

Application to the Ohio Power Siting Board For a Certificate of Environmental Compatibility and Public Need

Submitted By
Vectren Energy Delivery of Ohio, Inc.

Case No. 13-1651-GA-BTX

September 20, 2013



VECTREN
Live Smart



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September 20, 2013

Via Electronic Filing

Ms. Betty McCauly
Administration/Docketing
Ohio Power Siting Board
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3793

Re: Vectren Energy Delivery of Ohio, Inc.
Case No. 13-1651-GA-BTX

Dear Ms. McCauly:

Enclosed, please find an original and five copies of the Application of Vectren Energy Delivery of Ohio, Inc. for a Certificate of Environmental Compatibility and Public Need under Chapter 4906-15 of the Ohio Administrative Code (OAC). Pursuant to OAC 4906-5-03(A)(3), the applicant makes the following declarations:

Name of Applicant: Vectren Energy Delivery of Ohio, Inc.
120 West Second Street
Dayton, OH 45402

**Name/Location of
Proposed Facility:** Z-167 Pipeline Replacement
Dayton International Airport
Cities of Dayton, Vandalia, Union,
Montgomery County

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September 20, 2013
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Notarized Statement:

See Attached Affidavit of Colleen M. Ryan,
on behalf of Vectren Energy Delivery of Ohio, Inc.

Sincerely on behalf of
VECTREN ENERGY DELIVERY OF OHIO, INC.



Sally W. Bloomfield

Enclosure

**BEFORE
THE OHIO POWER SITING BOARD**

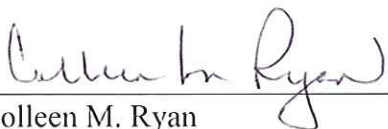
In the Matter of the Application of **Vectren
Energy Delivery of Ohio, Inc.** for a Certificate)
of Environmental Compatibility and Public Need)
for its Dayton Airport Z-167 Pipeline Rerouting) Case No. 13-1651-GA-BTX
Project)

AFFIDAVIT OF COLLEEN M. RYAN, VECTREN ENERGY DELIVERY OF OHIO, INC.

STATE OF OHIO :
 : ss.
COUNTY OF MONTGOMERY :

I, Colleen M. Ryan, being duly sworn and cautioned, state that I am over 18 years of age and competent to testify to the matters stated in this affidavit and further state the following based upon my personal knowledge:

1. I am the President of Vectren Energy Delivery of Ohio, Inc. and am authorized to execute this affidavit.
2. I have reviewed the Vectren Energy Delivery of Ohio, Inc. Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need in the above referenced case.
3. To the best of my knowledge, information and belief, the information and materials contained in the above-referenced Application are true and accurate.
4. To the best of my knowledge, information and belief, the above-referenced Application is complete.

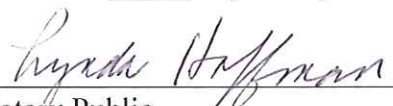


Colleen M. Ryan

I am sworn to before and signed in my presence this 19th day of September, 2013.



LYNDA HOFFMAN, Notary Public
In and for the State of Ohio
My Commission Expires Aug. 26, 2016



Notary Public

BEFORE THE OHIO POWER SITING BOARD**Application of Certificate of Environmental Compatibility and Public Need****Table of Contents**

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GLOSSARY

CFR - Code of Federal Regulations
 DOT - Department of Transportation
 EMH&T - Evans, Mechwart, Hambleton, and Tilton; Engineering and Survey Firm
 FAA - Federal Aviation Administration
 HDD - Horizontal Directional Drilling
 LTFR - Long Term Forecast Report
 MAOP - Maximum Allowable Operating Pressure
 NOI - Notice of Intent
 NRCS - Natural Resources Conservation Service
 NRHP - National Register of Historic Places
 NWP - Nation Wide Permit
 OAC - Ohio Administrative Code
 OAI - Ohio Archaeological Inventory
 ODNR - Ohio Department of Natural Resources
 OEPA - Ohio Environmental Protection Agency
 OGRIP - Ohio Geographically Referenced Information Program
 OHI - Ohio Historic Inventory
 OHPO - Ohio Historic Preservation Office
 OPSB - Ohio Power Siting Board
 OSHA - Occupational Safety and Health Administration
 OWI - Ohio Wetland Inventory
 PSIG - Pounds per Square Inch Gauge
 ROW - Right-of-Way
 SWP3 - Storm Water Pollution Prevention Plan
 USACE - United States Army Corps of Engineers
 USDA - United States Department of Agriculture
 USFWS - United States Fish and Wildlife Service
 USGS - United States Geological Survey
 UTI - Utility Technologies International
 Vectren - Vectren Energy Delivery of Ohio

4906-15-01 Project Summary and Facility Overview

(A) PROJECT SUMMARY AND FACILITY OVERVIEW**(1) General Purpose of the Facility**

The Applicant, Vectren Energy Delivery of Ohio, Inc. (Vectren), seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board (OPSB) for a proposed natural gas pipeline Project to relocate a twelve-inch diameter natural gas pipeline around the west side of the Dayton International Airport located in Montgomery County, Ohio. The purpose for this proposed relocation is to increase public safety by moving the pipeline to a lower density location, to increase the safety of Vectren employees who are currently responsible for performing integrity management assessments within the airport fence, reduce pipeline maintenance costs, and eliminate cased crossings. Vectren owns and operates a 31.9 mile long, twelve-inch diameter natural gas transmission line, Z-167. The pipeline originates on the north side of Dayton and feeds natural gas to the Sidney area. Vectren is proposing to relocate a three-mile section of this pipeline that currently traverses under the Dayton International Airport. The original eight-inch diameter pipeline was installed in the early 1900s, before the airport was built, and was later upgraded to twelve-inch diameter to accommodate increased demands for natural gas on the transmission line. Additionally, several modifications and minor line relocations have occurred within the airport's boundaries within the past sixty years because of airport expansion projects.

Presently a three-mile section of the Z-167 pipeline crosses under the main runway and six taxiways, contains nine cased crossings, and is in close proximity to the Federal Aviation Administration (FAA) tower and the main terminal building. The relocation of the pipeline

around the west side of the airport would alleviate the current situation of a pipeline located in a high consequence area. In the unlikely event of an emergency involving the current pipeline where the area would need to be evacuated, travelers and others at the airport would be affected. Also, the Vectren personnel responding to the emergency would face increased risk.

The location of the existing pipeline makes it difficult to perform the operations and maintenance assessments required by the Department of Transportation Pipeline Safety Regulations in 49 CFR Part 192. Additionally, the multiple short-radius bends in the pipeline make it impossible to utilize smart pigging as an assessment technique for the integrity management requirements in Part 192. The new pipeline will enable easier access to conduct the necessary integrity management assessments on the pipeline, as well as reduce some of the safety risks associated with performing said assessments. Additionally, existing and proposed communities and facilities to the west could be more easily served with natural gas in the future with the relocation of the pipeline. Vectren would construct, maintain, operate, and own the proposed natural gas pipeline.

(2) Facility Description

The proposed relocation will reroute the existing Z-167 pipeline around the Dayton International Airport by connecting into the existing Z-167 pipeline on the east side of Corporate Center Drive, south of the airport, routing around the west side of the airport, and reconnecting to the existing pipeline at the northwest corner of the airport. This area is predominantly used for agriculture purposes. Vectren proposes to install approximately six and a half miles of twelve-inch diameter steel pipe around the west side of the Dayton International Airport, primarily utilizing property owned by the City of Dayton. The proposed pipeline will have a maximum allowable operating pressure of 500 pounds per square inch gauge (PSIG). The normal operating

pressure range of the Z-167 transmission line is between 300 to 350 PSIG.

The relocation is proposed to be sited in land that is primarily agricultural with small portions of wooded lots, as well as small areas that are zoned commercial and residential.

Installation of the natural gas pipeline along much of the proposed route will involve the excavation of a two- to three- foot wide by four-and one-half to five-foot deep trench. Much of the proposed route is sited alongside the boundaries of the agricultural fields. An eighty foot-wide easement will be required to accommodate construction equipment and temporary stockpile areas for excavated soil. Once completed, a fifty foot-wide permanent easement will be maintained atop of the pipeline. The permanent and temporary easements will be restored to pre-existing conditions, as much as possible, including the restoration of topsoil and the repair of any drain tile systems.

(3) Route Selection Process

A Route Selection Study (study) was performed to identify and evaluate routes for the proposed relocation of the Z-167 natural gas pipeline (see Section 4906-15-03 of this Application) and is attached as Appendix3-1. The objective of the study was to identify suitable routes that minimize impacts on the ecology, sensitive land uses, and cultural features to the greatest extent practical and to increase public safety while maintaining economic and technical feasibility. This method involved an approach to collect and evaluate ecological, cultural, land use, and engineering data to quantitatively define constraints to routing a pipeline. These attributes and constraints were used to select potential routes for the pipeline and quantitatively and qualitatively evaluate the routes to select a “Preferred” and “Alternate” Route. Nine potential routes were evaluated and ranked in the Study resulting in the selection of a Preferred

and Alternate Route. Utility Technologies International (UTI)¹ assisted Vectren with the evaluations of the alternate routes and the preparation of the Application. The Preferred Route for the relocation of the pipeline begins at Corporate Center Drive on the south side of the Dayton International Airport, routes around the airport on the west and ties back into the existing line at Lightner Road on the northwest corner of the airport. The Preferred Route is described by six segments on the route section constraint map attached as Figure 1 in the Route Selection Study and is identified as Route D in the Study. The Preferred Route is approximately 6.55 miles long and is also shown in Figures 4-1 through 4-6.

The Alternate Route follows the same alignment as the Preferred Route for approximately 4.4 miles, from the southern tie-in point off Corporate Center Drive north to Old Springfield Road. From this point, the Alternate Route heads generally east through the study area and ties back into the existing Z-167 line at the end of Macy Lane. The Alternate Route is composed of five segments depicted on Figure 1 in the Route Selection Study (*See* Section 4906-15-03) and is identified as Route B in the Study. The total length of the Alternate Route is approximately 6.02 miles. The Alternate Route is also shown in Figures 4-1 through 4-6.

The Preferred and Alternate Routes follow the same path for approximately 4.4 miles or 74% of the total length. Ohio Administrative Code Rule 4906-5-04(A)(2)(a)(iii) provides that two right-of-ways (ROW) are not considered alternatives if more than 20% of the ROWs are in

¹ UTI is a multi-disciplinary energy consulting firm with extensive experience in engineering design and project management of pipeline projects, leakage and corrosion control, training, code compliance and quality control, regulation and measurement, master meter operator services, network computer simulation and other energy related services. UTI has completed numerous construction projects from the planning stages through the completion of the projects.

common. Based on the complexity of land uses, Vectren requested and was granted a waiver of Ohio Administrative Code (OAC) Rule 4906-5-04(A)².

(4) Principal Environmental and Socioeconomic Considerations

(a) Land Use Impacts

Land use in the immediate area of both the Preferred Route and Alternate Route is predominantly agricultural with a small percentage being commercial, residential and wooded lots. Vectren does not anticipate the need to remove any existing structures for the construction of the pipeline. No new temporary or permanent access roads will be required to construct or maintain the proposed natural gas pipeline. Once in place, the relocated pipeline will have no aesthetic impact beyond the required line-of-sight pipeline markers. Where the Preferred Route and Alternate Route cross agricultural fields, there may be some temporary damage to drainage tile and compaction of soil resulting from access by construction vehicles. Vectren will restore impacted drainage tile to its original condition near the pipe trench excavation and will segregate and restore excavated topsoil.

No sensitive land uses will be impacted by either route. Based on review of local plans and contacts with local government officials, the Project appears to be consistent with existing local and regional development plans.

(b) Economic Impacts

The Project is anticipated to have a positive impact on the local economy as labor for the construction of the pipeline will be drawn as much as possible from local sources. No new housing or schools will be required as those non-local employees brought in will stay at local motels and hotels.

² The Entry of the Administrative Judge approving the waiver for this proceeding was issued August 9, 2013.

In addition, development of those industries requiring an increased reliability in the natural gas supply will likely be encouraged, contributing further to regional economic development.

(c) Ecological Impacts

An ecological study of the Preferred and Alternate Routes was performed as part of this Application. The study included analysis of published literature and maps and a field survey to assess the presence of endangered plant and animal species and natural features, such as wetlands and waterways that may be subject to jurisdiction under section 401 and 404 of the Clean Water Act. The results of this survey are discussed in detail in Section 4906-15-07 of this Application.

Correspondence with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) indicated that the proposed routes are within the range of six species that are currently listed or are candidates for listing as Federal and/or State endangered, threatened or rare species. None of these species were observed during field surveys by Evans, Mechwart, Hambleton, and Tilton (EMH&T) biologists.

Environmental field surveys concluded that limited to no habitat was present for the upland sandpiper (*Bartramia longicauda*) and that potential habitat for the eastern massasauga (*Sistrurus catenatus*) was highly fragmented from commercial development. Neither species is likely to be significantly impacted by the Project. It was also reported that favorable conditions were not present for aquatic bivalves or salamanders at any of the five streams.

Suitable summer roost habitat for the Indiana bat (*Myotis sodalis*), listed by the United States Fish and Wildlife Service and Ohio Department of Natural Resources as endangered, was observed along both the Preferred and Alternate Routes. Efforts will be made to avoid these

habitats as much as possible. Potential bat roost trees have been identified and will only be cleared as necessary within the permanent easement to ensure pipeline safety. Clearing of any potential Indiana bat roost trees will occur between October 1 and March 31, when *M. sodalist* is in winter hibernacula. Vectren will consult with ODNR and USFWS should circumstances require working in areas where, or during times when, impacts to listed species might occur.

