands, and only two (2) of the route alternatives cross palustrine unconsolidated bottom (PUB) wetlands. Additionally, no streams or waterbodies were identified along any of the route alternatives. Impacts to the prime and unique farmland soils within the Londonderry Focus Area ranges from 5.6 acres impacted by Route Alternative B to 9.1 acres impacted by Route Alternative C, creating a difference of 3.5 acres between the most impactful and least impactful route alternative. Tree clearing requirements are also minimal, with Route Alternatives A, B, and C each requiring 0.4-acre or less of tree clearing. Route Alternative D requires the most tree clearing at 1.1 acres. Although this acreage is nearly four times the tree clearing required for Route Alternatives A, B, and C, it is relatively minor when compared to the total area of the ROW (approximately 29.1 acres) within Londonderry.

Table 1. Natural Resource Evaluation Criteria

Table 1. Natural Resource Evaluation Criteria					
Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
General					
Length	miles	2.4	2.3	2.5	2.4
Water Resources					
Total streams crossed (NHD)	count	0	0	0	0
High/Exceptional/Special Protection streams crossed (OEPA)	count	0	0	0	0
PEM wetlands in the ROW (NWI)	acres	0.0	0.0	0.0	0.0
PFO/PSS wetlands in the ROW (NWI)	acres	0.0	0.0	0.0	0.0
PUB wetlands in the ROW (NWI)	acres	0.0	0.0	0.1	0.1
Waterbody crossings (NHD)	feet	0.0	0.0	0.0	0.0
FEMA-designated floodplain crossed by ROW	acres	0.0	0.0	0.0	0.0
FEMA-designated floodway crossed by ROW	acres	0.0	0.0	0.0	0.0
Geological, Topographical, and Soil Resources					
Prime and unique farmland soil in the ROW ¹	acres	7.0	5.6	9.1	6.9
Farmland of statewide importance in the ROW ²	acres	0.0	0.0	0.0	0.0
Karst topography in the ROW	acres	0.0	0.0	0.0	0.0
Known caves or mines in the ROW	count	0	0	0	0
Wildlife and Habitat					
Tree clearing required in the ROW (digitized based on aerial photography)	acres	0.2	0.3	0.4	1.1
Length of clearing parallel to existing linear infrastructure	miles	0.0	0.0	0.0	0.0
Special natural areas crossed by the ROW	acres	0.0	0.0	0.0	0.0
Special natural areas within 250 feet of the ROW	count	0	0	0	0

¹ Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops.

² Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as soils of statewide importance.

North and South of the Londonderry Focus Area

The comparative analysis indicated few differences in impacts between the Preferred Route and Alternate Route north and south of the Londonderry Focus Area. The Preferred and Alternate Routes are of similar length, and have similar impacts to wetlands, waterbodies, and farmland. The most distinctive variance between the Preferred Route and Alternate Route is the amount of tree clearing required to construct and operate the Project. Although the Preferred Route utilizes a portion of the existing ROW by paralleling it, this route would require significantly more tree clearing to create a 100-foot-wide ROW. The Alternate Route, by contrast, would require fewer trees to be cleared as the Alternate Route would utilize the existing 69 kV transmission line ROW in its entirety. Tree clearing required for the Alternate Route would generally be limited to expanding the existing 50-foot-wide ROW to a 100-foot width.

Table 2. Natural Resource Evaluation Criteria

Table 2. Natural Resource Evaluation Criteria						
Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
General						
Length	miles	3.1	3.1	1.5	1.5	0.3
Water Resources						
Total streams crossed (NHD)	count	4	4	1	1	0
High/Exceptional/Special Protection streams crossed (OEPA)	count	2	2	1	1	0
PEM wetlands in the ROW National Wildlife Inventory (NWI)	acres	0.3	0.5	0.1	0.2	0.1
PFO/PSS wetlands in the ROW (NWI)	acres	0.6	0.5	0.0	0.0	0.0
PUB wetlands in the ROW (NWI)	acres	0.0	0.0	0.4	0.3	0.0
Waterbody crossings (NHD)	feet	0.0	0.0	0.0	0.0	0.0
FEMA-designated floodplain crossed by ROW	acres	2.9	3.3	0.0	0.0	0.0
FEMA-designated floodway crossed by ROW	acres	0.0	0.0	0.0	0.0	0.0
Geological, Topographical, and Soil Resources						
Prime and unique farmland soil in the ROW ¹	acres	12.3	12.4	2.4	2.2	0.9
Farmland of statewide importance in the ROW ²	acres	0.0	0.0	0.0	0.0	0.0
Karst topography in the ROW	acres	0.0	0.0	0.0	0.0	0.0
Known caves or mines in the ROW	count	0	0	0	0	0
Wildlife and Habitat						
Tree clearing required in the ROW (digitized based on aerial photography)	acres	9.4	2.1	4.5	0.6	0.0
Length of clearing parallel to existing linear infrastructure	miles	1.0	0.0	0.5	0.0	0.0
Special natural areas crossed by the ROW	acres	0.0	0.0	0.0	0.0	0.0
Special natural areas within 250 feet of the ROW	count	0	0	0	0	0

¹ Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops.

² Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as soils of statewide importance.

4.2 Land Use

Land use impacts include direct and indirect impacts to residential, commercial, and industrial development, institutional uses (e.g., schools, places of worship, cemeteries, and hospitals), cultural resources, and land use. Construction of a new transmission line can result in changes to land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational users. A comparison of the land use considerations for the route alternatives within the Londonderry Focus Area and the Preferred and Alternate Routes north and south of Londonderry are presented in **Tables 3 and 4**. Land use within the Focus Areas is shown on **Attachment A - Map 4**.

Londonderry Focus Area

The most sensitive category of land use within this Focus Area is residential. After the existing Berlin-Ross 69 kV transmission line was built, residential development within Londonderry increased, resulting in several residences and structures being constructed within the existing ROW. This area of the overall Project also has the most residences within 500 feet of the route alternatives. As such, minimizing new impacts to the current residences within the Focus Area and maintaining no structures within the expanded ROW were the main contributing factors to the identification of the four (4) route alternatives within the Londonderry Focus Area.

Route Alternatives B and D have three (3) and two (2) residences, respectively, within the proposed 100-foot-wide ROW; these same residences are also located within the existing 50-foot-wide ROW for both Route Alternatives. There are no residences within the proposed ROW for Route Alternatives A and C, and Route Alternative C is the only route that does not have a residence within 100 feet of the proposed centerline. Outside of the proposed ROW, impacts to residences are visual in nature, with Route Alternatives B and D having the most residences (32 each) within 500 feet of the centerline. Route Alternative C had the fewest residences within 500 feet of the centerline with 20. In compiling Study Segments to create route alternatives through the Londonderry Focus Area, segments with the least visual impact to residences were considered to be the most desirable. Uninhabitable structures are present within the proposed 100-foot-wide ROW of Route Alternatives A (one [1] structure), B (five [5] structures), and D (two [2] structures); the structure for Route Alternative A is outside the existing 50-foot-wide ROW, three (3) structures for Route Alternative B are within the existing 50-foot-wide ROW, and one (1) structure for Route Alternative D is within the existing 50-foot-wide ROW.

No business or commercial buildings were identified within the ROW for any of the route alternatives. However each of the route alternatives have at least one (1), but no more than two (2), business or commercial buildings within 500 feet of the centerline.

The amount of pasture/rangeland and cropland crossed by the ROW for each of the route alternatives are generally comparable with pasture/rangeland ranging from 7.5 to 9.9 acres and cropland ranging from 15.2 to 20.1 acres.

None of the route alternatives within the Londonderry Focus Area had identified constraints for community/recreational facilities, protected land, and cultural resources.

Table 3. Land Use Evaluation Criteria

Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
General					
Length	miles	2.4	2.3	2.5	2.4
Number of parcels ¹ crossed	count	24	29	21	28
Landowners within ROW ²	count	18	24	14	24
Municipalities, Counties, and Townships Crossed					
Ross County	miles	2.4	2.3	2.5	2.4
Liberty Township	miles	2.4	2.3	2.5	2.4
Residential					
Barns, outbuildings, sheds, garages and silos in the ROW (excludes abandoned features)	count	1	5	0	2
Residences/single-family dwellings within ROW	count	0	3	0	2
Residences/single-family dwellings within 100 feet of centerline	count	1	4	0	3
Residences/single-family dwellings within 250 feet of centerline	count	12	19	6	16
Residences/single-family dwellings within 500 feet of centerline	count	31	38	20	38
Residences/single-family dwellings within 1,000 feet of centerline	count	87	85	59	88
Multi-family dwellings ³ within ROW	count	0	0	0	0
Multi-family dwellings within 250 feet of centerline	count	0	0	0	0
Multi-family dwellings within 500 feet of centerline	count	0	0	0	0
Multi-family dwellings within 1,000 feet of centerline	count	0	0	0	0
Commercial/Industrial					
Businesses/commercial buildings ⁴ within the ROW	count	0	0	0	0

¹ The number of parcels crossed refers to the number of individual plots of owned land recorded by each County.

² The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

³ Multi-family dwellings include townhome, condominium, and apartment complexes, and duplexes.

⁴ Commercial development includes retail, service, office, restaurants, and lodging establishments.

Table 3. Land Use Evaluation Criteria

Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
Businesses/commercial buildings within 250 feet of the centerline	count	0	0	0	0
Businesses/commercial buildings within 500 feet of the centerline	count	2	1	2	1
Businesses/commercial buildings within 1,000 feet of the centerline	count	2	2	2	2
Mining areas crossed	count	0	0	0	0
Quarries crossed	count	0	0	0	0
Agricultural					
Pasture/rangeland crossed in ROW (based on National Land Cover Database [NLCD] data)	acres	9.9	8.1	7.5	9.9
Cropland crossed in ROW (based on NLCD data)	acres	16.3	16.7	20.1	15.2
Tree farms/orchards crossed in ROW	acres	0	0	0	0
Community/Recreational Facilities					
Schools within 1,000 feet of centerline	count	0	0	0	0
Designated places of worship within 1,000 feet of centerline	count	0	0	0	0
Cemeteries within 250 feet of centerline	count	0	0	0	0
Hospitals, and assisted living facilities within 250 feet of centerline	count	0	0	0	0
Parks and recreation areas crossed by the ROW	count	0	0	0	0
Scenic byways crossed	count	0	0	0	0
Protected Land					
Federal/state land crossed by ROW	acres	0	0	0	0
Local public lands crossed by ROW	acres	0	0	0	0
Cultural Resources					
NRHP-listed sites within one mile of the centerline	count	0	0	0	0
National Landmarks within one mile of the centerline	count	0	0	0	0
Historic Districts within one mile of the centerline	count	0	0	0	0
Known NRHP-eligible sites within one mile of the centerline	count	0	0	0	0

Table 3. Land Use Evaluation Criteria

Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
Listed archaeological sites within ROW	count	0	0	0	0
Listed archaeological sites within 250 feet of centerline	count	0	0	0	0

North and South of the Londonderry Focus Area

The comparative analysis resulted in few differences in impacts between the Preferred Route and Alternate Route north and south of the Londonderry Focus Area, mainly due to the parallel nature of the routes. Both routes are of similar length, and impact a similar number of landowners and parcels. Each route also has similar impacts to existing structures. However, it is notable that the Alternate Route north of the Londonderry Focus Area would contain one (1) additional outbuilding within the proposed ROW. The Alternate Route north of Londonderry Focus Area also impacts a greater amount of pasture and/or rangeland compared to the Preferred Route (3.5 acres versus 5.0 acres, respectively).