Five potentially United States Army Corps of Engineers (USACE) jurisdictional streams were identified along both the Preferred and Alternate Routes, two perennial, two ephemeral, and one intermittent. Two potentially jurisdictional wetlands were identified within 100 feet of the centerline of both the Preferred and Alternate Routes. These wetlands and streams will be crossed utilizing horizontal directional drilling (HDD) methods or by using open trench techniques. There will be no permanent impacts to wetlands or streams as a result of this Project. Excavation activities within delineated wetlands will be limited to the required area for pipeline installation. The anticipated total temporary impact to wetlands within the Project area is less than 0.15 acres.

All soils excavated from wetlands will be stored in an upland location and, unless saturated, the topsoil segregated so that at least the top 12-inches of backfill over the pipeline will consist of topsoil material removed from the trench, as per Ohio State Certification Requirements under the U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) 12 (Utility Line Activities). It is expected that this Project will be authorized by USACE under NWP 12. According to the USACE, for linear projects each separate wetland and stream crossing is considered as a separate and complete project. HDD will be selectively utilized on the Project so that each separate stream and/or wetland crossing does not result in the loss of jurisdictional waters as allowed under NWP 12.

(d) Cultural Impacts

A records review of known cultural resources adjacent to the Preferred and Alternate Routes was performed as part of this Application. The review included compilation of previously recorded archaeological sites, Ohio Historic Inventory (OHI) structures, and sites currently listed on the National Register of Historic Places (NRHP). No culturally significant structures or sites were identified within the project area during this initial study.

A Phase I cultural resources survey is required by the Ohio Historic Preservation Office (OHPO) as the only means of documenting all cultural resources within the proposed project area. A Phase I scope of work meeting OHPO specifications will be designed and a survey of the appropriate route will be undertaken prior to construction. Plans for avoiding or mitigating impact to potentially significant sites will be developed through OHPO consultation. The Phase I cultural resources survey will be submitted to the OPSB board once completed.

(5) Project Schedule

- Local Public Informational Meeting – August 29, 2013
- Fall 2013 – Application for Certificate submitted to the OPSB
- Winter 2013-14 – Staff Report of Investigation issued
- Winter 2013-14 – Local Public Hearing and Adjudicatory Hearing at the OPSB
- Spring 2014 – Pipeline Certificate received
 - Easements obtained
 - Construction begins
- Fall 2014 – Construction complete

See also Figure 02-1.

4906-15-02 Review of Need for Proposed Project

(A) STATEMENT OF FACILITY NEED

Vectren owns and operates a 31.9 mile long twelve-inch natural gas transmission line, Z-167, with a variable MAOP between 400 and 500 PSIG that originates on the north side of Dayton and feeds natural gas into the Sidney area. Vectren has planned to relocate a three mile portion of Z-167 in order to better facilitate 49 CFR Part 192 pipeline operations and maintenance and integrity management requirements and to increase safety.

The planned relocation of the pipeline is the section of Z-167 that crosses under Dayton International Airport. This section of pipeline is currently under the main runway and six taxiways, contains nine cased crossings, and is in close proximity to the FAA tower and the main terminal building. This segment of Z-167 is not capable of being inspected by smart pigging due to existing fittings in the system, and is only capable of being evaluated by hydrostatic pressure testing or direct assessment. Pressure testing has been the preferred assessment method and is a reliable evaluation method, but it requires the pipeline to be shut down, uses a significant volume of water, and requires handling and disposal of the hydrostatic test water. Pressure testing is also an expensive method of evaluating long segments of pipeline.

By contrast, the new relocated segment of Z-167 will be capable of evaluation using smart pigging techniques and will eliminate all nine cased crossings through the relocation process. Pipeline casings have the potential to shield the cathodic protection current from the carrier pipe and can potentially cause corrosion issues on the pipeline. Maintenance of the existing pipeline is also very difficult and expensive due to its location within the airport

boundaries. Any inspection or testing work requires extremely close coordination with the airport for work conducted within the fence.

The relocated portion of the Z-167 pipeline will traverse a significantly less populated area and will increase public safety due to its new location. The safety of Vectren's pipeline maintenance personnel will also be increased by not having to perform pipeline maintenance duties over and around the active airport runways and taxiways.

(1) Statement of Purpose of Proposed Facility

The purpose of the proposed pipeline relocation is to increase public safety by moving the pipeline to a lower density location and to increase the safety of Vectren employees who are currently responsible for performing integrity management assessments within the airport fence, to reduce pipeline maintenance costs, and eliminate cased crossings.

The relocation of Z-167 will be a size-on-size pipeline replacement with the same MAOP as the original pipeline segment. The relocated portion of pipeline will not materially change the flow characteristics of the existing pipeline and, as such, will not change the capacity of the existing Z-167 pipeline.

(2) System Conditions and Local Requirements

The proposed relocation of the three mile section of the Z-167 pipeline has no material change in the flow capacity of the Z-167 pipeline.

(3) Relevant Load Flow Studies

Vectren's Engineering Services team uses SynerGee Gas 4.6.1 computer analysis model (GL Noble Denton) to indicate how natural gas systems operate and where system improvements must be made to maintain service. The model revealed that there were no significant changes to the service areas with the relocation of the three mile section of the Z-167 transmission line. It

also revealed that the system would still be operable if that portion of the Z-167 line was separated off the system, but would lead to an unacceptable reliability condition for the Ohio system north of Derby, in the event Vectren was required to separate transmission line A-97 for maintenance. Figure 2-1 is a SynerGee Gas snapshot of the Z-167 load flow study with the Base Case. Figure 2-2 is a snapshot with the relocated pipeline and Figure 2-3 is a snapshot with the section separated from the system. The proposed Project results in no material change in the flow capacity of the Z-167 pipeline.

(4) Electric transmission Load Flow data

Not applicable

(5) Base Case System Data

One copy of the base case system data file has been saved on a CD and provided to the Staff of the Ohio Power Siting Board.

(B) EXPANSION PLANS

(1) Electric Transmission Lines

Not applicable

(2) Gas Transmission Lines and Associated Facilities

Vectren has no expansion plans other than those outlined in the Z-167 Relocation Project. In addition, Vectren no longer has an obligation to file long term forecast plans because the Public Utilities Commission of Ohio granted it an exemption from filing the reports otherwise required by Ohio Revised Code Chapter 4935 in Case No. 07-1285-GA-EXM by order dated April 30, 2008.

(C) IMPACT ON ELECTRIC SYSTEM ECONOMY AND RELIABILITY

Not applicable

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED ELECTRIC TRANSMISSION LINE

Not applicable

(E) FACILITY SELECTION RATIONALE

Vectren Operations and Maintenance personnel have performed extensive investigations and studies of the existing pipeline conditions as they relate to Pipeline Integrity Management. Relocating the Z-167 segment around the airport will provide a safer and more reliable energy source for Vectren and their customers. It is believed that this is the best cost and least impact solution to meet the pipeline safety and integrity management requirements.

(F) FACILITY SCHEDULE

(1) Schedule

The major scheduled activities associated with the proposed project are shown in bar chart form as Figure 2-4.

(2) Delays

The relocation Project has been scheduled for completion by December 2014. The Z-167 pipeline must be re-assessed by December 11, 2014 in order to fulfill Vectren's Integrity Management requirements under 49 CFR Part 192. Delays to the Project resulting in a completion date beyond December 2014 would require re-assessment by means of hydrostatically pressure testing the line. Shutting down the pipeline and hydrostatically pressure testing it in cold weather would be extremely expensive and may require alternative gas supply measures when the pipeline is out of service. As previously mentioned it would also use a significant volume of water as well as the need for handling and disposing of the hydrostatic test water.

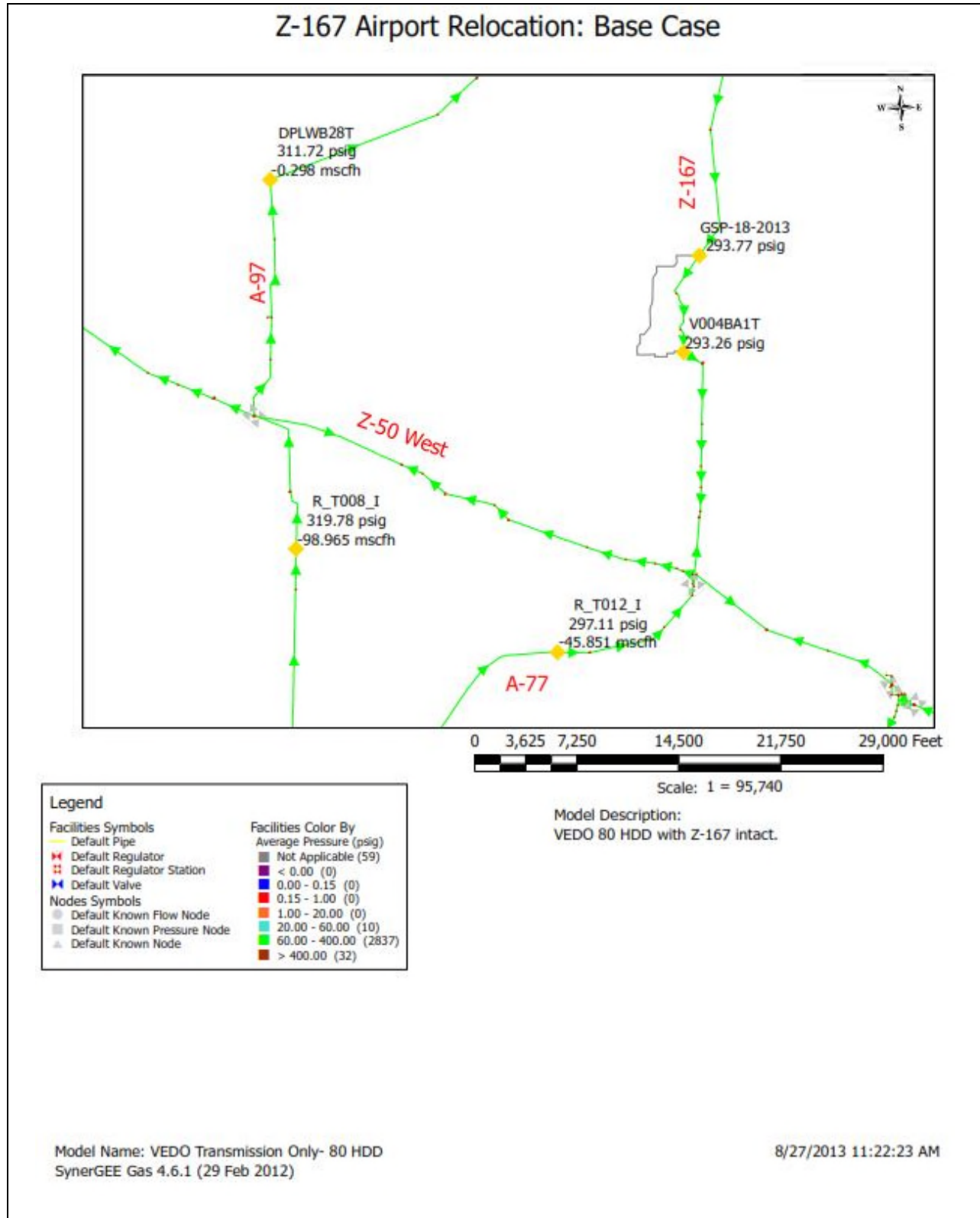
FIGURE 2-1- LOAD FLOW STUDY SNAPSHOT: BASE CASE

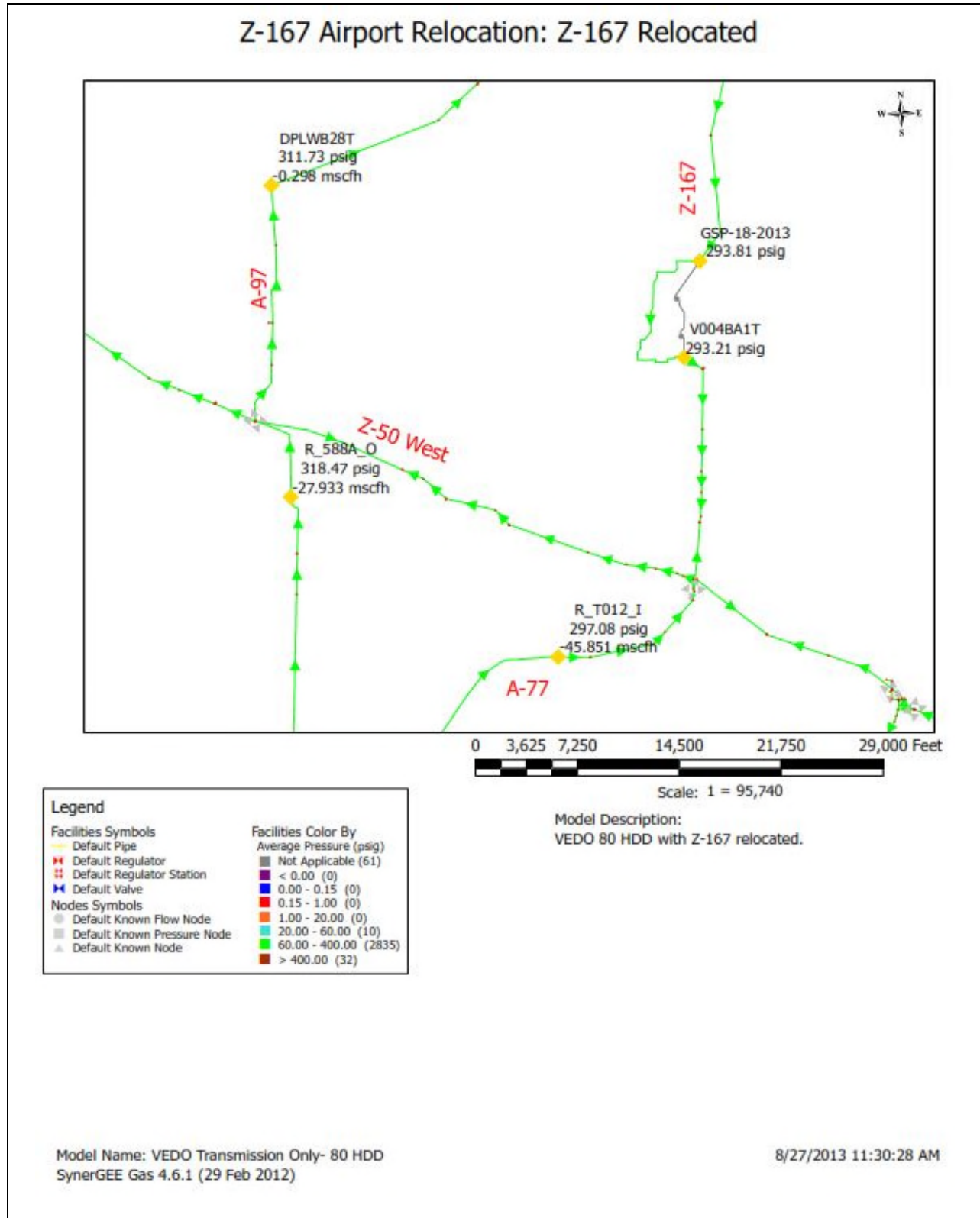
FIGURE 2-2- LOAD FLOW STUDY SNAPSHOT: RELOCATED

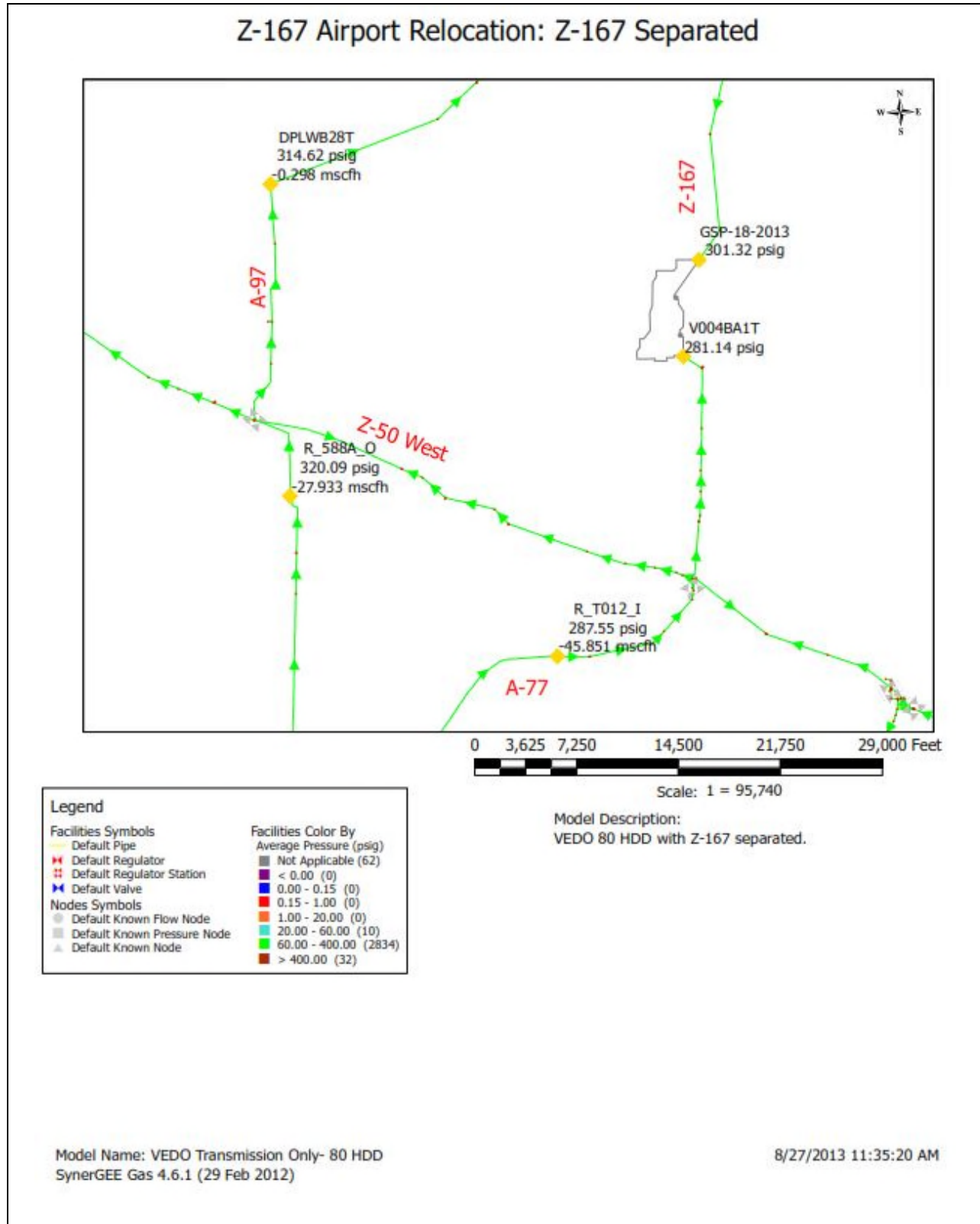
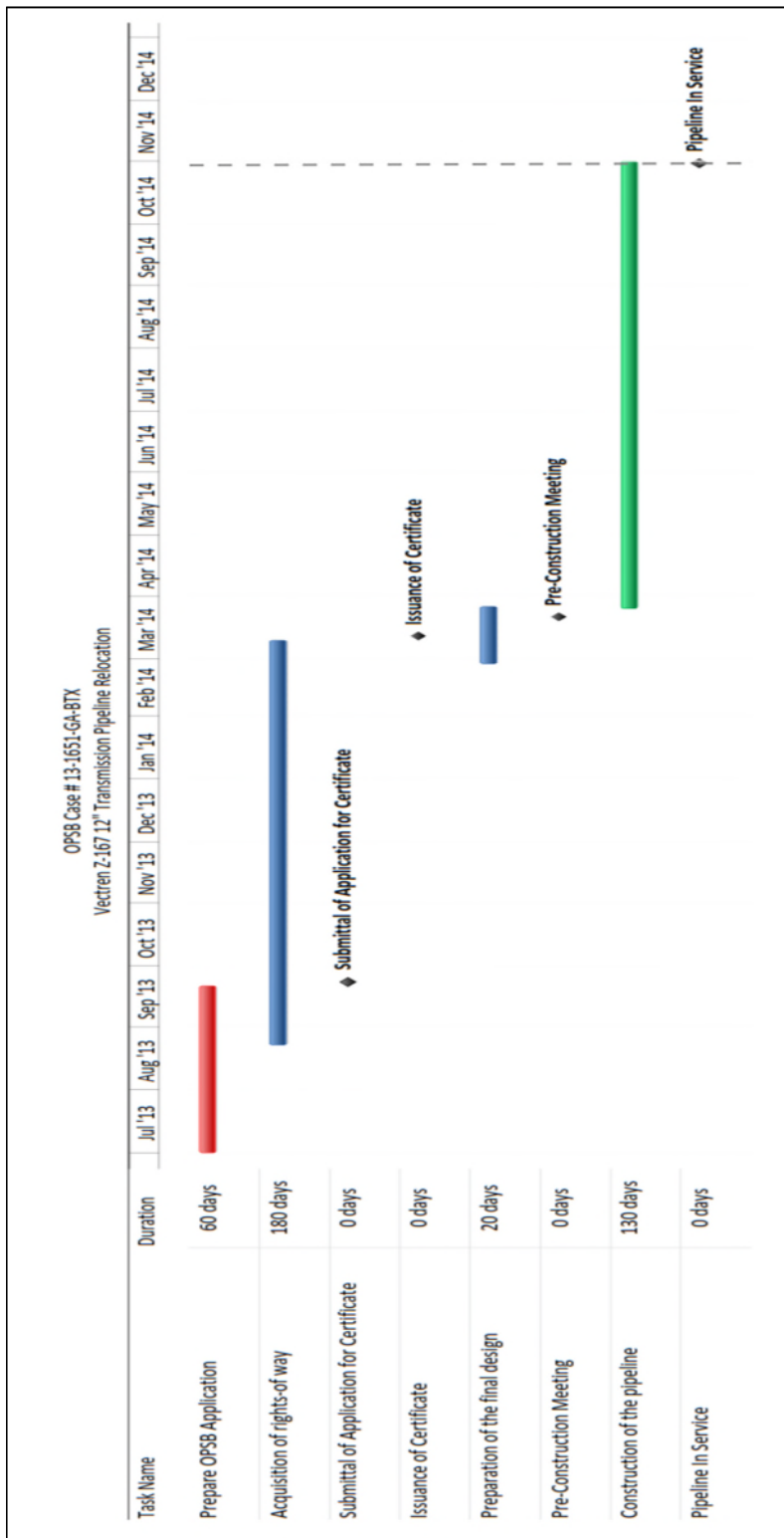
FIGURE 2-3- LOAD FLOW STUDY SNAPSHOT: SEPARATED

FIGURE 2-4- FACILITY SCHEDULE



4906-15-03 **Site and Route Alternatives**

(A) SITE SELECTION STUDY

Vectren is proposing to relocate a portion of its Z-167 twelve-inch transmission pipeline that currently runs through the middle of the Dayton International Airport and is not readily accessible to conduct the required integrity management assessments on the pipeline. A portion of the existing segment of the twelve-inch pipeline that crosses through the Dayton International Airport will be converted to a distribution line for the airport's generators. The remainder of the line will be purged, capped and abandoned in place after the replacement is complete.

The objective of the Route Selection Study was to identify potential routes for the proposed replacement pipeline that minimize impacts to ecological, socioeconomic and land use features, while taking into consideration the significant limitations imposed by the airport, interstates, built-up areas, and engineering and construction needs of the Project.

(1) General

A Route Selection Study was completed July 2013 by UTI on behalf of Vectren. This Study is provided in Appendix 3-1.

(a) Description of Study Area

The study area for the route selection is located in Montgomery County, Ohio around the Dayton International Airport. The delineation of the study area for the route selection process was driven by the identification of the starting and end points for the proposed replacement pipeline. The south end of the proposed pipeline is fixed at a starting point along Corporate Center Drive and the north end of the proposed pipeline is a fixed point at the northwest corner of the airport along Lightner Road. Given that the starting and end points for the proposed pipeline are fixed points approximately three miles apart, the study area is limited to an area

within reasonable distance of the end points that provides the appropriate opportunity to identify multiple potentially practical pipeline routes for further evaluation. Additional limitations on route selection included Stillwater River to the west and the City of Vandalia to the east. Due to the limitations of the study area, general route options were heavily influenced by the availability and practicality of the rural areas located west of the airport.

(b) Maps of Evaluated Sites

The study area (Figure 1 in Appendix 3-1) is characterized with dense urban development south and east of the airport and rural areas to the west.

(c) Siting Criteria

The goal of the route selection process was to identify viable routes based on the necessary engineering criteria, while avoiding or limiting impacts to ecological and cultural resources and sensitive land uses. A comprehensive list of all the qualitative and quantitative siting criteria was provided in the Route Selection Study (Appendix 3-1).

(d) Relevant Factors in the Site Selection Process

The study involved the collection and evaluation of environmental, cultural, land use, and engineering data in order to evaluate potential routes for the proposed relocation of the pipeline. A comprehensive list of the relevant factors and constraints in the site selection process are provided in the Route Selection Study (Appendix 3-1).

(e) Process for Determining Sites

The route selection process involved balancing the varying constraints identified in the study area. Nine routes were evaluated using a ranking system that compared nineteen attributes identified within the four categories (ecological, cultural, land use and engineering). Evaluation criteria used for the route selection process is part of the Route Selection Study (Appendix 3-1).

(2) Constraint Map

The Constraint Map for the routes evaluated in the Route Section Study is provided in Figure 2 in Appendix 3-1.

(B) SUMMARY TABLE OF EVALUATED SITES

Route selection comparison tables encompassing all of the qualitative and quantitative siting criteria, factors and constraints are part of the Route Section Study (Appendix 3-1).

(C) OPTION TO PROVIDE THE SELECTION STUDY

The July 2013 Route Section Study is provided in Appendix 3-1.

4906-15-04 Technical Data

(A) ALTERNATIVE SITES/ROUTES OF PROJECTS**(1) Geography and Topography**

Maps at 1:12,000-scale, including the area 1,000 feet on each side of the proposed pipeline route, are presented in Figures 4-1 through 4-6. This map was developed from the following United States Geological Survey (USGS) 7.5-minute topographic maps:

- Tipp City (1965, Revised 1992)
- West Milton (1955, Photo-inspected 1979)

Data on this map was updated using information from field reconnaissance conducted by EMH&T on July 24 and 25, 2013. Soil data, legal boundaries and aerial imagery were obtained from the United States Department of Agriculture department of Natural Resources Conservation Service (USDA/NRCS) and the Ohio Geographically Referenced Information Project (OGRIP) websites to update the base map.

(a) Proposed Transmission Line Alignments

The proposed alignments for the Preferred and Alternate pipeline, including the proposed turning points are shown in Figures 4-1 through 4-6.

(b) Proposed substation or Compressor Station Site Locations

No new compressor stations are planned as part of this Project.

(c) Major Highway and Railroad Routes

Both the Preferred and Alternate pipeline routes cross U.S. Route 40 (National Road) and the Access Road to the Dayton International Airport off Interstate 70. The remaining road crossings are township and county roads. No railroads are crossed with the proposed Project.

(d) Identifiable Air Transportation Facilities

The proposed relocation of the Z-167 pipeline routes around the western perimeter of the Dayton International Airport. Wright Patterson Air Force Base is located approximately 9.5 miles to the southeast.