Table 4. Land Use Evaluation Criteria

Table 4. Land Use Evaluation Criteria						
Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
General						
Length	miles	3.1	3.1	1.5	1.5	0.3
Number of parcels ¹ crossed	count	26	26	17	18	7
Landowners within ROW ²	count	20	20	12	12	7
Municipalities, Counties, and Townships Crossed						
Ross County	miles	3.1	3.1	1.5	1.5	0.3
Springfield Township	miles	0.5	0.5	0.0	0.0	0.0
Liberty Township	miles	1.2	1.2	1.4	1.4	0.0
Harrison Township	miles	1.4	1.4	0.0	0.0	0.0
Jefferson Township	miles	0.0	0.0	0.1	0.1	0.3
Residential						
Barns, outbuildings, sheds, garages and silos in the ROW (excludes abandoned features)	count	2	3	0	0	0
Residences/single-family dwellings within ROW	count	0	0	0	0	0
Residences/single-family dwellings within 100 feet of centerline	count	0	2	0	0	0
Residences/single-family dwellings within 250 feet of centerline	count	7	6	1	2	3
Residences/single-family dwellings within 500 feet of centerline	count	15	17	7	7	7
Residences/single-family dwellings within 1,000 feet of centerline	count	27	28	27	28	15
Multi-family dwellings ³ within ROW	count	0	0	0	0	0
Multi-family dwellings within 250 feet of centerline	count	0	0	0	0	0
Multi-family dwellings within 500 feet of centerline	count	0	0	0	0	0

¹ The number of parcels crossed refers to the number of individual plots of owned land recorded by Ross County.

² The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

³ Multi-family dwellings include townhome, condominium, and apartment complexes, and duplexes.

Table 4. Land Use Evaluation Criteria

Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
Multi-family dwellings within 1,000 feet of centerline	count	0	0	0	0	0
Commercial/Industrial						
Businesses/commercial buildings ⁴ within the ROW	count	0	0	0	0	0
Businesses/commercial buildings within 250 feet of the centerline	count	0	0	0	0	0
Businesses/commercial buildings within 500 feet of the centerline	count	0	0	0	0	0
Businesses/commercial buildings within 1,000 feet of the centerline	count	0	0	0	0	0
Mining areas crossed	count	0	0	0	0	0
Quarries crossed	count	0	0	0	0	0
Agricultural						
Pasture/rangeland crossed in ROW (based on NLCD data)	acres	3.5	5.0	9.4	9.0	2.8
Cropland crossed in ROW (based on NLCD data)	acres	18.7	18.6	0.0	0.0	0
Tree farms/orchards crossed in ROW	acres	0.0	0.0	0.0	0.0	0
Community/Recreational Facilities						
Schools within 1,000 feet of centerline	count	0	0	0	0	0
Designated places of worship within 1,000 feet of centerline	count	0	0	0	0	0
Cemeteries within 250 feet of centerline	count	0	0	0	0	0
Hospitals, and assisted living facilities within 250 feet of centerline	count	0	0	0	0	0
Parks and recreation areas crossed by the ROW	count	0	0	0	0	0
Scenic byways crossed	count	0	0	0	0	0
Protected Land						
Federal/state land crossed by ROW	acres	0.0	0.0	0.0	0.0	0
Local public lands crossed by ROW	acres	0.0	0.0	0.0	0.0	0

⁴ Commercial development includes retail, service, office, restaurants, and lodging establishments.

Table 4. Land Use Evaluation Criteria

Table 4. Land Use Evaluation Criteria						
Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
Cultural Resources						
NRHP-listed sites within one mile of the centerline	count	0	0	0	0	0
National Landmarks within one mile of the centerline	count	0	0	0	0	0
Historic Districts within one mile of the centerline	count	0	0	0	0	0
Known NRHP-eligible sites within one mile of the centerline	count	0	0	0	0	0
Listed archaeological sites within ROW	count	0	0	0	0	0
Listed archaeological sites within 250 feet of centerline	count	0	0	0	0	0

4.3 Constructability

This section discusses the feasibility of a proposed transmission line, as it relates to engineering and construction concerns. Constructability evaluates the use of existing transmission line corridors, engineering challenges, and accessibility issues of a route. Major factors that affect constructability include, but are not limited to, steep topography, condensed ROWs, high angles, proximity to major highways, accessibility, safety, and cost. A comparison of the constructability considerations for the route alternatives within the Londonderry Focus Area and the Preferred and Alternate Routes north and south of Londonderry are presented in **Tables 5 and 6**.

Londonderry Focus Area

The comparative analysis for the Londonderry Focus Area concluded that no one route was significantly different from a constructability perspective than the other. The greatest distinctions between the route alternatives are that some were designed to utilize the existing ROW to the fullest extent possible (while avoiding existing encroachments), while others were designed as greenfield options that would reduce the visual impact to residences within the Focus Area and allow the Project to be constructed without a required outage. Route Alternative B utilizes the greatest extent of existing ROW (2.4 miles), followed by Route Alternatives A and D with 1.4 miles and 1.2 miles, respectively. Route Alternative C does not utilize the existing 69 kV transmission line within the Londonderry Focus Area.

Table 5. Constructability Evaluation Criteria

Table 5. Constructability Evaluation Criteria					
Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
General					
Length	miles	2.4	2.3	2.5	2.4
Transportation Resources					
Interstate highways crossed	count	0	0	0	0
U.S. highways crossed	count	1	1	1	1
State highways crossed	count	0	0	0	0
Local roads and streets crossed	count	3	3	2	3
Railroads crossed	count	0	0	0	0
Airports within one mile of the centerline	count	0	0	0	0
Utility Resources					
Oil and gas pipelines crossed	count	0	0	0	0
Oil and gas wells within 250 feet from edge of ROW	count	0	0	0	0
Communication towers within 1,000 feet of the centerline	count	0	0	0	0
Existing AEP Transmission Lines Crossed	count	0	0	0	0
Engineering and Construction Considerations					
Steep slopes crossed by ROW (>20%), percent of total length	percent	1.8	1.7	1.3	1.9
Heavy angles, greater than 30%	count	3	0	2	3
Rights-of-Way Rebuild/Parallel					
Existing AEP transmission lines paralleled	miles	0.0	0.0	0.0	0.0
Existing distribution lines paralleled or underbuilt	miles	0.0	0.0	0.0	0.0
Existing AEP transmission lines rebuilt	miles	1.4	2.3	0.0	1.2
Oil and Gas Pipeline	miles	0.0	0.0	0.0	0.0
Interstate highways, U.S. highways, State highways, and local roads	miles	0.0	0.0	0.0	0.0
Railroad	miles	0.0	0.0	0.0	0.0
Total length paralleled	miles	0.0	0.0	0.0	0.0
Total percentage paralleled	percent	0.0	0.0	0.0	0.0



Table 5. Constructability Evaluation Criteria

Criteria	Unit	Londonderry Focus Area			
		A	B	C	D
Total length rebuilt	miles	1.4	2.3	0.0	1.2
Total percentage rebuilt	percent	60.3	100.0	0.0	49.7

North and South of the Londonderry Focus Area

The comparative analysis indicated few differences in impacts between the Preferred Route and Alternate Route north and south of the Londonderry Focus Area. Both routes encounter a similar amount of steep slopes. The greatest distinction between the Preferred Route and Alternate Route is that the Preferred Route was designed primarily to parallel the existing 69 kV ROW, whereas the Alternate Route was designed to utilize the existing 69 kV ROW in its entirety. As such, the impacts expressed in the “Rights-of-Way Rebuild/Parallel” category are opposite between the Preferred Route and the Alternate Route. Each route encounters different opportunities and constraints associated with the decision to either parallel or utilize the existing 69 kV transmission line ROW. The Preferred Route will utilize approximately half of the existing ROW, however a complete outage on the existing transmission line will not be required to construct the Preferred Route. In contrast, the Alternate Route will require a complete outage on the existing transmission line, but it will make use of the entire existing ROW, plus an additional 25 feet on either side to acquire the total 100-foot-wide ROW needed.

Table 6. Constructability Evaluation Criteria

Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
General						
Length	miles	3.1	3.1	1.5	1.5	0.3
Transportation Resources						
Interstate highways crossed	count	0	0	0	0	0
U.S. highways crossed	count	0	0	0	0	0
State highways crossed	count	0	0	0	0	0
Local roads and streets crossed	count	4	4	1	1	1
Railroads crossed	count	0	0	0	0	0
Airports within one mile of the centerline	count	0	0	0	0	0
Utility Resources						
Oil and gas pipelines crossed	count	0	0	0	0	0
Oil and gas wells within 250 feet from edge of ROW	count	0	0	0	0	0
Communication towers within 1,000 feet of the centerline	count	0	0	0	0	0
Existing AEP Transmission Lines Crossed	count	0	0	0	0	0
Engineering and Construction Considerations						
Steep slopes crossed by ROW (>20%), percent of total length	percent	23.7	22.2	25.1	24.2	3.7
Heavy angles, greater than 30%	count	0	0	0	0	1
Rights-of-Way Rebuild/Parallel						
Existing AEP transmission lines paralleled	miles	3.1	0.0	1.5	0.0	0.0
Existing distribution lines paralleled or underbuilt	miles	0.0	0.0	0.0	0.0	0.0
Existing AEP transmission lines rebuilt	miles	0.0	3.1	0.0	1.5	0.3
Oil and Gas Pipeline	miles	0.0	0.0	0.0	0.0	0.0
Interstate highways, U.S. highways, State highways, and local roads	miles	0.0	0.0	0.0	0.0	0.0
Railroad paralleled	miles	0.0	0.0	0.0	0.0	0.0

Table 6. Constructability Evaluation Criteria

Criteria	Unit	North of Londonderry Focus Area		South of Londonderry Focus Area		
		Preferred	Alternate	Preferred	Alternate	Common Segment
Total length paralleled	miles	3.1	0.0	1.5	0.0	0.0
Total percentage paralleled	percent	100.0	0.0	100.0	0.0	0.0
Total length rebuilt	miles	0.0	3.1	0.0	1.5	0.3
Total percentage rebuilt	percent	0.0	100.0	0.0	100.0	100.0

5.0 IDENTIFICATION OF THE PREFERRED ROUTE

As stated in the introductory sections of this Siting Study, the goal in selecting a suitable route for the Project is to minimize impacts on land use and natural and cultural resources while avoiding circuitous routes, extreme costs, and non-standard design requirements. However, in practice, it is not usually possible to optimally minimize all potential impacts at all times. There are often inherent trade-offs in potential impacts to every siting decision. For example, in heavily forested areas, the route that avoids the most developed areas may likely have the greatest amount of forest clearing, while the route that has the least impact on vegetation and wildlife habitats may impact more residences or farm lands. Thus, an underlying goal of a siting study is to reach a reasonable balance between minimizing potential impacts on one resource versus increasing the potential impacts on another.