(e) Utility Corridors

There are no major utility corridors within 1,000 feet of the proposed routes.

(f) Proposed Permanent Access Roads

No permanent access roads are planned for this Project.

(g) Lakes, Ponds, Reservoirs, Streams, Canals, Rivers and Swamps

A full description of the surface water features located within 1,000 feet of the proposed pipeline project is provided in Section 4906-15-07(B)(3) of this Application. Surface waters identified within 100 feet of both the Preferred and Alternate Routes are shown in Figures 4-1 through 4-6.

(h) Topographic Contours

Using USGS topographic source data, maps of existing surface contour intervals (10 feet) of the study area were prepared and are illustrated on Figures 4-1 through 4-3.

(i) Soil Associations

Using USDA/NRCS soil data, maps showing the various soils within the study area were prepared and are illustrated on Figures 4-4 through 4-6.

(j) Population Centers and Legal Boundaries of Cities, Villages, Townships, and Counties

The proposed pipeline route crosses within 100 feet of the cities of Dayton, Vandalia, and Union; Butler and Monroe Townships; and Montgomery and Miami Counties. Population

centers and the legal boundaries of these cities, townships and counties have been prepared and are illustrated on Figures 4-1 through 4-3.

(2) Slope and Soil Mechanics

Information obtained from the Web Soil Survey site, Soil Survey of Montgomery County, Ohio March 2004 Supplement (USDA/NRCS) and ESRI GIS data indicated three soils types within the route study area that exceeded slopes of 12 percent. These soils were the Hennepin and Miamian silt loam (HeE2) with 18 to 25 percent slopes and moderately eroded, Milton silty clay loam (MtD3) with 6 to 18 percent slopes and severely eroded, and the Miamian silt loam (MiD2) with 12 to 18 percent slopes and moderately eroded. Both the Hennepin and Miamian silt loam and the Miamian silt loam soils are located within a riparian zone southwest of the Preferred Route and Alternate Route and are located well outside of the proposed Project construction limits. A very small percentage of the route however passes through or nearby the Milton silty clay loam soil, which is located along the eastern side of Dog Leg Road, west of the airport and approximately one-half mile north of U.S. Route 40. The percentage slope for this soil series ranges from 6 to 18 percent. Field surveys conducted in this area in July 2013 revealed that the slope is less than 12 percent.

No foundations will be constructed for the proposed relocation of the pipeline around the Dayton International Airport. The pipe will be placed within an open cut trench and buried no less than 48-inches below the surface of the earth. Settling is expected within areas of the trenching and will be addressed according to the Environmental Construction Standards for the Project (Appendix 4-1).

(B) LAYOUT AND CONSTRUCTION

(1) Site Activities

The following paragraphs provide data on the layout and construction of the Project.

(a) Surveying and Soil Testing

Aerial photographs may be used to aid in the pipeline location process. At the appropriate time, the certified pipeline route will be surveyed to establish the centerline location. The surveying will be completed using conventional methods.

Offsets will be used to survey around large trees and other large obstructions. The pipeline right-of-way (ROW) will be staked prior to construction. The location of the pipeline centerline will be determined by offset from the ROW staking.

A geotechnical overview will be performed on the selected route. Soil tests may be performed at various locations along the proposed pipeline ROW to document geotechnical issues prior to soil excavation.

(b) Grading and Excavation

The pipeline ROW will be graded, as necessary, to provide a safe and efficient work area for construction equipment and personnel. Both the Preferred Route and Alternate Route are relatively level and grading requirements will be minimal.

The ROW will be cleared of vegetation, where necessary, and tree stumps cut or removed to permit construction equipment access and excavation. Material excavated from the trench will be stockpiled within the ROW, segregating the topsoil. Grading work will include the prompt installation of soil erosion and sedimentation control measures.

After grading, a trench approximately four-feet wide by six-feet deep will be excavated. Open cuts of hard surfaces will be made with the appropriate equipment, such as surface excavators, air hammers and saws. The pipeline will then be installed as described below, and the trench backfilled. Excess backfill material will be distributed over the trench and spoil areas or hauled from the site. Finally, the topsoil will be replaced in the trench from spoil areas, and final grading will restore the land surface to its original contours.

Broken or damaged tile or pipe will be replaced with the same size and same or better quality material. Reseeding will be utilized in non-agricultural areas when requested by the property owner. Further details on grading and excavating activities have been provided in the Environmental Construction Standards located in Appendix 4-1.

Several small portions of the pipeline route will be installed utilizing horizontal directional drilling (HDD) methodology. These include several streams, as well as their riparian zones, along both the Preferred Route and Alternate Route. HDD methodology can significantly reduce impacts to streams and other sensitive areas because it eliminates the need for an open trench. The HDD equipment will be set up on upland surfaces, maintaining at least a fifty-foot buffer from the stream. Silt fence or other appropriate erosion controls will be installed where appropriate between the bore entrance and the exit pits and the stream. During the directional bore process, there is a risk of an inadvertent return of drilling fluids or frac-out. An inadvertent return of drilling lubricant is typically non-toxic, fine clay bentonite slurry that can be forced through cracks in bedrock and surface soils. Containment measures taken during an inadvertent return event will include the reduction or elimination of pressure, straw bale containment (where returns occur on land), and removal of drilling mud. The area affected by any inadvertent return will be restored as closely as possible to original conditions. Directional boring will not continue until the inadvertent return is completely contained and impacts remedied. An Inadvertent Return (Frac-Out) Contingency Plan for this Project has been included with this Application in Appendix 4-1 with the Environmental Construction Standards.

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

Access to the majority of the pipeline installation areas will occur from public roads or existing driveways along both the Preferred and Alternate Routes. No additional permanent or temporary access roads are planned. A pipe stringing and pull-back workspace will be necessary

for the HDD crossings. These staging areas will have the necessary ecological and cultural surveys performed on them and will be shown on the construction drawings as well as the Storm Water Pollution Prevention Plan (SWP3) for the Project, once the plans are finalized for the route. These documents will be provided to the staff at the OPSB once completed.

(d) Laying of Pipe

Line pipe will be transported from the coating mill to the Project location by truck. Vectren will obtain pipe delivery and staging areas as close to the ROW as possible. Previously-cleared land will be used for pipe staging, and staging areas will be cleaned up and restored at the completion of construction.

Pipe handling will be minimized to prevent damage to the pipe and coating. To the extent possible, pipe will be strung along the ROW directly from delivery trucks. If the delivery schedule does not allow immediate stringing of the pipe, it will be stockpiled at the staging areas and loaded onto stringing trucks as needed.

Pipe will be handled using spreader bars, fabric slings, padded forklifts, or other methods that will prevent damage to end bevels and coating. When stockpiling or stringing pipe, padding will be used to protect the coating and the pipe will be properly supported to prevent distortion of the pipe roundness or damage to factory bevels.

Pipe will be installed such that secondary stresses are kept to a minimum to avoid abrasions, scuffing, sharp protrusions, and cracking. Any supported pipe will be insulated at the point of contact with a suitable insulating material such as rock shield or fiberglass sheeting. Prior to installation, the pipeline welds will be x-rayed, welded joints coated, pipe examined for flaws in the coating and the coating repaired if necessary, and the pipeline then lowered into the trench. Before the pipe is buried, cathodic protection wires and other monitoring systems will be installed.

The trench will be backfilled and excess soil will be spread over the trench and spoil areas or hauled from the site. Topsoil replacement and final grading will be completed as described above. After installation, the pipeline will be pressure tested to verify its integrity according to industry standards.

(e) Post-Construction Reclamation

After construction, the pipeline ROW will be restored to as close to original condition as possible. Pre-construction photographs will be taken of the entire route to provide a record of comparison to ensure restored conditions after construction.

Restoration will include the permanent repair of fences and other surface facilities, restoration of drainage ditches, fertilizing, seeding, and mulching of non-cultivated areas, and the removal of temporary soil erosion and sedimentation control measures after vegetative cover has been established. Areas adjacent to streams and wetlands will be restored to original conditions using methods to minimize soil erosion and degradation. Line markers will be installed along the ROW to warn against excavation in the vicinity of the pipeline.

(2) Layout

(a) Map of Associated Facilities

No new associated facilities are planned as part of this Project at this time.

(b) Reasons for the Proposed Facility and Unusual Features

There are no unusual features associated with the construction of this Project.

(c) Future Modification Plans

The proposed natural gas pipeline is sized to provide adequate capacity for projected future needs. No future modifications to the pipeline are anticipated at this time.

(C) TRANSMISSION EQUIPMENT**(1) Electric Transmission Line Data**

Not applicable

(2) Electric Transmission Substation Data

Not applicable

(3) Gas Transmission Line Data**(a) Maximum Allowable Operation Pressure**

The maximum allowable operating pressure for the pipeline will be 500 psig.

(b) Pipe Material

The proposed relocation will use twelve inch Electric Resistance Welded steel pipe with a minimum of 0.312 inch wall thickness and a minimum of X-52 grade steel. All pipes will be coated with 14-16 mils of Fusion Bonded Epoxy. Pipe that is to be installed by directional drilling will have an additional 20 mils of Powercrete® R95 for additional protection.

(c) Pipe Dimensions and Specifications

See (b) above.

(d) Other Major Equipment

No other major equipment is anticipated.

(4) Gas Transmission Facilities**(a) Control Buildings**

No control buildings are planned for this Project.

(b) Heaters, Odorizers, and Above-Ground Facilities

No heaters, odorizers, or other above ground facilities are planned for this Project.

(c) Other Major Equipment

No other major gas transmission facility equipment is planned for this Project.

(D) ENVIRONMENTAL AND AVIATION COMPLIANCE INFORMATION**(1) List of Permits Required for Construction of the Facility**

Environmental permits that are anticipated for this construction of this Project include submitting a Notice of Intent (NOI) for coverage under the Ohio Environmental Protection Agency's (OEPA) General Construction Stormwater Permit, No. OHC000004, and Permit No. OHH000002 for the activities associated with the hydrostatic testing of the pipeline. Additionally, depending on the method used to cross Wetland 2, coverage may be required under the U.S. Army Corps of Engineers (USACE) Nation Wide Permit (NWP) 12 for utility line construction activities in jurisdictional waters and OEPA Section 401 Water Quality Certification and Isolated Wetland Permit. No other environmental permits are anticipated for the relocation of the natural gas pipeline around the Dayton International Airport.

Information was submitted for the FAA's "Notice of Criteria Tool" for external projects on September 4, 2013. The project number assigned by the FAA is VECTR-000249860-13 and the Aeronautical Study Number assigned is 2013-AGL-8578-OE. Future correspondence regarding this notice will be provided to the OPSB staff once received.

No road closures, lane closures, road access restrictions, or traffic controls are anticipated for the construction of the pipeline. Vectren will coordinate with city and county engineers, Ohio Department of Transportation, local law enforcement, and health and safety officials to determine required permits for the construction of the pipeline, egress on and off the roadway, crossing of the roadways, etc.

A schedule of the construction activities and acquisition of corresponding permits for each activity will be provided to the OPSB staff at the preconstruction conference. Vectren will obtain and comply with all required permits and/or authorizations prior to the commencement of construction activities. Copies of these permits and/or notifications and their supporting

documents, as well as any developed traffic plans (if needed), will be provided to the OPSB staff within 7 days of issuance or receipt by Vectren.

(2) Description, Quantification and Characterization of Debris and Plans for Disposal of Debris

As construction work proceeds, the ROW will be kept clean of all rubbish and debris resulting from the work. Refuse will be properly disposed to an approved landfill or other appropriate location.

Where trees must be cleared from the ROW, the resulting brush will be chipped; timber and stumps will be hauled off site and disposed. All excess vegetation will be properly disposed to an approved landfill or other suitable area if the property owner so wishes.

(3) Process to Control Storm Water, Minimize Erosion, Restoration of Soils, Wetlands and Streams

A Storm Water Pollution Prevention Plan (SWP3) is currently under development for the Project. The Environmental Construction Standards, Appendix 4-1, will be used as the base with the development for the SWP3. The SWP3 will cover the following aspects as they relate to the construction of the replacement pipeline:

- Erosion and sediment controls
- Installation and maintenance requirements
- Inspections and record keeping
- Stabilization measures and requirements
- Solid waste management and disposal procedures
- Chemical storage requirements
- Spill prevention and counter control measures
- Emergency spill notification information
- Fugitive dust control and sediment track-out plan
- Inadvertent Return (Frac-Out) Contingency Plan
- Requirements for Notice of Termination

(4) Disposition of Contaminated Soil and Hazardous Materials

Contaminated soil and hazardous material generation and disposition will also be addressed in the SWP3. All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the likelihood of spills. Petroleum products will be properly stored in clearly labeled OSHA/DOT approved containers. Secondary containment will be provided for all on-site fuel storage tanks.

All sanitary waste will be collected in portable units that will be located at least 25 feet from any storm drainage ditch, water conveyance system, or storm drain inlet system and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.

All spills will be cleaned up immediately after discovery by trained personnel using recommended methods per the manufacturer. Emergency spill notification procedures will be followed as outlined within the SWP3. Personnel working on the Project site will be trained on the contents of the SWP3 and required to sign the “Duty to Inform” form as required by the OHC000004 permit. Materials and equipment necessary to handle the largest potential spill for the Project will be kept in a designated storage area on-site.

(5) Height of Anticipated Above Ground Structures

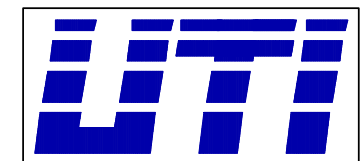
The maximum height of construction equipment that will be used during the installation of the transmission pipeline is anticipated to be approximately twenty-one feet tall, the maximum height of a sideboom. The only above ground structure that will remain after completion of construction are the identity markers for the pipeline, which are approximately four inches wide and thirty-six inches high.

(6) Plans for Construction During Excessively Dusty or Muddy Soil Conditions

Fugitive dust on the Project route and surrounding areas will be minimized through the use of best management practices (BMP) such as with the application of water to the soil,

reducing the speed of equipment, promptly removing any tracked out sediment on public roads, and with the application of mulch or tackifiers. Fugitive dust will also be addressed in the SWP3 for the Project.

The SWP3 specifies BMPs that will be implemented during the construction of the Project to minimize the transportation of sediment off-site. Construction entrances will be established and maintained in accordance with the Ohio Department of Natural Resources “Rainwater and Land Development” manual for Ohio’s Standards for Stormwater Management and Development and Urban Stream Protection which will prevent the tracking of sediment onto public right-of-ways. Additionally, matting materials may be used to reduce rutting while working within the ROW for the Project during excessively wet conditions. Other stormwater control measures that will be used during the construction of the Project include the use of silt fencing, straw bales, and stabilization efforts. All sediment spilled, dropped, washed, or tracked onto public right-of-ways shall be removed immediately.



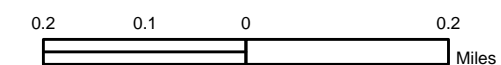
Utility Technologies International
4700 Homer Ohio Lane
Groveport, OH 43125
(614) 482-8080



Z-167 Proposed Route Relocation

Topographic Map
Tipp City and West Milton
7.5-minute

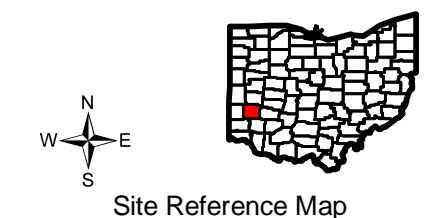
Figure 4-1

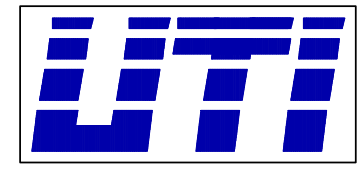
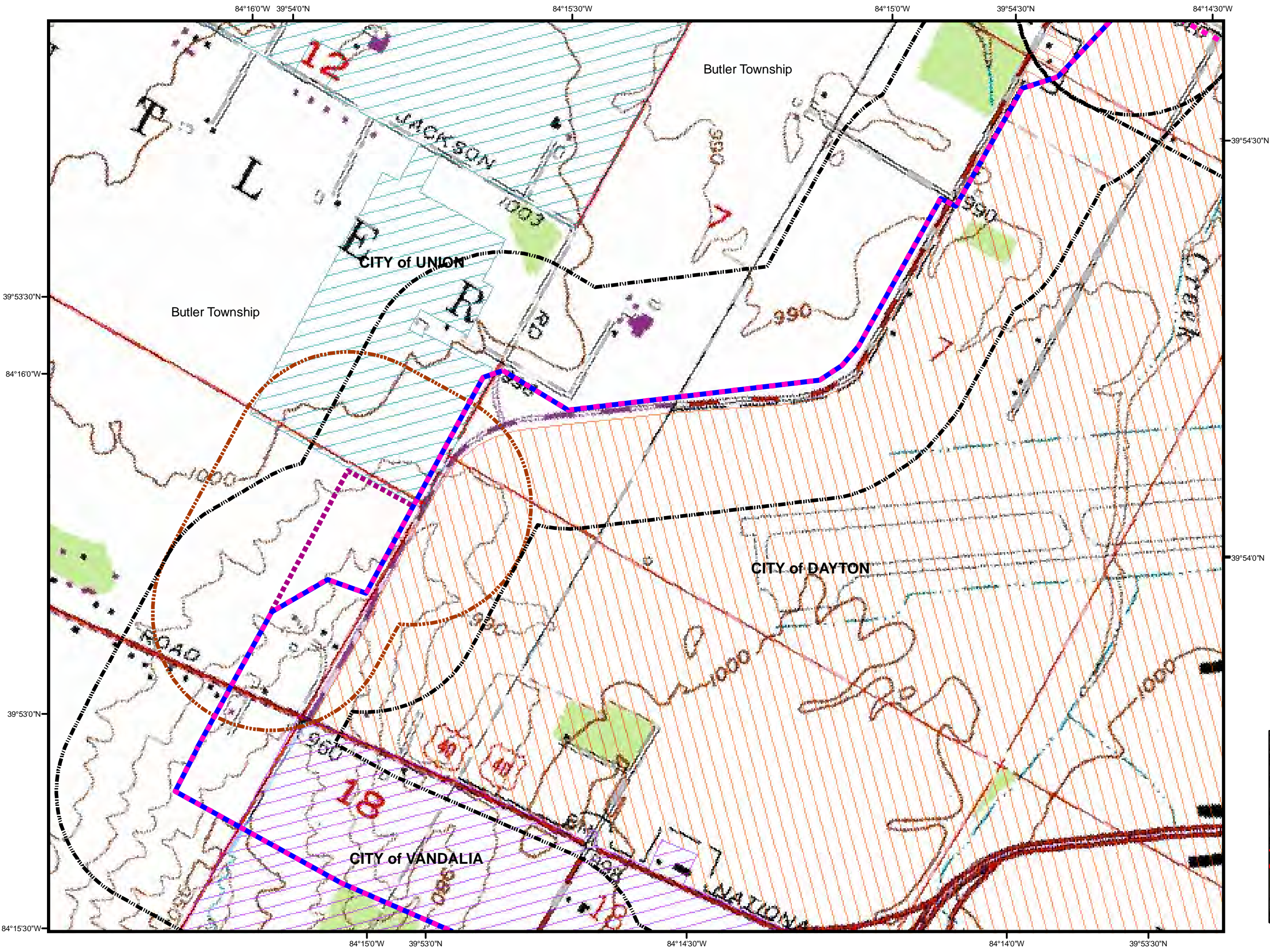


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Legend

- Preferred Route
- Alternate Route
- Common Shared Segment
- Existing Z167 Line
- 1000' Corridor
- Route Adjustment
- Adjusted 1000' Corridor





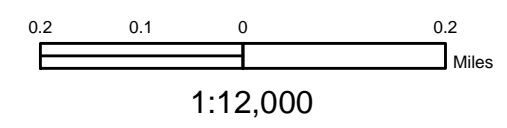
Utility Technologies International
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Z-167 Proposed Route Relocation

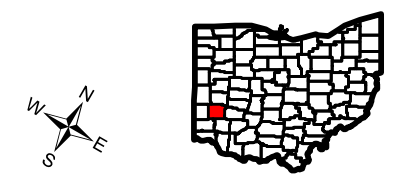
Topographic Map
Tipp City and West Milton
7.5-minute

Figure 4-2

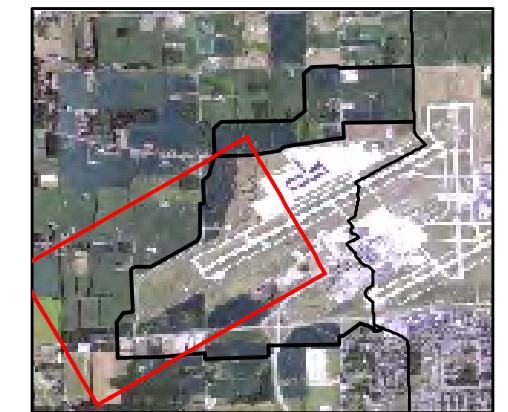


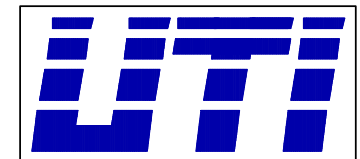
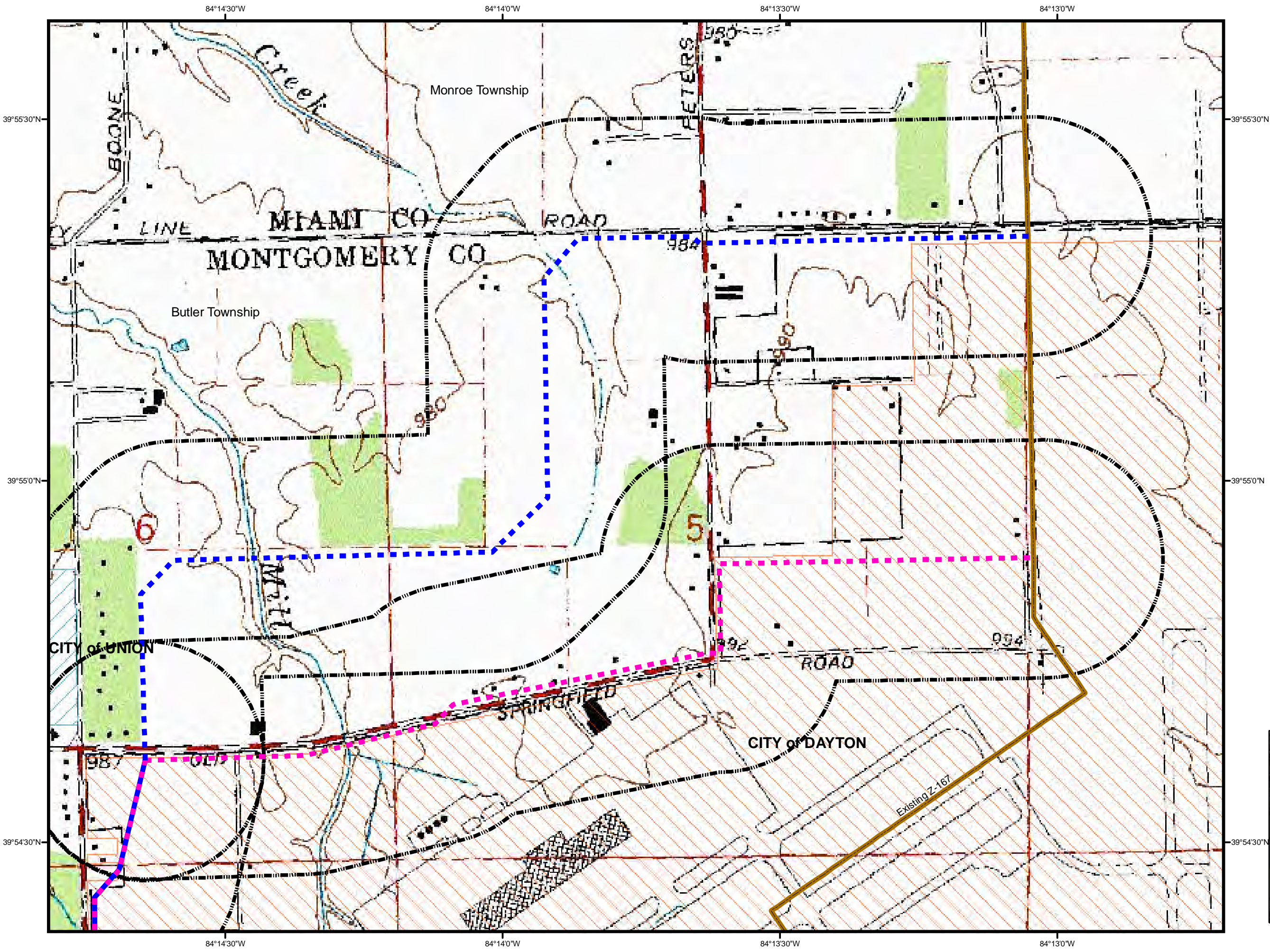
Legend

- Preferred Route
- Alternate Route
- Common Shared Segment
- Existing Z167 Line
- 1000' Corridor
- Route Adjustment
- Adjusted 1000' Corridor



Site Reference Map





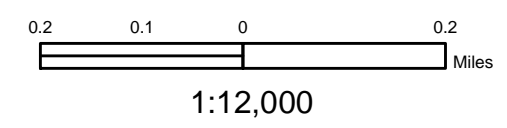
Utility Technologies International
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Z-167 Proposed Route Relocation

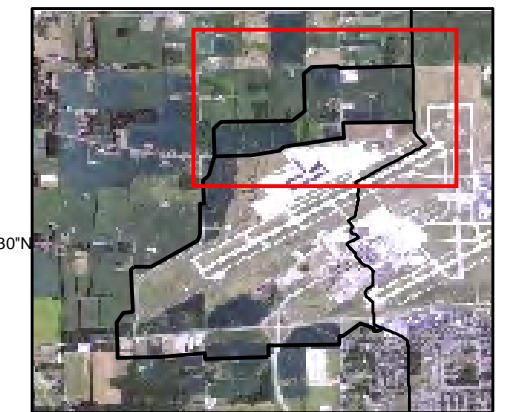
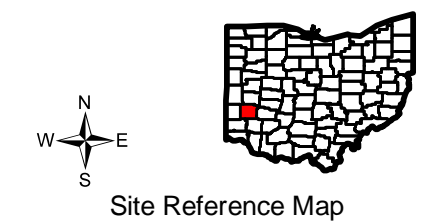
Topographic Map
Tipp City and West Milton
7.5-minute

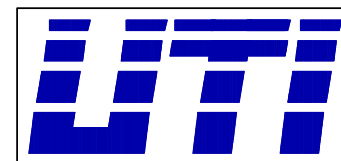
Figure 4-3



Legend

- Preferred Route
- Alternate Route
- Common Shared Segment
- Existing Z167 Line
- 1000' Corridor
- Route Adjustment
- Adjusted 1000' Corridor



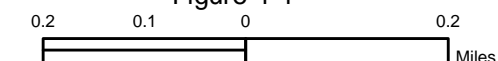


Utility Technologies International
4700 Homer Ohio Lane
Groveport, OH 43125
(614) 482-8080