The following section summarizes the rationale for selection of the Preferred Route, and thus, the route the Siting Team considered to best minimize the overall impacts of the Project. The rationale presented is derived from the accumulation of the siting decisions made throughout the process, the knowledge, and experience of the Siting Team, comments from the public and regulatory agencies, and the comparative analysis of potential impacts presented in Section 4.0.

5.1 Route and Study Segment Summary

A summary of the advantages and disadvantages associated with the Route Alternatives within the Londonderry Focus Area and Preferred and Alternate Routes north and south of the Londonderry Focus Area are presented in **Tables 7 and 8**.

Table 7. Route Summary - Londonderry Focus Area (Advantages and Disadvantages)

Advantages				
Criteria	Route Alternative A	Route Alternative B	Route Alternative C	Route Alternative D
Outage requirements			Has the least stringent outage constraints	
Tree clearing	Requires the least amount of tree clearing			
Length of new ROW		Requires the least amount of new ROW		
Disadvantages				
Criteria	Route Alternative A	Route Alternative B	Route Alternative C	Route Alternative D
Outage requirements		Would require a complete outage along the existing line during construction of the new line		
Tree clearing				Requires the greatest amount of tree clearing
Length of new ROW			Requires the most amount of new ROW	

Table 8. Route Summary – North and South of Londonderry Focus Areas (Advantages and Disadvantages)

Advantages				
Criteria	North of Londonderry Focus Area		South of Londonderry Focus Area	
	Preferred Route	Alternate Route	Preferred Route	Alternate Route
Outage requirements	Has the least stringent outage constraints		Has the least stringent outage constraints	
Tree clearing		Requires the least amount of tree clearing		Requires the least amount of tree clearing
Amount of new ROW		Requires the least amount of new ROW		Requires the least amount of new ROW
Disadvantages				
Criteria	Preferred Route	Alternate Route	Preferred Route	Alternate Route
Outage requirements		Would require a complete outage along the existing line during construction of the new line		Would require a complete outage along the existing line during construction of the new line
Tree clearing	Requires the most amount of tree clearing		Requires the most amount of tree clearing	
Amount of new ROW	Requires the most amount of new ROW		Requires the most amount of new ROW	

5.2 Preferred Route

Based on a qualitative and quantitative review of information obtained from GIS data, existing easements, field reconnaissance, agency consultation and public outreach, as well as engineering and financial estimates for the Project, the Siting Team recommends to move forward with Route Alternative A (Study Segments 1, 5, 7, 10, 11, 13, 15, 16, 18 and 20 within the Londonderry Focus Area)—combined with the 4.6 miles of the 50-foot offset along the existing Berlin-Ross 69 kV transmission line north and south of the Londonderry Focus Area, and 0.3-mile Rebuild Segment—as the Preferred Route. However, as previously mentioned in this Siting Study, the final Preferred Route that will be submitted to the OPSB includes two (2) route adjustments within the Londonderry Focus Area that were not presented during the public open houses, but resulted from comments received during the Open Houses and discussions with landowners, as well as input from AEP engineers. These adjustments are located near US Route 50 and Township Road 216 (Hanna Lane). The Siting Team also considered minor adjustments of the Preferred Route within the Londonderry Focus Area and south of the Londonderry Focus Area. These adjustments were made to either maximize distance from residences with the expanded 100-foot-wide ROW or to assist with a feasible engineering approach.

Conclusion

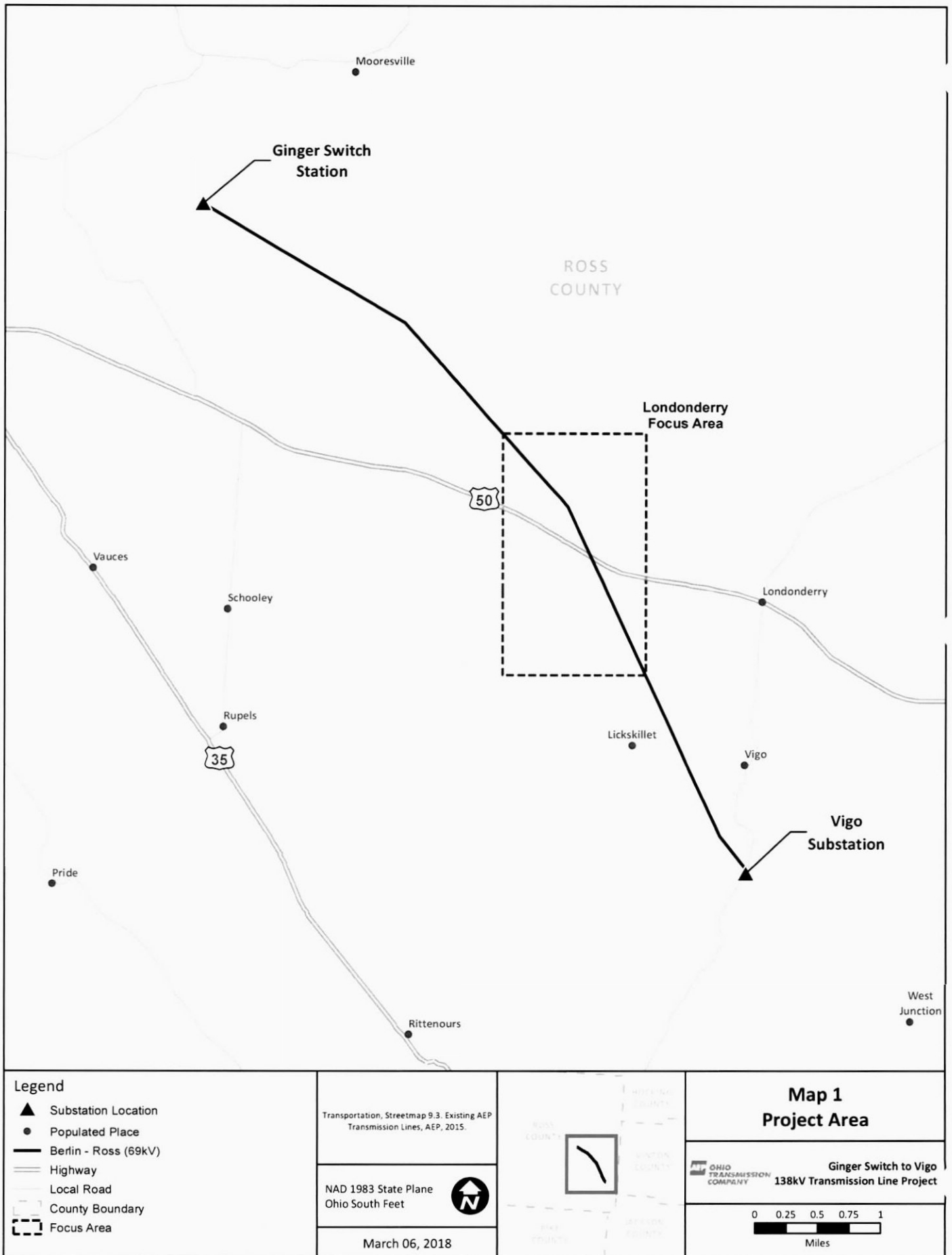
A key factor in the decision to select the Preferred Route as the best route option is that it allows for the majority of the new transmission line to be built without requiring a complete outage on the existing Berlin-Ross 69 kV transmission line. This will minimize impacts and disruptions to the customers within the service area. In contrast, the majority of the Alternate Route is located on centerline and within the existing ROW, thus requiring the entirety of the 69 kV transmission line to be taken out of service during construction, leaving customers to be fed radially and susceptible to potentially prolonged outages. The final Preferred and Alternate Route that will be presented to the OPSB are shown on **Attachment A - Map 5**. The Preferred Route and Alternate Route are comparatively equal in regard to other factors evaluated. Collectively, the Siting Team believes that the Preferred Route meets the goal of minimizing impacts on residences, land use, and the natural and cultural resources along the route, while avoiding circuitous routes, extreme costs, and non-standard design requirements.

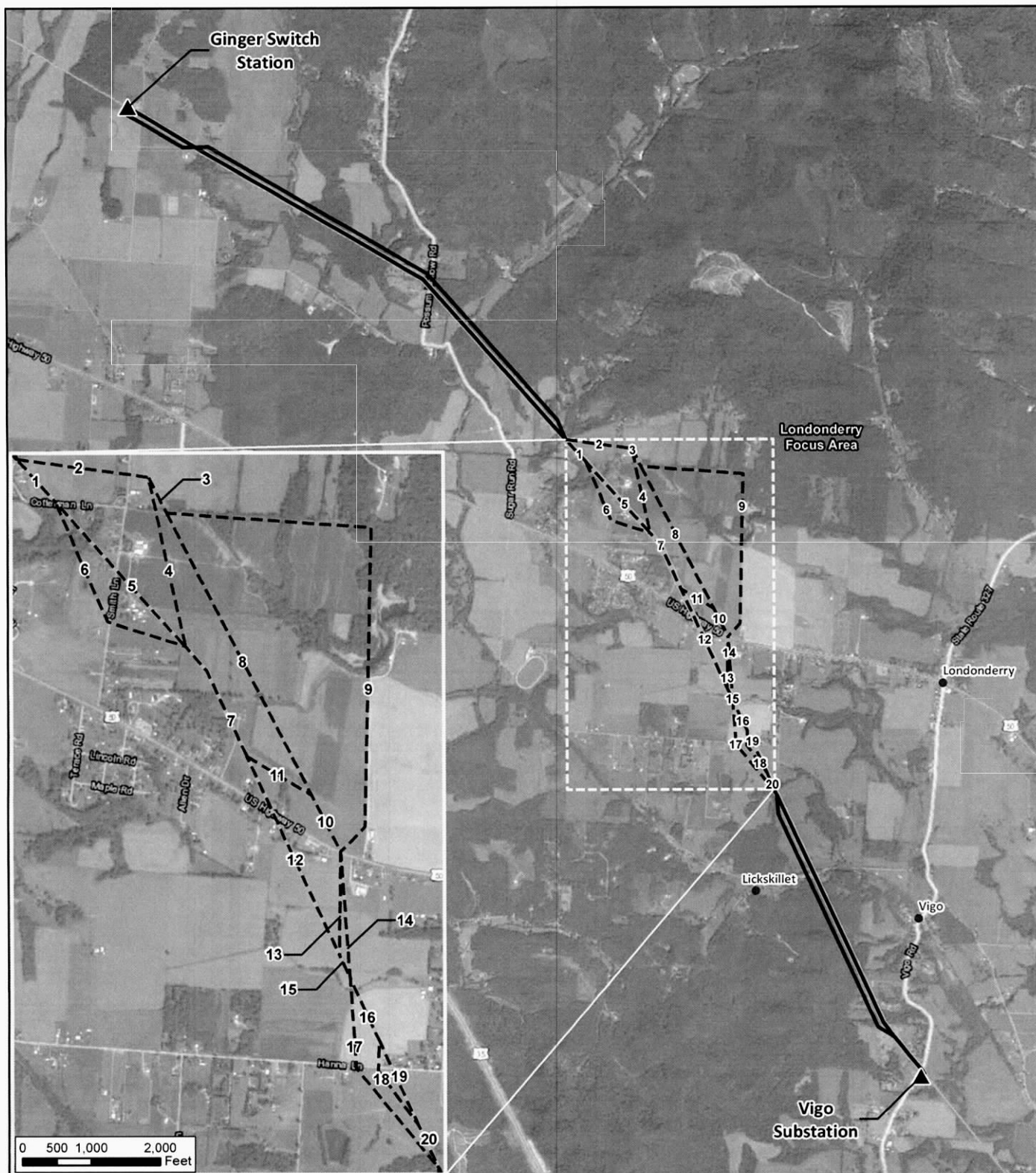
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Attachment A: Maps





Legend

- ▲ Substation Location
- Populated Place
- Preferred/Alternate Routes
- - - Study Segment
- Berlin - Ross (69kV) Transmission Line Focus Area

ESRI World Imagery,
Transportation, Esri ArcGIS Online,
Accessed 03/2018. Existing AEP
Transmission Lines, AEP, 2015.