Z-167 Proposed Route Relocation

Geographic Map
Figure 4-4

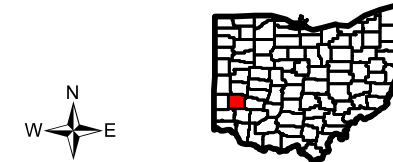


1:12,000

Legend

Point of Interest

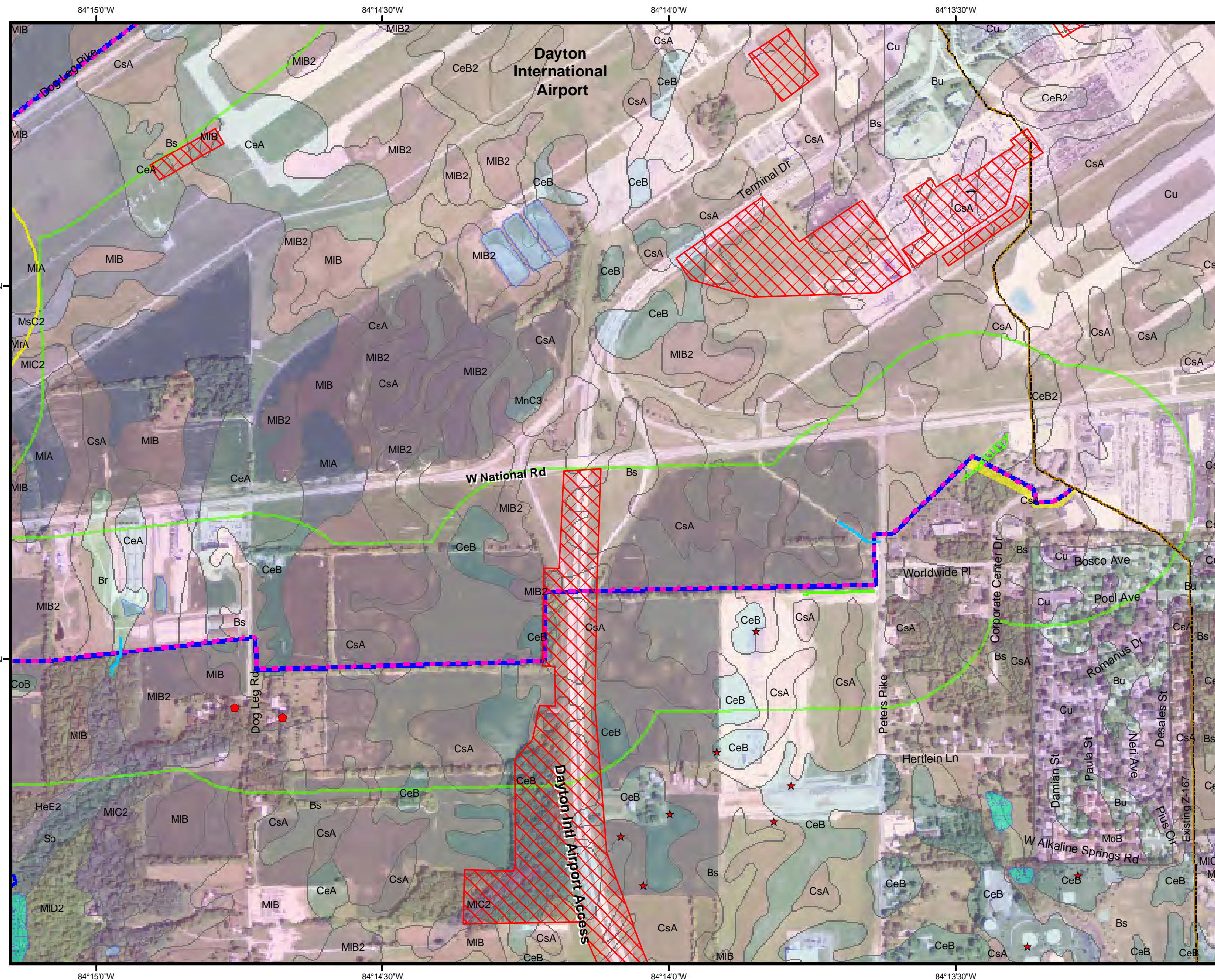
- | | |
|------------------------|---------------------------|
| Airport | Phase I Study Area |
| Airport Tower | Ohio Historical Structure |
| Church | Ohio Archaeological Site |
| Driving Range | Streams |
| Fuel | Delineated Streams |
| Cemetery | Emergent Wetland |
| Library | Forested/Shrub Wetland |
| Park | Pond |
| Parking | Riverine |
| Pitch | Delineated Wetlands |
| Post Office | Preferred Route |
| Post Office - Historic | Alternate Route |
| Power Tower | Common Shared Segment |
| School | Adjusted Route |
| Soccer | Existing Z-167 Line |
| | High Consequence Area |
| | 1000' Corridor |
| | Adjusted 1000' Corridor |

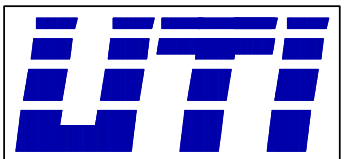
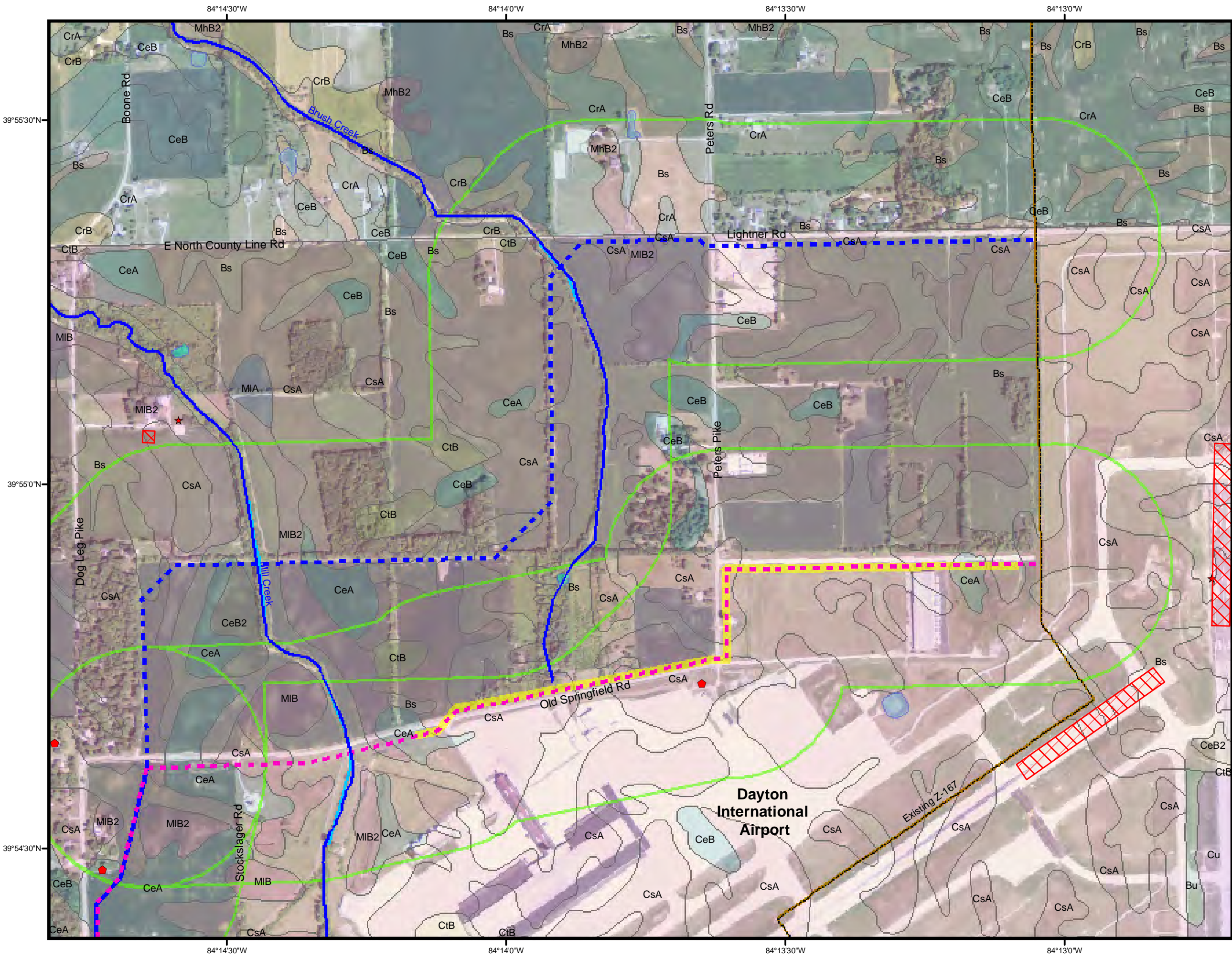


Site Reference Map



September 4, 2013



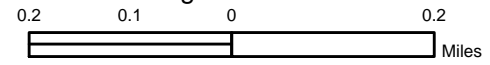


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Z-167 Proposed Route Relocation

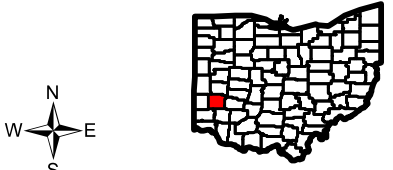
Geographic Map
Figure 4-6



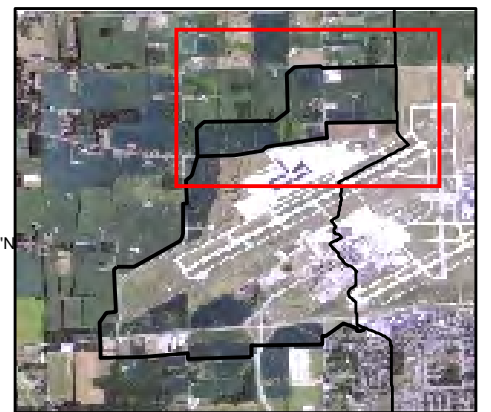
1:12,000

Legend

- | | |
|--------------------------|---------------------------|
| Point of Interest | Phase I Study Area |
| Airport | Ohio Historical Structure |
| Airport Tower | Ohio Archaeological Site |
| Church | Streams |
| Driving Range | Delineated Streams |
| Fuel | Emergent Wetland |
| Cemetery | Forested/Shrub Wetland |
| Library | Pond |
| Park | Riverine |
| Parking | Delineated Wetlands |
| Pitch | Preferred Route |
| Post Office | Alternate Route |
| Post Office - Historic | Common Shared Segment |
| Power Tower | Adjusted Route |
| School | Existing Z-167 Line |
| Soccer | High Consequence Area |
| | 1000' Corridor |
| | Adjusted 1000' Corridor |



Site Reference Map



4906-15-05 **Financial Data**

(A) **OWNERSHIP**

Vectren Corporation is an energy holding company headquartered in Evansville, Indiana. Vectren's wholly owned subsidiary, Vectren Utility Holdings, Inc., serves as the intermediate holding company for Vectren Energy Delivery of Ohio, Inc. (Vectren). Vectren will construct, own, operate, and maintain the natural gas pipeline.

(B) **ELECTRICAL CAPITAL COSTS**

Not Applicable

(C) **GAS CAPITAL COST**

Estimates of applicable intangible and capital costs for both the Preferred Route and Alternate Route are identified in Table 5-1.

TABLE 5-1- ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS

Preferred and Alternate Routes		
Description	Preferred (\$)	Alternate (\$)
Land & Land Rights	\$600,000	\$430,000
Structures and Improvements	0	0
Pipe	\$9,400,00	\$8,820,000
Valves, meters, boosters, regulators, tanks, and other equipment	0	0
Roads, trails or other access	0	0
TOTAL	\$10,000,000	\$9,250,000

4906-15-06 **Socioeconomic and Land Use Impact Analysis**

(A) **SOCIOECONOMIC CHARACTERISTICS**

A study of the general socioeconomic characteristics of the Project area was conducted as part of the application by UTI. The study is summarized below and was based on a review of local planning documents, maps, and communications with local planning and governmental agencies.

The Preferred and Alternate Routes are both located in Montgomery County Ohio and pass through Butler Township and the cities of Vandalia and Union. The socioeconomic characteristics of the affected areas are essentially the same for both Routes due to their close proximity. These characteristics are summarized below. Table 6-1 contains summary information regarding population estimates and projections for the county.

TABLE 6-1- STUDY AREA DEMOGRAPHICS

Characteristic	Montgomery County	City of Vandalia	City of Union
2010 Population	535,153	15,246	6,419
2012 Population <i>estimate</i>	534,325	15,204	6,409
Percent change 4/1/10 to 7/1/12	-0.2%	-0.3%	-0.3%
Households 2007-2011	233,546	6,499	2,562
Persons per Household	2.31	2.30	2.47
Median Home Value	\$118,600	\$138,700	\$107,800
Median Household Income	\$44,585	\$50,764	\$50,573

Data obtained from US Census Bureau, www.census.gov

Montgomery County has experienced a 4.28 percent decrease in population over the past decade and a 6.88 percent decrease since its highest population in 1990 of 573,809. The Ohio Development Services Agency Projections indicate that Montgomery County will continue to experience a decline in the population through 2040. For the period 2007-2011, the number of

households in Montgomery County totaled 223,546 with a median home value of \$118,600. Montgomery County has 2.31 persons per household with a median household income of \$44,585.

The City of Vandalia's population was estimated at 15,204 in 2012, which decreased 0.3 percent from the 2010 population of 15,246. For the period 2007-2011, the number of households in Vandalia totaled 6,499 with a median home value of \$138,700. The City of Vandalia has 2.30 persons per household with a median household income of \$50,764.

The City of Union's population was estimated at 6,409 in 2012, which decreased 0.3 percent from the 2010 population of 6,419. For the period 2007-2011, the number of households in Union totaled 2,562 with a median home value of \$107,800. The City of Union has 2.47 persons per household with a median household income of \$50,573.

The Preferred and Alternate Routes are sited as close to the boundaries of agricultural fields as not to interfere with their agricultural use of the land. Additionally, the Routes utilize the City of Dayton's land around the Dayton International Airport and as much as possible and they are located adjacent to existing roads. Based on the selection of these potential corridors, the socioeconomic impacts of the proposed natural gas pipeline are expected to be minimal.

(B) SITE/ROUTE ALTERNATIVES AND ADJACENT AREAS

A map at 1:12,000 scale, including the area 1,000 feet on either side of the proposed Routes, is presented in Figures 4-1 and 4-6.

(1) Proposed Approximate Centerline for Each Transmission Line Alternative

Preferred Route: The Preferred Route is one of the most-direct alignments identified in the Route Selection Study between the fixed point at the south of the airport along Corporate Center Drive and the fixed point at the northwest corner of the airport off Lightner Road. The

Preferred Route utilizes land owned by the City of Dayton and follows along the perimeter of agricultural fields as much as possible to reduce the impacts during construction, as well as when it is placed in service. The route is comprised of six segments (S-1, S-3, W-1, W-4, W-5 and N-2) as shown on the route selection map, attached as Figures 1 and 2 in the Route Selection Study attached as Appendix 3-1. The Preferred Route is 34,588 feet long (6.55 miles). The Preferred and Alternate Routes, as determined from the Route Selection Study, are shown on Figures 4-1 through 4-6. The Preferred Route ranked the best out on the nine routes evaluated in the study and is identified as Route D in Appendix 3-1.

Alternate Route: The Alternate Route is the shorter of the two routes and, like the Preferred, is one of the most-direct alignments between the fixed points discussed above. Like the Preferred Route, the Alternate Route utilizes land owned by the City of Dayton and follows along the perimeter of agricultural fields as much as possible to reduce impacts during construction, as well as when it is placed in service. The route is comprised of five segments (S-1, S-3, W-1, W-4 and W-6) as shown on the route selection map, Figures 1 and 2, in the Route Selection Study attached as Appendix 3-1. The Route is 31,789 feet long (6.02 miles). The Alternate route, as determined from the Route Selection Study, is shown with the Preferred Route on Figures 4-1 through 4-6. It had the second best ranking out of the nine routes evaluated and is identified as Route B in the Route Selection Study. Even though the Alternate Route is shorter in length and less expensive to construct, it is less desirable than the Preferred Route due to the increased high consequence areas, which was a major factor driving this relocation Project.

Description of the Common Overlap of Both Routes: The Preferred and Alternate Routes start on the south side of the airport off Corporate Center Drive near the Vandalia Range and Armory. They follow along the south side of Corporate Center Drive for approximately 520 feet

and cross the road heading northwest, running along the south side of the Airport Inn and Parking, for approximately 820 feet. They then head southwest, utilizing properties owned by the City of Dayton, for roughly 1,190 feet where they cross Peters Pike and a concrete lined ditch. They continue west for approximately 3,370 feet, where they cross under the Dayton International Airport Access Road. The routes then head south and turns back west, paralleling property lines and following alongside woodlots, for 4,205 feet and then cross Dog Leg Road. The routes continue heading west for approximately 1,320 feet and cross an Unnamed Tributary to Stillwater River. The routes continue west for another 2,026 feet, where they cross a second Unnamed Tributary to Stillwater River. After crossing the tributary they continue another 826 feet before turning north and crossing National Road. After crossing National Road they continue north through a small woodlot for approximately 820 feet, then jog slightly to the east to align with the western side of Dog Leg Road. After roughly 3,880 feet the routes cross Jackson Road and are directed back east to realign with the western side of Dog Leg Road. They follow along Dog Leg Road for approximately 5,995 feet where they cross the road to run along the east side for roughly 3,080 feet before intersecting with Old Springfield Road. This is the point where both routes change paths. The Preferred Route continues north crossing Old Springfield Road whereas the Alternate Route heads toward the east following along the south side of Old Springfield Road.

Description of the non-overlapped portion of the Preferred Route: After crossing Old Springfield Road, the Preferred Route continues north along the eastern edge of a wooded residential area, in an agricultural field, for approximately 1,790 feet, where it changes direction eastward for roughly 1,379 feet and crosses Mill Creek. After crossing Mill Creek, the Route continues following along the south side of a woodlot for approximately 2,525 feet. The route

then changes direction northward for roughly 3,300 feet and crosses Brush Creek, south of North County Line Road. The route turns east, following along the south side of North County Line Road, for approximately 1,725 feet, where it crosses Peters Pike. After crossing Peters Pike the Preferred Route continues for approximately another 3,470 feet until it connects back in with the existing Z-167 pipeline.

Description of the non-overlapped portion of the Alternate Route: The Alternate Route continues its route at Old Springfield Road by following along the south side of Old Springfield Road for approximately 3,220 feet until it crosses the road to follow along the north side for another 2,995 feet. It then crosses Peters Pike and turns north for approximately 990 feet where it turns east to follow along the south side of Macy Lane for approximately 3,500 feet until it connects back in with the existing Z-167 pipeline.

(2) Proposed Substation or Compression Station Locations

No new compressor stations are required as a result of this Project.

(3) General Land Use

Table 6-2 tabulates the land use factors of the Preferred and Alternate Routes. Figure 2 of the Route Selection Study, Appendix 3-1, shows that the south and east portions of the study area contains the highest density population with the city of Vandalia. Whereas, the western and northern portions of the Routes are primarily composed of agricultural fields.

TABLE 6-2- LAND USE FACTORS

	Preferred Route		Alternate Route	
Length (miles)	6.55		6.02	
Agricultural Fields (acres)	~55.4		~35.8	
Trees Impacted (acres)	~6.3		~7.9	
Stream Crossings	5		5	
Road Crossings	9		9	
	Features within 100 feet	Features within 1,000 feet	Features within 100 feet	Features within 1,000 feet
Residences	2	109	2	89
NRHP	0	0	0	0
OHI	0	4	0	5
OAI	0	1	0	1
Agricultural	20	-	14	-

~ Approximate

(a) Residential Use

The study areas, including Butler Township and the cities of Vandalia and Union in Montgomery County, have a few residential areas that vary in density. The primary concentration of residential areas is located in the City of Vandalia at the southeastern portion of the study area. Lower density residential areas include the City of Union along Jackson, Dog Leg, and Old Springfield roads, west of the airport. The 2012 Montgomery County Comprehensive Plan, Appendix 6-1, for Butler Township specifies future residential development in the area south of National Road. Additional residential development within the Project area is not likely due to the Dayton International Airport and future industrial and commercial expansions.

The vicinity of the Preferred and Alternate Routes is primarily rural in nature with 109 residences identified within 1,000 feet of the Preferred Route of which two were within 100 feet. Two residences were also identified within 100 feet of the Alternate Route, with 89 residences located within 1,000 feet.

The construction, operation and maintenance of the natural gas pipeline will not have a permanent effect on existing property parcels and associated residences, and no residential structures will be removed as part of this Project.

(b) Commercial Use

Commercial development within 1,000 feet of the Preferred and Alternate Route is most concentrated along the common portion of the routes along National Road.

(c) Industrial Use

Industrial land uses within 1,000 feet of the routes is scattered around the perimeter of the airport. The 2012 Montgomery County Comprehensive Plan, Appendix 6-1, specified that office and light industrial land uses are planned surrounding the Dayton International Airport north of National Road.

(d) Cultural

Data for the landmarks shown on Figures 4-4 through 4-6 were obtained from the Ohio Historic Preservation Office (OHPO). Based on a literature search of these sources, only one Ohio Archaeological Inventory (OAI) site was recorded within 1,000 feet of the shared segment of both Routes. No sites were identified within 100 feet of either Route. Additionally, no National Register of Historic Places (NRHP) sites were identified within the study area. Four Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Preferred Route and five within 1,000 feet of the Alternate Route. No OHI structures were identified within 100 feet of either Route.

More information on cultural impacts can be found in Section 4906-15-06(F)(1)(a) of this Application.

(e) Agricultural

As shown in Figures 4-4 through 4-6, agricultural areas dominate the landscape west of the airport and along both the Preferred and Alternate Routes. The Routes have been sited as close to the boundaries of these lands so as not to interfere with the agricultural use of the land.

Table 6-3 provides a brief description of the agricultural land use areas within 100 feet of the Preferred and Alternate Routes. Twenty parcels zoned for agriculture were identified within 100 feet of the Preferred Route, of which eight are city owned. Fourteen were identified within 100 feet of the Alternate Route, of which six are city owned. Seven agricultural districts were identified within 100 feet of the Preferred Route and five within 100 feet of the Alternate Route.

TABLE 6-3- AGRICULTURAL LAND USE PARCELS

PARCEL ID	OWNER	LOCATION	ROUTE	LEGAL
A01 00106 0015	City of Dayton	3029 W National	Both	
A01 00106 0017	HGHeritage LLC	3111 W National Rd	Both	Agricultural District 2/14/13
A01 00106 0018	HGHeritage LLC	N National Rd	Both	Agricultural District 2/14/13
A01 00204 0001	Oaks, Richard	3080 Montgomery County Line Rd	Preferred	Agricultural District 3/21/08
A01 00204 0002	Hanauer, John & Lucille	11683 Peters Pike	Preferred	Agricultural District 3/26/08
A01 00204 0013	City of Dayton	Old Springfield Rd	Both	
A01 00205 0006	Thies Richard & Debra	11744 Dog Leg Rd	Preferred	
A01 00205 0011	Thies Richard & Debra	Old Springfield Rd	Preferred	
A01 00206 0001	Thies Richard & Debra	Dog Leg Rd	Both	
A01 00206 0006	City of Dayton	Jackson Rd	Both	
A01 00206 0007	City of Dayton	2125 Jackson Rd	Both	
A01100105 0096	Waterwheel Inc	Jackson Rd	Both	
B02 01013 0001	City of Dayton	W National Rd	Both	
B02 01013 0004	HGHeritage LLC	9105 Peters Pike	Both	Agricultural District 5/5/03
B02 01013 0009	City of Vandalia	Peters Pike	Both	
B02 01015 0001	Hall, Clarence	2858 W National Rd	Both	Agricultural District 5/5/03
B02 01015 0019	Geiger, Charles Jr & Mary	9494 Dog Leg Rd	Both	
B02 01015 0021	HGHeritage LLC	Dog Leg Rd	Both	Agricultural District 5/5/03
R72717413 0008	City of Dayton	Lightner Rd	Preferred	
R72717413 0009	City of Dayton	11950 Peters Pike Rd	Preferred	

(f) Recreational Use

The Preferred and Alternate Routes both cross within 100 feet of the back edge of the National Road Driving Range. No other recreational areas are within 1,000 feet of either Route.

(g) Institutional Use

No institutional use structures or areas are located within 1,000 feet of either the Preferred or Alternate Routes.

(4) Transportation Corridors

Transportation corridors within 1,000 feet of the Preferred and Alternate Routes consist

of nine road crossings and no railway crossings. These crossings include:

- Corporate Center Drive
- Peters Pike (south of the airport)
- Dayton International Airport Access Road
- Dog Leg Road (south of National Rd)
- National Road (U.S. Route 40)
- Jackson Road
- Dog Leg Road (south of Old Springfield Road)
- Old Springfield Road
- Peters Pike (north of the airport)

(5) Existing Corridors

There are no existing utility corridors within 1,000 feet of either the Preferred or Alternate Routes.

(6) Noise-Sensitive Areas

Noise sensitive areas located within the 1,000-foot corridor of both the Preferred and Alternate Routes consist entirely of residences. A total of 109 residences were observed within 1,000 feet of the Preferred Routes and 89 within 1,000 feet of the Alternate Route. Construction noise will be limited to excavation and pipeline installation equipment. Construction activities will be limited primarily to daytime hours and equipment will be outfitted with standard mufflers. However, some afterhours work may occur to accommodate crossing the entrance to the Vandalia Shooting Range as to not impede customer access during their hours of operation. No noise related issues in the operation of the pipeline are anticipated. A more detailed assessment of noise impact during construction and operation is provided in Subpart G of this section.

(7) Agricultural Land

Agricultural land dominates the land use type along both the Preferred and Alternate Routes. Most of the agricultural land within the study area is used for row crop propagation such

as soybeans, corn and oats. However, a few fields were being utilized for hay production. Construction of the natural gas pipeline will not have any long-term impact on row crop production. Fair compensation for crop loss during the installation will be determined between Vectren and the landowner at the time of the ROW negotiations. Care will be taken to segregate soils during trench excavation and to backfill around the installed pipeline to the original condition.

Table 6-3 lists the parcels that are zoned for agriculture within 100 feet of the routes. Twenty were identified within 100 feet of the Preferred Route, six of which are agricultural districts. Fourteen were identified within 100 feet of the Alternate Route, four of which were classified as agricultural districts. Construction of the natural gas pipeline will not have any long-term impact on row crop production. Where agricultural land is crossed by the pipeline, care will be taken to segregate the soils during trench excavation and to backfill around the installed pipeline to the original conditions.

The Ohio Farm Service Agency was contacted requesting information on any properties along the routes that participate in the Conservation Reserve Program. Correspondence with this agency has been included in Appendix 6-2. Results will be forwarded to the staff at the OPSB once received. Further discussion of agricultural district land can be found in Section 4906-15-06(B)(3)(e) of this Application.

(C) IMPACT ON LAND USE

Land use in the immediately surrounding area of both the Preferred and Alternate Routes is predominantly agricultural with some residential, industrial and commercial areas. Approximately 55.4 acres of agricultural lands will be temporarily impacted with the installation of the pipeline on the Preferred Route and approximately 35.8 acres on the Alternate Route.