NAD 1983 State Plane
Ohio South Feet



March 06, 2018

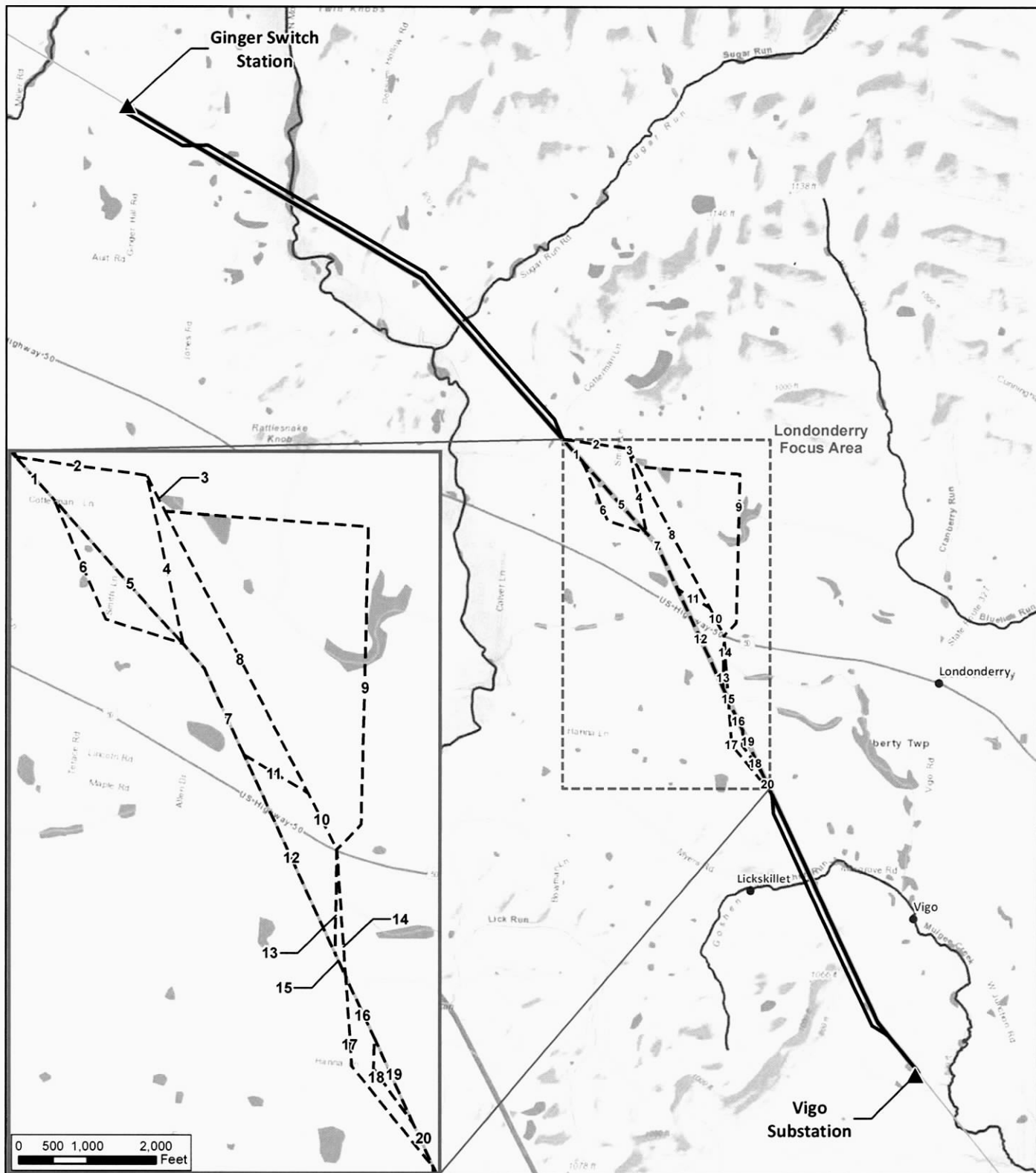


Map 2 Study Segments



Ginger Switch to Vigo
138kV Transmission Line Project

0 1000 2000 3000 4000
Feet



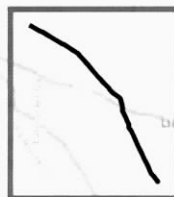
Legend

- ▲ Substation Location
- Populated Place
- Preferred/Alternate Routes
- - - Study Segment
- Berlin - Ross (69kV) Transmission Line
- Ohio WQS Stream
- NHD Stream
- FEMA Floodplain
- NWM Wetland
- - - Focus Area

World Topographic, Street Map, Transportation, Esri ArcGIS Online, Accessed 03/2018
 National Hydrography Dataset (NHD), USGS, 2015
 WQS Streams, Ohio Water Quality Standards, 2010
 National Wetland Inventory (NWI) Wetlands, USFWS, 2017
 National Flood Hazard Layer, Federal Emergency Management Agency (FEMA), Ohio, 2015
 Existing AEP Transmission Lines, AEP, 2015

NAD 1983 State Plane
 Ohio South Feet

March 06, 2018

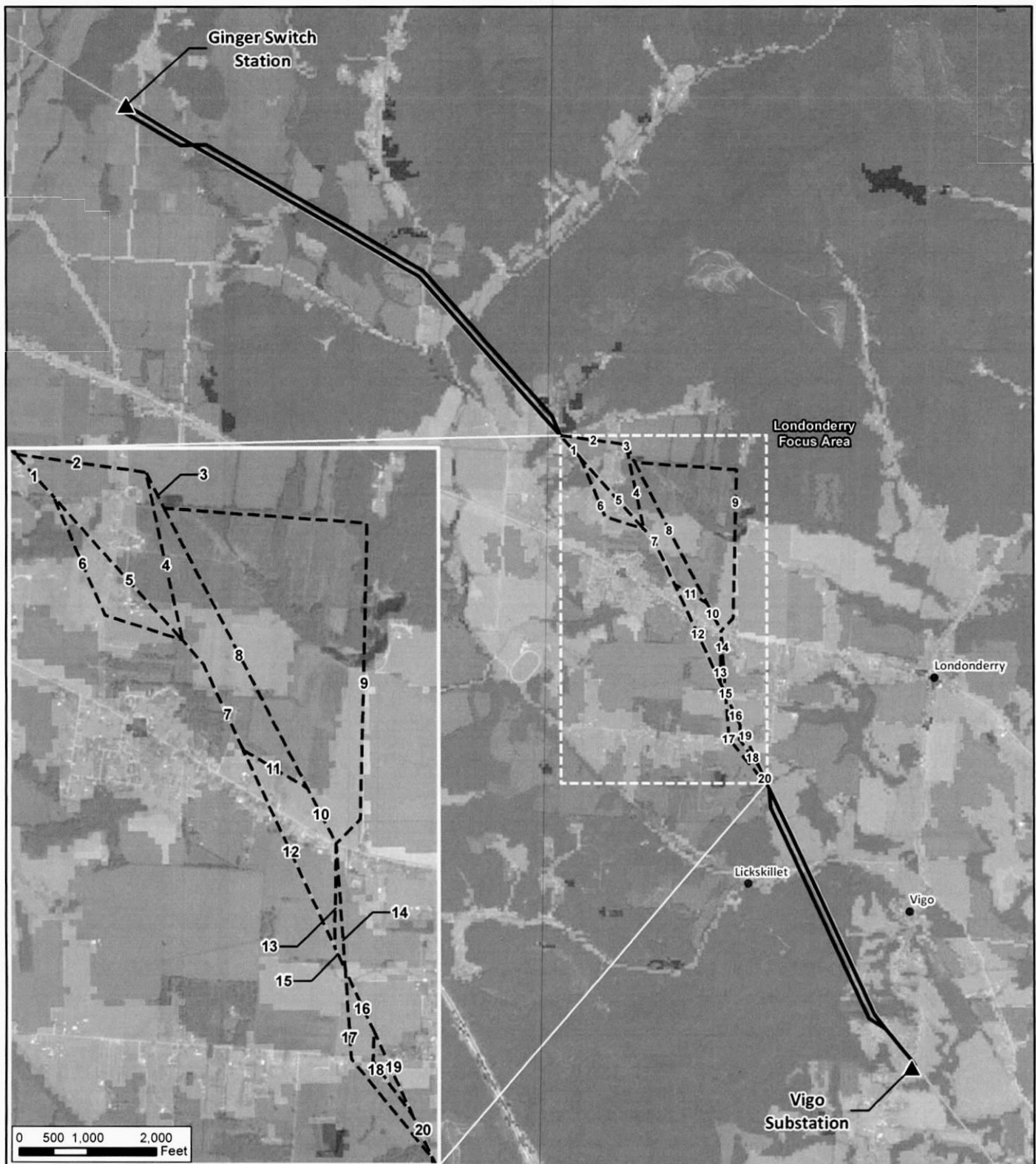


Map 3 Natural Resource Constraints

OHIO
 TRANSMISSION
 COMPANY

Ginger Switch to Vigo
 138kV Transmission Line Project

0 1000 2000 3000 4000
 Feet



Legend

- ▲ Substation Location
- Populated Place
- Preferred/Alternate Routes
- Study Segment
- Berlin - Ross (69kV) Transmission Line
- Woody Wetlands
- Shrub/Scrub
- Open Water
- Mixed Forest
- Herbaceous
- Hay/Pasture
- Evergreen Forest
- Emergent Herbaceous Wetlands
- Developed, Open Space
- Developed, Medium Intensity
- Developed, Low Intensity
- Developed, High Intensity
- Deciduous Forest
- Cultivated Crops
- Barren Land

World Imagery, Street Map, Transportation, Esri
 ArcGIS Online, Accessed 03/2018. Existing AEP
 Transmission Lines, AEP, 2015. NLCD
 Polygons National Land Cover Database (NLCD), 2011.

NAD 1983 State Plane
 Ohio South Feet



March 06, 2018

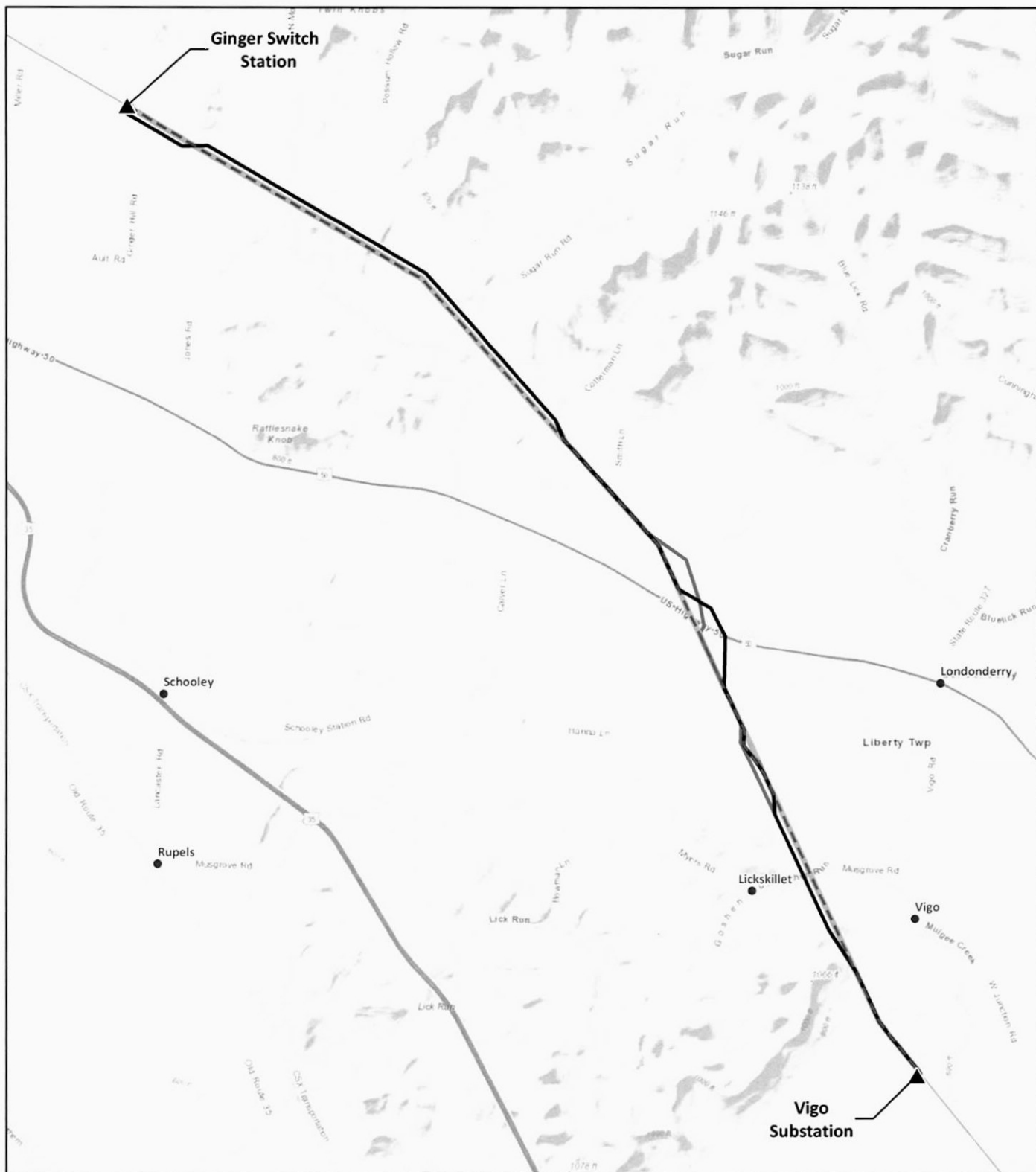


Map 4 Land Use



**Ginger Switch to Vigo
 138kV Transmission Line Project**

0 1000 2000 3000 4000
 Feet



Legend

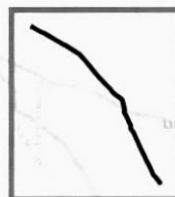
- ▲ Substation Location
- Populated Place
- Preferred Route
- - - Alternate Route
- Preferred and Alternate Route Adjustment (After Siting Study)
- Berlin - Ross (69kV) Transmission Line

World Topographic, Street Map, Transportation, Esri ArcGIS Online, Accessed 03/2018. Existing AEP Transmission Lines, AEP, 2015.

NAD 1983 State Plane
Ohio South Feet



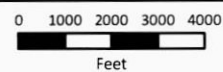
March 14, 2018



Map 5 Preferred and Alternate Route



Ginger Switch to Vigo
138kV Transmission Line Project



Attachment B: GIS Data Sources

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Land Use		
Number of parcels crossed by the ROW	Ross County Assessor, 2017	Count of the number of parcels crossed by the ROW
Number of residences within 500 feet of the route centerline	Digitized from Google Earth Imagery 2015, Bing 2011, Google Streetview, and field verified from points of public access	Count of the number of residences within the ROW and within 500 feet of potential routes
Number of commercial buildings within 500 feet of the route centerline	Digitized from Google Earth Imagery 2015, Bing 2011, Google Streetview, and field verified from points of public access	Count of the number of commercial buildings within the ROW and within 500 feet of potential routes
Land use acreage and distance crossed by the ROW and acreage within 500 feet of the route centerline	National Land Cover Database (NLCD), 2011.	The NLCD 2011 (NLCD 2011) compiled by the Multi-Resolution Land Characteristics (MRLC) Consortium includes 15 classes of land cover from Landsat satellite imagery
Acres of conservation easements crossed	National Conservation Easement Database (NCED) 2017	Private conservation easements crossed by the routes from the NCED which is comprised of voluntarily reported conservation easement information from land trusts and public agencies
Acres of agricultural district land crossed	Ross County Auditor, 2017	Protected land that is devoted exclusively to agricultural production or devoted to and qualified for compensation under a federal land retirement or conservation program that is at least 10 acres in size, or produces an average yearly gross income of at least \$2,500 during a 3-year period
Number of archeological resources within the ROW and within 1 mile	Ohio History Connection Online Mapping System, 2017	Previously identified archeological resources listed or eligible on the National Register of Historic Places (NRHP) acquired through 2017

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Number of historic architectural resources within the ROW, within 1 mile	Ohio History Connection Online Mapping System, 2017	Previously identified historic architectural resource sites and districts listed or eligible on the NRHP acquired through 2017
Institutional uses (schools, places of worship and cemeteries) within 1,000 feet of the route centerline	ESRI ArcGIS Online, Google Earth Imagery, Google Streetview	This dataset includes the locations of cemeteries, churches, hospitals, parks, and schools. Features within 1,000 feet of potential routes were field verified.
Airfield and heliports within 1 miles of the route centerline	Federal Aviation Administration (FAA) database, Sectional Charts, US DOT, ArcGIS Online, 2017	Distance from airfields and heliports
Natural Environment		
Forest clearing within the ROW	Digitized based on Google Earth Imagery 2015	Acres of forest within the ROW
Number of National hydrography dataset (NHD) stream and waterbody crossings within the ROW	National Hydrography Dataset, USGS, 2015	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells
Acres of National Wetland Inventory (NWI) wetland crossings within the ROW	U.S. Fish and Wildlife Service (USFWS), National Wetland Inventory, 2017	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats
Acres of 100-year floodplain crossing within the ROW	U.S. Federal Emergency and Management Agency (FEMA) 2015	Acres of 100-year floodplain within the ROW
Miles of public lands crossed by the route	Ohio DNR Lands, OH DNR, 2014, Ross County Assessor (Parcel Data), 2017	Miles of federal, state and local lands crossed by the ROW
Threatened, endangered, rare or sensitive species occurrence within the Project vicinity	Direct agency consultation with USFWS and ODNR.	Known occurrences; locations of potential habitat based on land use

Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Percent of hydric soils within the ROW	United States Department of Agriculture (USDA-NRCS), Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database 2015	Percent of soil associations crossed by the ROW characterized as hydric, predominantly hydric, partially hydric and non-hydric
Percent of prime farmland soils and soils of statewide importance within the ROW	United States Department of Agriculture (USDA-NRCS), Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database 2015	Percent of soil associations crossed by the ROW characterized as prime farmland or farmland of statewide importance
Technical		
Route length	Measured in GIS	Length of route in miles
Number and severity of angled structures	Developed in GIS	Anticipated number of angled structures < 3 degrees, 3 to 45 degrees and over 45 degrees based on preliminary design
Number of road crossings	TIGER Roads, US Census, 2017. Google Earth, 2017	Count of federal, state and local roadway crossings
Number of pipeline crossings	U.S. Department of Transportation National Pipeline Mapping System 2017	Number of known pipelines crossed by the transmission ROW
Number of transmission line crossings	AEP Ohio Transco	Number of high voltage (100 kV or greater) transmission lines crossed by the ROW
Distance of steep slopes crossed	Derived from seamless Digital Elevation Models (DEMs) obtained from the U.S. Geologic Survey 2017	Miles of slope greater than 20 percent crossed by the routes
Length of transmission line parallel	AEP Ohio Transco	Miles of the route parallel to existing high voltage transmission lines



Attachment B. GIS Data Sources		
Siting Criteria	Source	Description
Length of pipeline parallel	U.S. Department of Transportation National Pipeline Mapping System 2017	Miles of the route parallel to existing pipelines
Length of road parallel	TIGER Roads, US Census, 2017. Google Earth, 2017	Miles of the route parallel to existing roadways

Attachment C: Agency Correspondence



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Office of Real Estate
Paul R. Baldrige, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
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August 23, 2017

Allison Wheaton
GAI Consultants
3720 Dressler Road NW
Canton, Ohio 44718

Re: 17-402; AEP - Vigo-Ginger 138 kV Line Rebuild Project

Project: The proposed project involves the rebuild of approximately 7.1 miles of the existing Vigo – Ginger transmission line, upgrading from a 69kV line to a 138kV line.

Location: The proposed project is located in Springfield, Harrison, Liberty and Jefferson Townships, Ross County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following record at or within a one-mile radius of the project area:

Eastern sand darter (*Ammocrypta pellucida*), State and federal species of concern

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to

minimize erosion and sedimentation.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees to include: shagbark hickory (*Carya ovata*), shellbark hickory (*Carya laciniosa*), bitternut hickory (*Carya cordiformis*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), shingle oak (*Quercus imbricaria*), northern red oak (*Quercus rubra*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), sassafras (*Sassafras albidum*), post oak (*Quercus stellata*), and white oak (*Quercus alba*). Indiana bat roost trees consists of trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. However, Indiana bats are also dependent on the forest structure surrounding roost trees. If suitable habitat occurs within the project area, the DOW recommends trees be conserved. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the DOW recommends a net survey be conducted between June 1 and August 15, prior to any cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, this project is not likely to impact this species.

The project is within the range of the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the sheepsnose (*Plethobasus cyphus*), a state endangered and federally endangered mussel, the clubshell (*Pleurobema clava*), a state endangered and federally endangered mussel, the fanshell (*Cyprogenia stegaria*), a state endangered and federally endangered mussel, the northern riffleshell (*Epioblasma torulosa rangiana*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the rabbitsfoot (*Quadrula cylindrica cylindrica*), a state endangered and federal candidate mussel, the long-solid (*Fusconaia maculata maculata*), a state endangered mussel, the sharp-ridged pocketbook (*Lampsilis ovata*), a state endangered mussel, the little spectaclecase (*Villosa lienosa*), a state endangered mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel, and the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel.

This project must not have an impact on freshwater native mussels at the project site. This applies to both listed and non-listed species. Per the Ohio Mussel Survey Protocol (2016), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 10 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. This is further explained within the Ohio Mussel Survey Protocol. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, as a last resort, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. The Ohio Mussel Survey Protocol (2016) can be found at:

<http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/OH%20Mussel%20Survey%20Protocol.pdf>

The project is within the range of the Ohio lamprey (*Ichthyomyzon bdellium*), a state endangered fish, the shovelnose sturgeon (*Scaphirhynchus platyrhynchus*), a state endangered fish, the blue sucker (*Cypleptus elongatus*), a state endangered fish and a Federal species of concern, the spotted darter (*Etheostoma maculatum*), a state endangered fish and a federal species of concern, the shortnose gar (*Lepisosteus platostomus*), a state endangered fish, the northern madtom (*Noturus stigmosus*), a state endangered fish, the Tippecanoe darter (*Etheostoma Tippecanoe*), a state threatened fish, the channel darter (*Percina copelandi*), a state threatened fish, the American eel (*Anguilla rostrata*), a state threatened fish, the river darter (*Percina shumardi*), a state threatened fish, and the lake chubsucker (*Erimyzon sucetta*) a state threatened fish. The DOW recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the timber rattlesnake (*Crotalus horridus horridus*), a state endangered species, and a federal species of concern. The timber rattlesnake is a woodland species. In addition to using wooded areas, the timber rattlesnake also utilizes sunlit gaps in the canopy for basking and deep rock crevices known as den sites for overwintering. The DOW recommends that a habitat suitability survey be conducted by a DOW approved herpetologist along the project route to determine if suitable habitat exists for the timber rattlesnake. If suitable habitat is determined to be present, the DOW recommends a presence/absence survey be conducted, or an avoidance/minimization plan be developed and implemented by the approved herpetologist.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. Due to the location, this project is not likely to impact this species.

The project is within the range of the mud salamander (*Pseudotriton montanus*), a state threatened species. Due to the location, the type of habitat present at the project site, this project is not likely to impact this species.

The project is within the range of the black bear (*Ursus americanus*), a state endangered species. Due to the mobility of this species, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler
ODNR Office of Real Estate

2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693
John.Kessler@dnr.state.oh.us



Canton Office
3720 Dressler Road Northwest
Canton, Ohio 44718

T 330.433.2680
F 330.433.2694

May 16, 2017
Project C170352.13

Environmental Review Staff
Ohio Department of Natural Resources
Division of Wildlife - Ohio Natural Heritage Program
2045 Morse Road, Building G-3
Columbus, Ohio 43229-6693

**American Electric Power
Vigo – Ginger 138kV Line Rebuild Project
Request for Technical Assistance Regarding Threatened
and Endangered Species and Critical Habitat
Ross County, Ohio**

Dear Staff:

GAI Consultants, Inc. (GAI), on behalf of American Electric Power (AEP), is requesting information regarding state- and federally-listed threatened and endangered species in the vicinity of the Vigo – Ginger 138kV Line Rebuild Project (Project) in Ross County, Ohio. As part of this request, please provide information specific to any threatened and endangered bats. GAI is also requesting the locations of any known golden or bald eagle nests in the area.

The proposed Project involves the rebuild of approximately 7.1 miles of the existing Vigo – Ginger transmission line, upgrading from a 69kV line to a 138kV line.

The study area for the Project is shown on the attached map (Figure 1). The habitat within the study area consists of maintained right-of-way with bordering agricultural land, mixed deciduous forests, and residential properties. Project shapefiles have been included to aid in your review.

GAI and AEP thank you in advance for your assistance. Please contact me at 330.324.9148 or via email at a.wheaton@gaiconsultants.com if you have any questions or require further information.

Sincerely,
GAI Consultants, Inc.

A handwritten signature in black ink, appearing to read 'Allison R. Wheaton'.

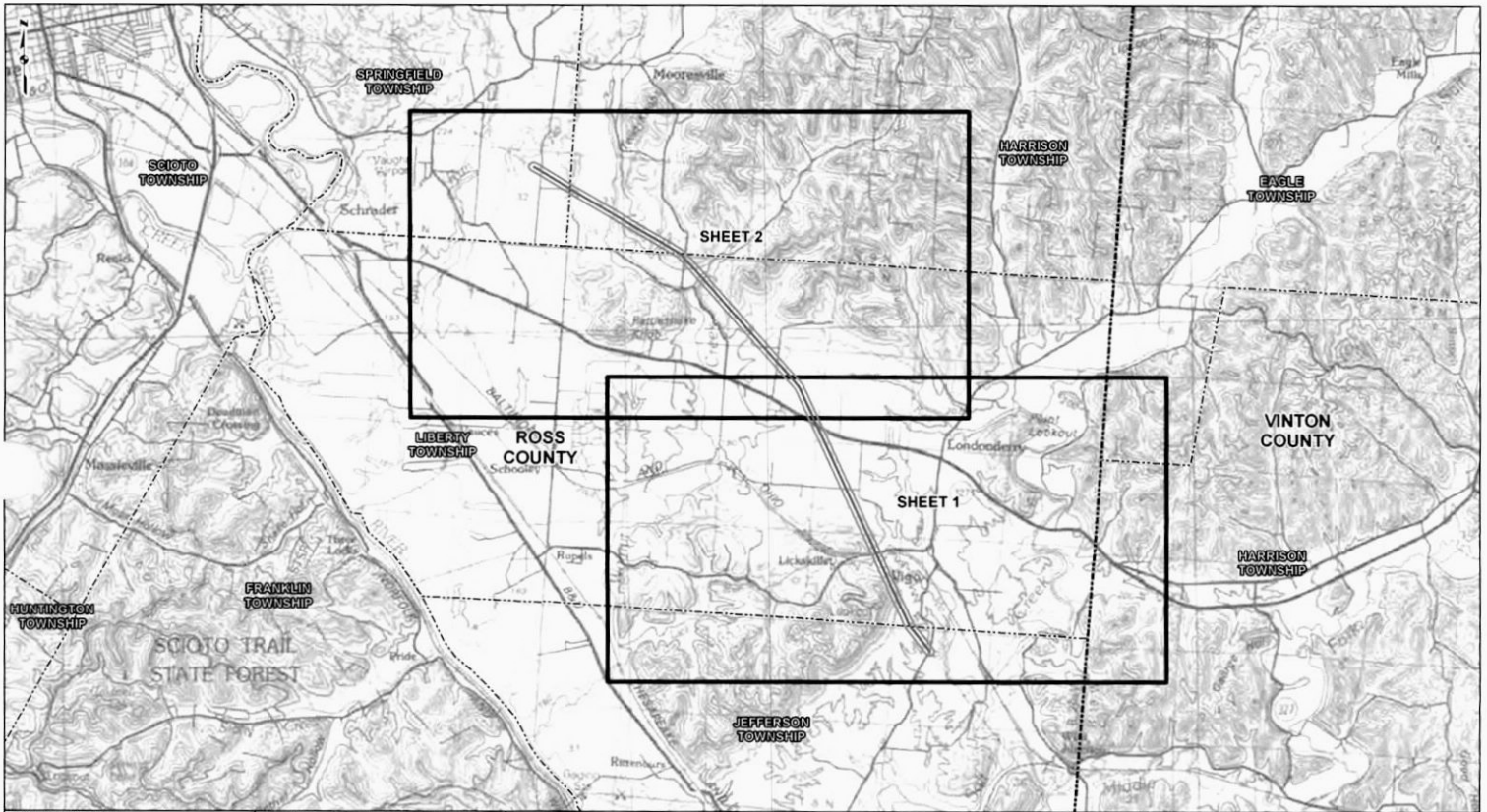
Allison R. Wheaton, WPIT
Senior Project Environmental Specialist

ARW/kea

Attachments: Attachment 1 (Project Location Map)
Project Shapefiles

May 16, 2017
Project C170352.13

ATTACHMENT 1
PROJECT LOCATION MAP



REFERENCE: USGS 30' x 60' TOPOGRAPHIC QUADRANGLE, WELLSTON (1985), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 05/2017

- LEGEND**
- EXISTING TRANSMISSION LINE
 - STUDY AREA
 - COUNTY BOUNDARY
 - TOWNSHIP BOUNDARY
 - SHEET INDEX

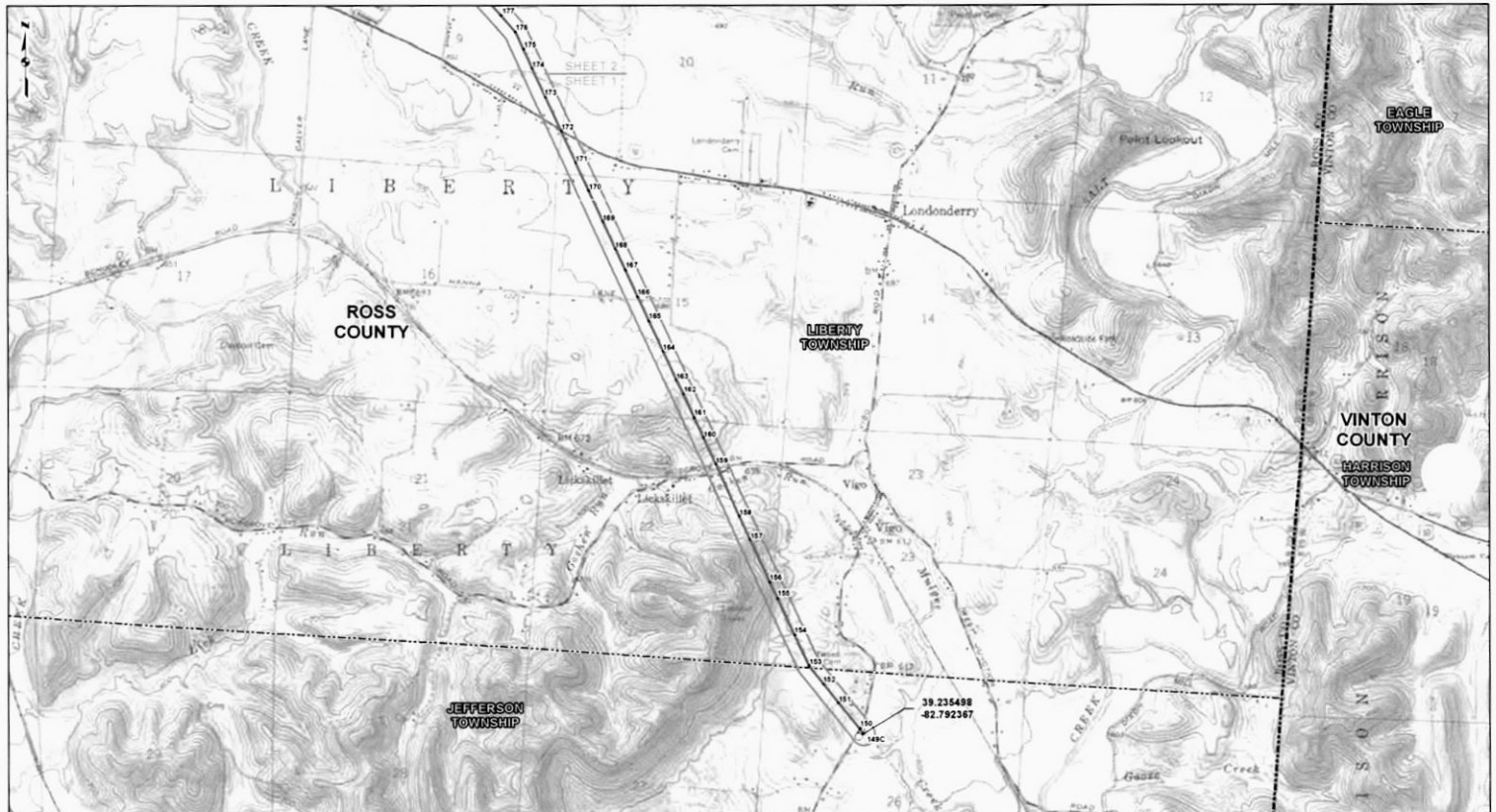
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PROJECT LOCATION MAP SHEET INDEX

VIGO - GINGER
138kV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY AKW
CHECKED JDP

DATE: 5/15/2017
APPROVED



PROJECT LOCATION



ROSS COUNTY, OHIO

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: BYER (1976), CHILICOTHE EAST (1985), LONDONDERRY (1963), RATCLIFFBURG (1977), AND RICHMOND DALE (1985), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 06/2017

LEGEND

- EXISTING STRUCTURE
- VIGO SUBSTATION
- GINGER SWITCH STATION
- EXISTING TRANSMISSION LINE
- STUDY AREA
- COUNTY BOUNDARY
- - - TOWNSHIP BOUNDARY

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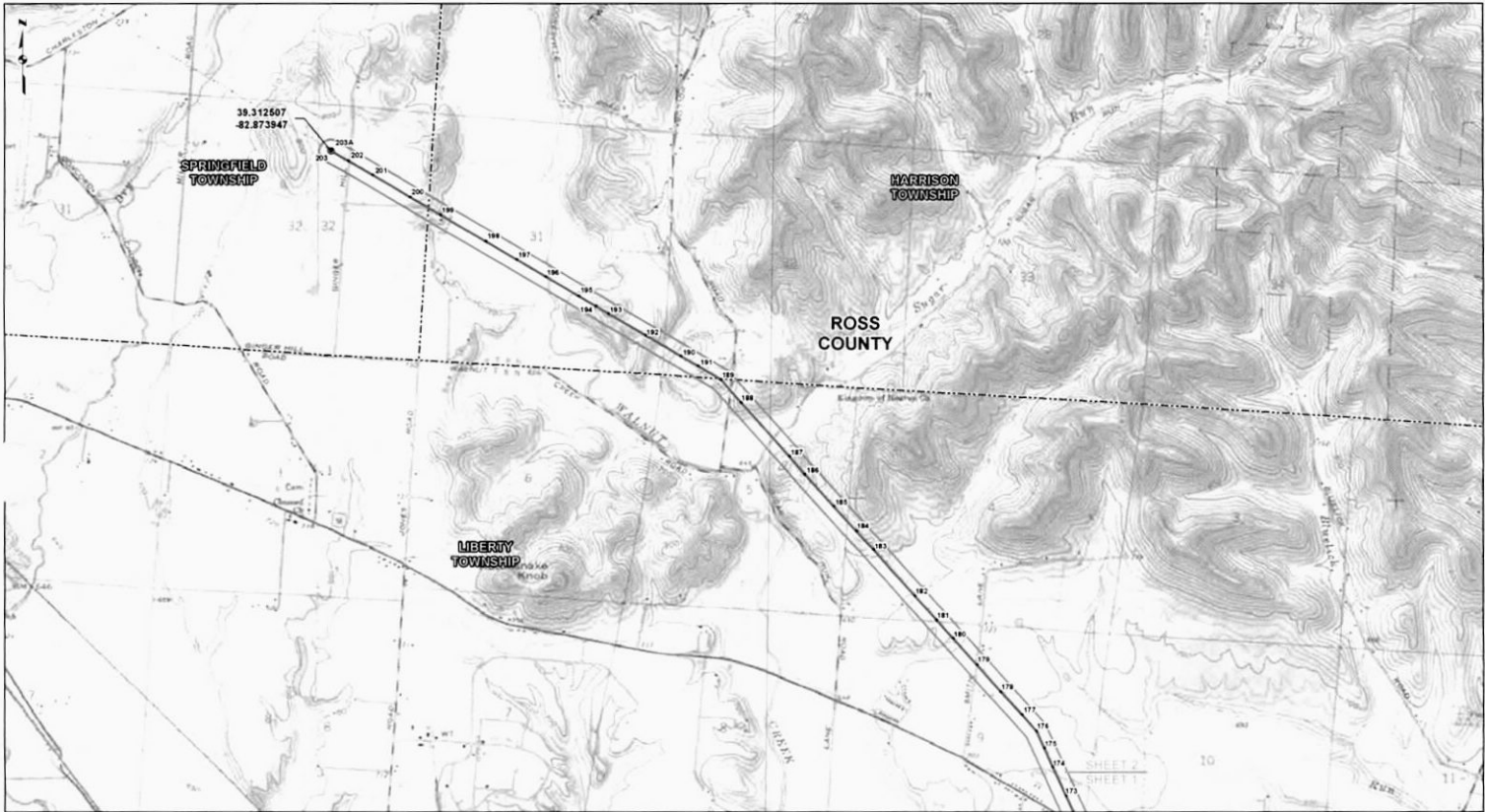
PROJECT LOCATION MAP SHEET 1 OF 2

VIGO - GINGER
138KV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY AKW
CHECKED JDP

DATE: 5/15/2017
APPROVED:

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REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: BYER (1976), CHILICOTHE EAST (1985), LONDONDERRY (1963), RATCLIFFBURG (1977), AND RICHMOND DALE (1985), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 06/2017

LEGEND

- EXISTING STRUCTURE
- VIGO SUBSTATION
- GINGER SWITCH STATION
- EXISTING TRANSMISSION LINE
- STUDY AREA
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY

0 1,000 2,000 4,000 Feet

PROJECT LOCATION MAP
SHEET 2 OF 2

VIGO - GINGER
138kV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY AKW
CHECKED JDP

DATE: 5/15/2017
APPROVED

From: Korfel, Lindsey
To: Allison Wheaton
Subject: GAI AEP Vigo-Ginger 138kV Line Rebuild Project, Ross Co., OH
Date: Thursday, May 18, 2017 2:29:33 PM

TAILS # 03E15000-2017-TA-1279

Dear Ms. Wheaton,

We have received your recent correspondence requesting information about the subject proposal. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The U.S. Fish and Wildlife Service (Service) recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

FEDERALLY LISTED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the federally endangered **Indiana bat** (*Myotis sodalis*) and the federally threatened **northern long-eared bat** (*Myotis septentrionalis*). In Ohio, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves and abandoned mines.

Should the proposed site contain trees ≥ 3 inches dbh, we recommend that trees be saved wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥ 3 inches dbh cannot be avoided, we recommend that removal of any trees ≥ 3 inches dbh only occur between October 1 and March

31. Seasonal clearing is being recommended to avoid adverse effects to Indiana bats and northern long-eared bats. While incidental take of northern long-eared bats from most tree clearing is exempted by a 4(d) rule (see <http://www.fws.gov/midwest/endangered/mammals/nleb/index.html>), incidental take of Indiana bats is still prohibited without a project-specific exemption. Thus, seasonal clearing is recommended where Indiana bats are assumed present.

If implementation of this seasonal tree cutting recommendation is not possible, summer surveys may be conducted to document the presence or probable absence of Indiana bats within the project area during the summer. If a summer survey documents probable absence of Indiana bats, the 4(d) rule for the northern long-eared bat could be applied. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid federal permit. Please note that summer surveys may only be conducted between June 1 and August 15.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at john.kessler@dnr.state.oh.us.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely

Lindsey M. Korfel

Wildlife Biologist
U.S. Fish and Wildlife Service
Ohio Field Office
4625 Morse Road, Suite 104

Columbus, OH 43230
614.416.8993 x. 29



Canton Office
3720 Dressler Road Northwest
Canton, Ohio 44718

T 330.433.2680
F 330.433.2694

May 16, 2017
Project C170352.13

Mr. Dan Everson
United States Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Road, Suite 104
Columbus, Ohio 43230

**American Electric Power
Vigo – Ginger 138kV Line Rebuild Project
Request for Technical Assistance Regarding Threatened
and Endangered Species and Critical Habitat
Ross County, Ohio**

Dear Mr. Everson:

GAI Consultants, Inc. (GAI), on behalf of American Electric Power (AEP), is requesting information regarding state- and federally-listed threatened and endangered species in the vicinity of the Vigo – Ginger 138kV Line Rebuild Project (Project) in Ross County, Ohio. As part of this request, please provide information specific to any threatened and endangered bats. GAI is also requesting the locations of any known golden or bald eagle nests in the area.

The proposed Project involves the rebuild of approximately 7.1 miles of the existing Vigo – Ginger transmission line, upgrading from a 69kV line to a 138kV line.

The study area for the Project is shown on the attached map (Figure 1). The habitat within the study area consists of maintained right-of-way with bordering agricultural land, mixed deciduous forests, and residential properties. Project shapefiles have been included to aid in your review.

GAI and AEP thank you in advance for your assistance. Please contact me at 330.324.9148 or via email at a.wheaton@gaiconsultants.com if you have any questions or require further information.

Sincerely,
GAI Consultants, Inc.

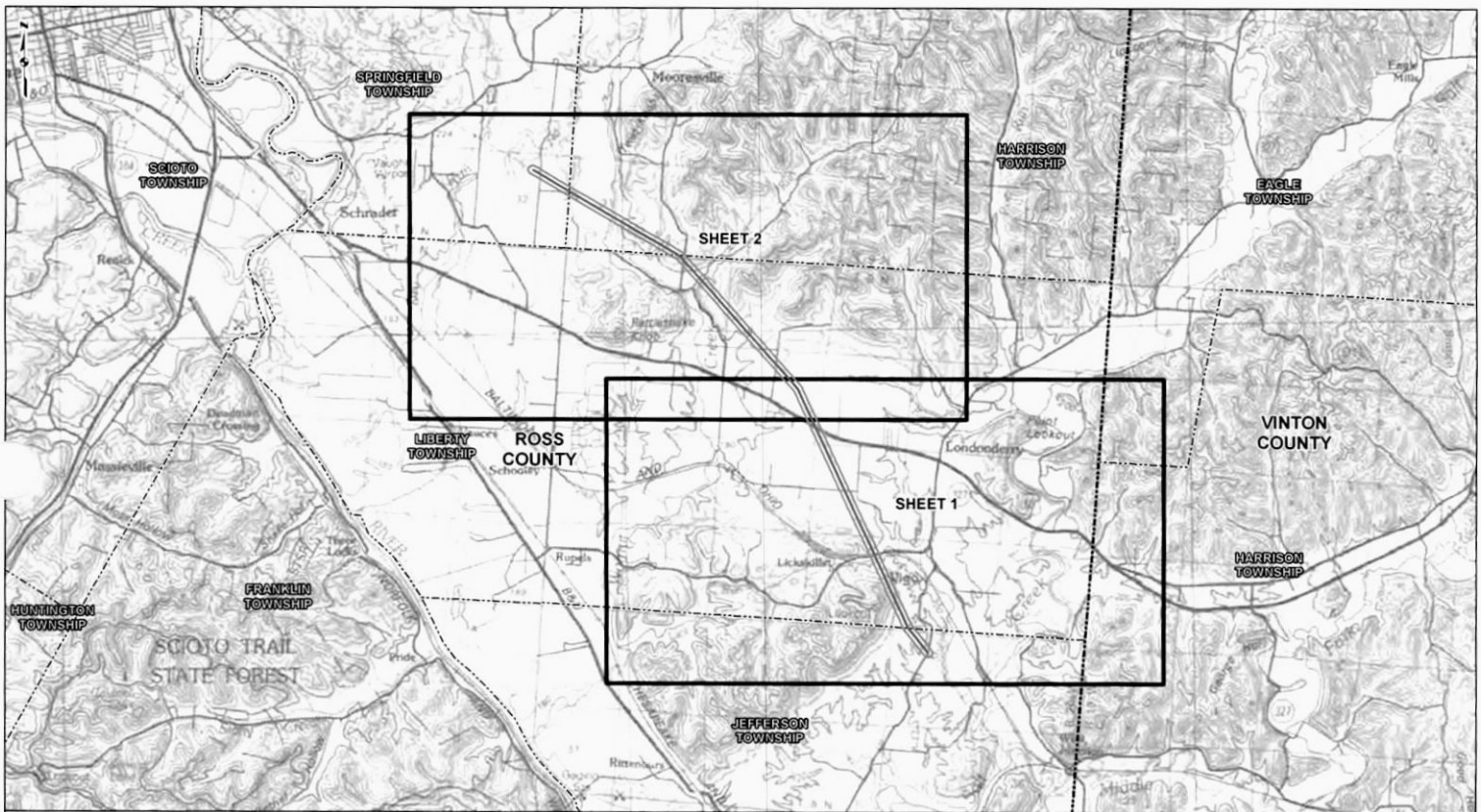
Allison R. Wheaton, WPIT
Senior Project Environmental Specialist

ARW/kea

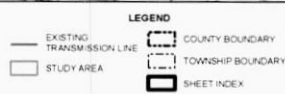
Attachments: Attachment 1 (Project Location Map)
Project Shapefiles

May 16, 2017
Project C170352.13

ATTACHMENT 1
PROJECT LOCATION MAP



REFERENCE USGS 30' x 60' TOPOGRAPHIC QUADRANGLE WELLSTON (1985), OHIO OBTAINED THROUGH ESRI USA TOPO MAPS NATIONAL GEOGRAPHIC TOPO AND USGS. ACCESSED 05/2017

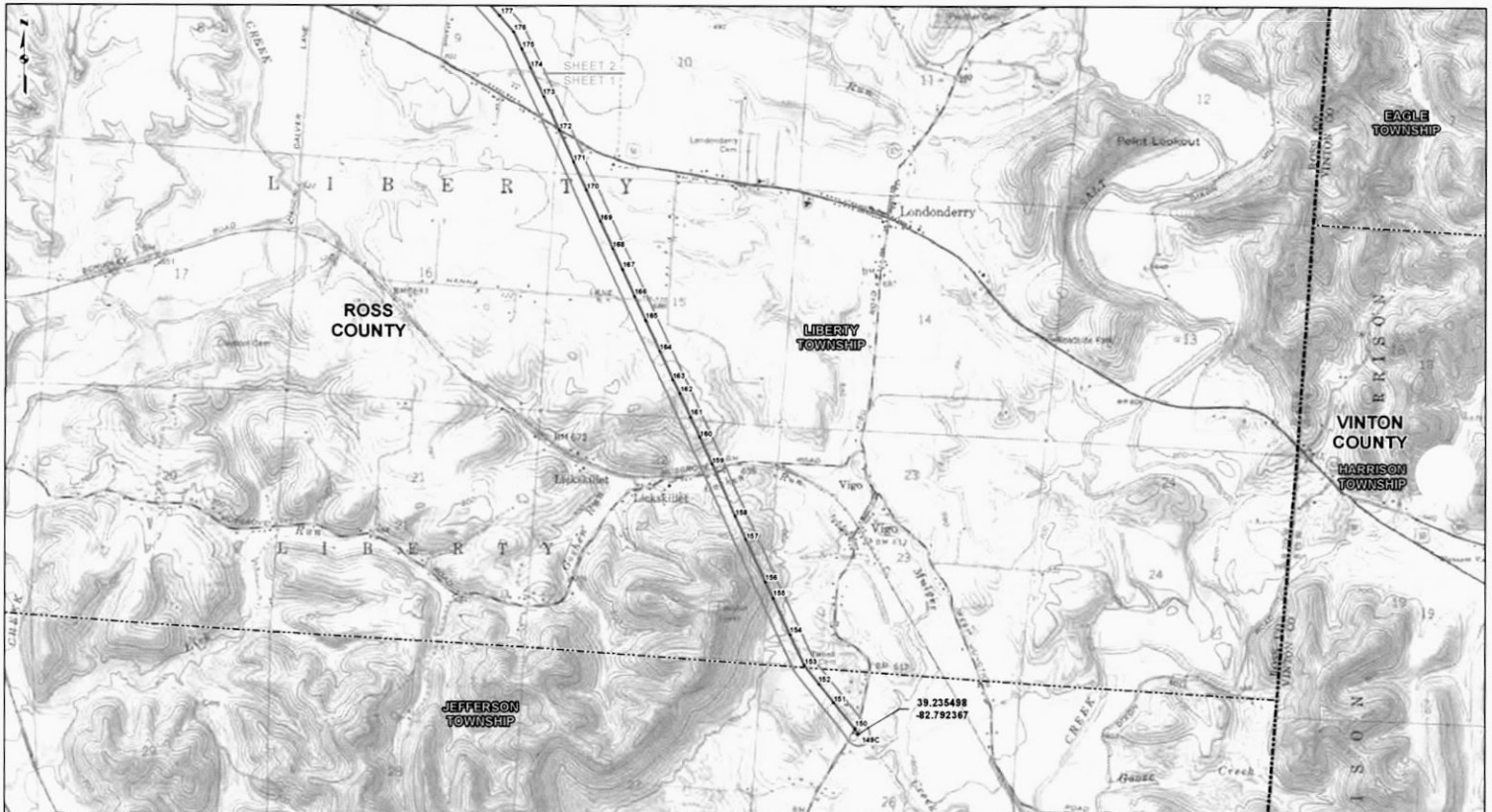


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PROJECT LOCATION MAP SHEET INDEX

VIGO - GINGER
138KV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY AKW DATE 5/15/2017
CHECKED JDP APPROVED



PROJECT LOCATION



ROSS COUNTY, OHIO

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: BYER (1976), CHILCOTHE EAST (1985), LONDONBERRY (1965), SATCLIFFBURG (1977), AND RICHMOND DALE (1965), OHIO, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 05/2017

LEGEND

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- VIGO SUBSTATION
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- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY

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PROJECT LOCATION MAP
SHEET 1 OF 2

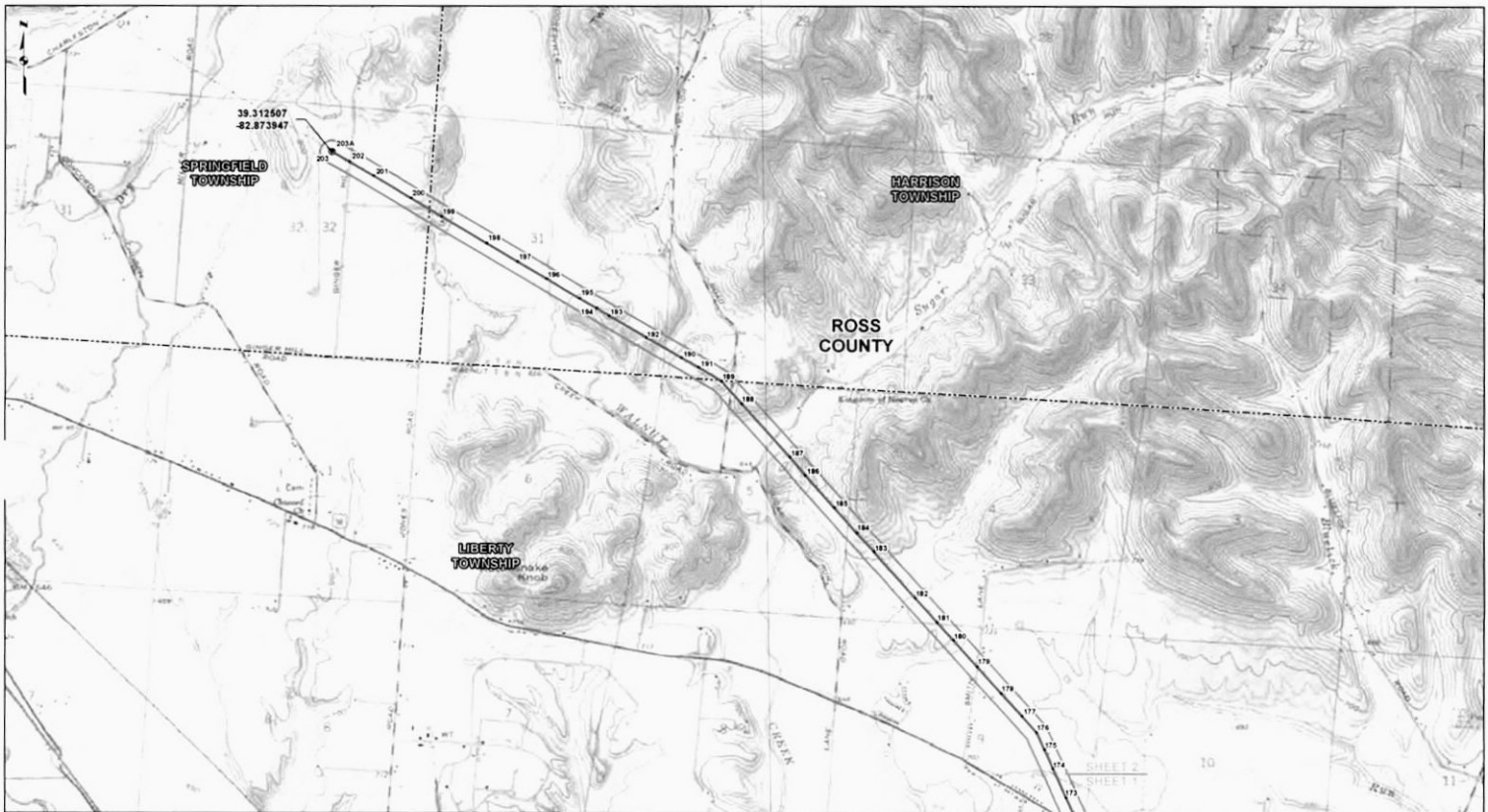
VIGO - GINGER
138KV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER

DRAWN BY AKW

DATE: 5/15/2017

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REFERENCE: USGS 7.5 TOPOGRAPHIC QUADRANGLES: BYER (1976), CHILCOTHE EAST (1985), LONDONDERRY (1963), RATCLIFFBURG (1977), AND RICHMOND DALE (1985), OHIO. OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 05/2017

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**PROJECT LOCATION MAP
SHEET 2 OF 2**

**VIGO - GINGER
138KV LINE REBUILD PROJECT
AMERICAN ELECTRIC POWER**

DRAWN BY AKW
CHECKED JDP

DATE: 5/15/2017
APPROVED