During the construction of the pipeline, there is the potential to damage field drain tiles and cause soil compaction from construction vehicles and equipment. Vectren, and any pipeline contractor it may hire for this work, will have extensive experience in gas pipeline installation and will restore any damaged drainage tiles to their original or better condition, will work to reduce compaction impacts during construction, and ensure that the pipeline is installed well below the plow zone. Therefore, it is unlikely that the agricultural use of the properties crossed will be changed. Impacts to those agricultural properties from construction will be minimal and may include some soil disturbance and compaction within the root zone that will be restored by the next plowing. Common techniques used to address field tile repairs and soil compaction are covered in the Environmental Construction Standards for the Project located in Appendix 4-1.

Construction in the residential, commercial, and industrial areas will be predominately limited to the right-of-way. Excavated and disturbed areas from the construction of the pipeline will be restored to pre-existing conditions once the installation is complete. However, construction will require traffic controls and temporary disruptions to adjacent land uses.

It is estimated that approximately 6.3 acres of trees will need to be removed for the installation of the pipeline on the Preferred Route and 7.9 acres on the Alternate Route. No managed wood lots, orchards or nurseries are located within the construction limits of either route. Construction ROW will be cleared using methods described in the Environmental Construction Standards for the Project located in Appendix 4-1.

No temporary or permanent access roads will be required for the construction or maintenance of the proposed natural gas pipeline. Access will be from existing roadways and acquired right-of-ways and easements. Pipe laydown areas will be located within the cleared ROW and a laydown yard that will be specified on the Project's SWP3. By utilizing HDD

technologies, no sensitive land uses will be impacted by the construction. No industrial or commercial facilities are likely to be impacted. No structures will be removed for construction of the Project and once in place, the pipeline will have no aesthetic impact beyond pipeline markers.

(1) Residential Structures

Preferred Route: Based on available data, 109 residences have been identified within 1,000 feet of the Preferred Route, two of which are located within 100 feet. Table 6-4 has the parcel numbers, addresses, and route information for these residential buildings.

Alternate Route: Based on available data, 89 residences have been identified within 1,000 feet of the Preferred Route, two of which are located within 100 feet. Table 6-4 has the parcel numbers, addresses, and route information for these residential buildings.

TABLE 6-4- RESIDENTIAL STRUCTURES WITHIN 100 FEET OF THE PREFERRED AND ALTERNATE ROUTES

PARCEL NUMBER	ADDRESS	ROUTE
A01 00106 0017	3111 W National Road	Preferred and Alternate
A01 00205 0032	2579 Old Springfield Road	Preferred
A01 00204 0014	3127 Old Springfield Road	Alternate

(2) Construction

Construction of the proposed routes would take place entirely within acquired ROW and easements. Where possible, the ROW will be accessed from public roads that cross the ROW, then by using the ROW to reach the necessary area for construction. No permanent roads are planned. Pipe laydown areas will be located within the cleared ROW and a laydown yard on the City of Dayton's property off Dog Leg Road. Access points and laydown areas will be indicated on the SWP3 when finalized. No residences or businesses will be significantly impacted by the proposed pipeline construction.

Construction activities will likely have a short-term temporary impact to the agricultural fields where the pipeline is routed. Vectren will provide compensation to the landowner or tenant for any losses of crop value or similar short-term impacts that may occur during construction. Damaged field drainage tiles will be restored to their original condition or better. Timber removed for the construction of the pipeline will either be stacked on the property at the direction of the owner or removed from the site and sold for mulch recycling or properly disposed of.

(3) Operation and Maintenance

Operation of the pipeline is not anticipated to impact any land use in the area. Maintenance of the pipeline will include periodic inspections that will be conducted from access points off the roadway and by using smart pig inspection devices. Additionally, a fifty-foot clear ROW will be maintained by Vectren. ROW maintenance is also discussed in Sections 4906-15-07(C)(3), 4906-15-07(E)(1), and Appendix 4-1.

(4) Mitigation Procedures

No land use changes are anticipated as a result of the construction of the pipeline. In most cases land use impacts will be temporary in nature, occurring as the pipeline is being installed.

The potential for project related erosion and sedimentation will be mitigated with the development of a SWP3 for the Project which will include the use of silt fence, straw bales, or other appropriate best management erosion and sedimentation control techniques as required. After construction and final grading are complete, disturbed non-agricultural surface areas will be re-vegetated as appropriate. Any damage resulting from Project construction shall be repaired

to original conditions, where deemed necessary by Vectren in coordination with local landowners.

**(D) PUBLIC INTERACTION INFORMATION FOR EACH SITE/ROUTE
ALTERNATIVES**

(1) List of Counties, Townships, Villages and Cities

A map has been provided as Figure 6-1 that presents the Counties, Townships, and Cities within 1,000 feet of the proposed routes. The areas within 1,000 feet of the Preferred and Alternate Routes are located in Montgomery and Miami Counties and include; Butler and Monroe Townships and the Cities of Dayton, Union and Vandalia.

(2) List of Public Officials

Vectren and UTI provided state, county and township officials and public agencies with a letter summarizing the proposed Project including a map of the Project area. The letter was intended to provide the agencies and officials with the opportunity to provide preliminary comments and suggest preferences regarding possible routes. A copy of this letter including a listing of the addresses of these officials is included as Appendix 6-2.

(3) Public Information Programs

A public informational meeting was held on August 29, 2013 at the Vandalia Recreation Center. Attendance at the meeting primarily included property owners who lived on or near the Preferred and Alternate pipeline routes. Comment sheets were available beside the sign-in sheets at the table at the entrance to the meeting; however, no comments were left. In addition to members of the public, officials from the Dayton International Airport and Cities of Vandalia and Union attended. The meeting sign-in sheet has been provided in Appendix 6-3.

Meetings with the Dayton International Airport officials have brought about a concern that future planned expansions with the Dayton International Airport could cause a small portion of the relocated pipeline to traverse under a planned expansion of runway 6R-24L. As a result it was determined that a small portion of the route will shift slightly west to avoid this future expansion as much as possible. The westward shift is located in an agricultural parcel owned by the City of Dayton and is shown on Figures 4-2, 4-5 and 7-2 at the southwest corner of the airport west of Dog Leg Road. The shift increases the overall length of the route by roughly 340 feet (0.06 mile) and increases the temporary impacts to the agricultural acreage calculated by 0.6 acres. It has no impacts on the number of houses, structures, or cultural resource sites identified along the routes. Additional ecological surveys will be conducted in this area, as well as the potential laydown and pipe pull-back areas along the routes. These reports will be forwarded to the OPSB staff once completed.

(4) Liability Compensation for Damages

Vectren has public liability and property damage insurance and will provide liability compensation for damages, if such should occur, as a result of the construction or operation of the proposed pipeline.

(5) Public Interest

The proposed relocation of the twelve-inch pipeline around the western side of the Dayton International Airport would reduce the risks associated with the pipeline and the airport, while enabling better technologies to assess the integrity of the pipeline system that would provide data to help improve the overall safety of the pipeline. A more detailed explanation of facility need is provided in Section 4906-15-02 of this Application.

(6) Tax Revenues

Portions of both the Proposed Route and the Alternate Route are located in three different taxing jurisdictions. At this point, Vectren cannot calculate with certainty the amount of tax because it has not yet measured the pipeline that will be constructed in each jurisdiction. However, Vectren can calculate a range of tax that will be due for each of the Preferred and Alternate Routes. For the first year, the tangible personal property estimate for the Preferred Route is between \$715,859 and \$1,003,476; for the Alternate Route it is between \$660,270 and \$925,533. Though over time, it is likely that the personal property value would decrease and the tax rates may vary, most likely upward. For the first year, the real property tax for the Preferred Route is estimated to be between \$14,977 and \$20,273 while for the Alternate Route it is estimated to be between \$10,734 and \$14,529. Over time, it is likely that there will be a small increase in both rates and values.

(7) Regional Development

The 2012 Montgomery County Comprehensive Plan and the Dayton International Airport Master Plan were reviewed for Project compatibility. No incompatibilities between the Project and these published planning documents were identified. The proposed pipeline will help ensure the long-term vitality of the natural gas system and safety in the Project area.

The Project is likely to have a small but positive impact on regional development in Montgomery County through the availability of natural gas to the planned small industrial facilities around the airport. No negative impacts are foreseen for this Project.

(E) HEALTH, SAFETY AND AESTHETIC INFORMATION**(1) Compliance with Safety Regulations**

The construction and operation of the proposed natural gas pipeline will comply with Title 49, Part 191, “Annual Reports, Incident Reports, and Safety Related Condition Reports,” and Part 192, “Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards,” and Part 199, “Drug and Alcohol Testing,” OAC Rule 4901:1-16, and will meet all applicable safety standards established by Occupational Safety and Health Administration.

State-of-the-art construction materials and techniques, pipeline corrosion protection, x-rayed welding, and other safety features will be designed into the project pipeline. For example, the outside of each pipe section is coated with a layer that prevents corrosion. Before each pipe section is installed, this coating will be carefully inspected in the field to make sure it has no flaws or defects. Though not required by code, all welded joints on the proposed pipeline will be 100% x-rayed to make sure they meet the strict industry standards.

All welds will be sealed with a moisture-proof material to prevent corrosion. When construction is complete, the inside of the pipeline will be cleaned with a device that removes dust, scale, water and other debris. Finally, a deformation tool will be run through the pipeline and it will be pressure tested with air and/or water to make sure there are no leaks. When the pipeline has passed all of these safety checks it will be ready to receive natural gas. Once in operation, the pipeline will be inspected regularly for leaks, and the ground will be monitored for potential soil erosion.

(2) Electric and Magnetic Field Production

Not Applicable

(3) Aesthetic Impact**(a) Views of the Facility**

After the natural gas pipeline has been installed, post-construction land reclamation activities completed, and re-vegetation started, public views of the pipeline from public roads, residential areas, and other sensitive vantage points will be fairly benign with respect to the surrounding environment. Only pipeline markers and corrosion test stations will be visible. These structures are expected to be less than three feet tall and should be similar to other poles and signs that are already present in the urban setting of the Project.

(b) Structure Design Features

See (a) above.

(c) Facility Effects on site and Surrounding Area

Since the proposed natural gas pipeline installation is underground, this Project is expected to have minimal effects on the surrounding area.

(d) Visual Impact Minimization

Since the proposed natural gas pipeline will be underground, special measures are not deemed necessary to minimize visual impact.

(4) Estimate of Radio and Television Interference

Not Applicable

(F) CULTURAL AND ARCHAEOLOGICAL SITES**(1) Cultural and Archaeological Sites**

UTI performed a review of maps, files and electronic databases from OHPO including information on NRHP, OHI and OAI. The cultural sites identified during this review are shown on Figures 4-4 through 4-6. Further discussion of previously recorded archaeological sites

within 1,000 feet of the Preferred and Alternate Routes can be found above in Section 4906-15-06(B)(3)(d). UTI submitted a Section 106 Review Form with the OHPO and, in its letter dated August 27, 2013, the OHPO recommended that an archaeological survey be conducted along the route selected for the Project. This letter has been included with this Application as Appendix 6-

2. Results of this study will be forwarded to the OPSB and OHPO when completed.

(2) Construction Impacts on Cultural Resources

A scope for Phase I cultural resources investigation will be prepared based on existing data and OHPO input, and submitted to OHPO for approval. A Phase I survey is required and will be conducted along the Preferred Route (or Alternate Route, as necessary) to assess possible construction impact on cultural resources and a report will be forwarded to OPSB and OHPO when completed.

(3) Operation and Maintenance Impacts on Cultural Resources

Pipeline maintenance operations will be limited to infrequent inspection and therefore no impacts on cultural resources are anticipated during operation and maintenance.

(4) Mitigation Procedures

A Phase I Cultural Resources survey will be completed along sections of the Preferred (or Alternate Route, as necessary) where UTI and OHPO have deemed such investigation necessary before construction commences. Additional avoidance and mitigation measures will be determined after any required archaeological survey work has been conducted.

(G) NOISE EMISSIONS

(1) Construction

(a) Dynamiting or Blasting Activities

None anticipated

(b) Operation of Earth Moving and Excavating Equipment

During the construction phase of the natural gas pipeline, a temporary increase in noise will result from the equipment used for clearing of any woody brush, excavation, pipeline installation and backfilling.

Standard construction techniques will be used and equipment operation will be confined to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Some instances may require working later to complete critical tasks (e.g. tie-ins and crossings) and to accommodate daytime business access for the Vandalia Armory and Range off Corporate Center Drive. These instances are expected to be few and irregular and will be monitored and mediated as necessary. Vectren will notify property owners or tenants of the upcoming construction activities for the pipeline, in accordance with Ohio Administrative Code Rule 4906-5-08(C)(3), including the potential for the after hour activities.

Noise related procedures will be in compliance with applicable OSHA standards. As a result, the noise impact on nearby sensitive areas will be controlled to the greatest extent practicable and is anticipated to be minimal. Construction at any location near a given residential, commercial and other noise sensitive area is expected to require much less than a month duration. The total duration of construction of the proposed natural gas pipeline is estimated at three months. It is anticipated that noise sensitive areas will not be significantly affected by the construction of the pipeline along either the Preferred or Alternate Route.

(c) Driving of Piles

None anticipated.

(d) Erection of Structures

None anticipated

(e) Truck Traffic

Beyond construction equipment access and equipment/material delivery, no other additional truck traffic is anticipated for the Project.

(f) Installation of Equipment

The pipeline will be installed using standard pipeline installation techniques, equipment, and construction personnel. Typical installation noise levels are anticipated.

(2) Operation and Maintenance

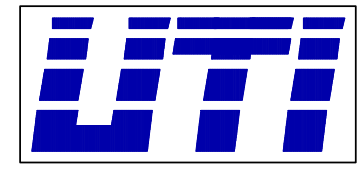
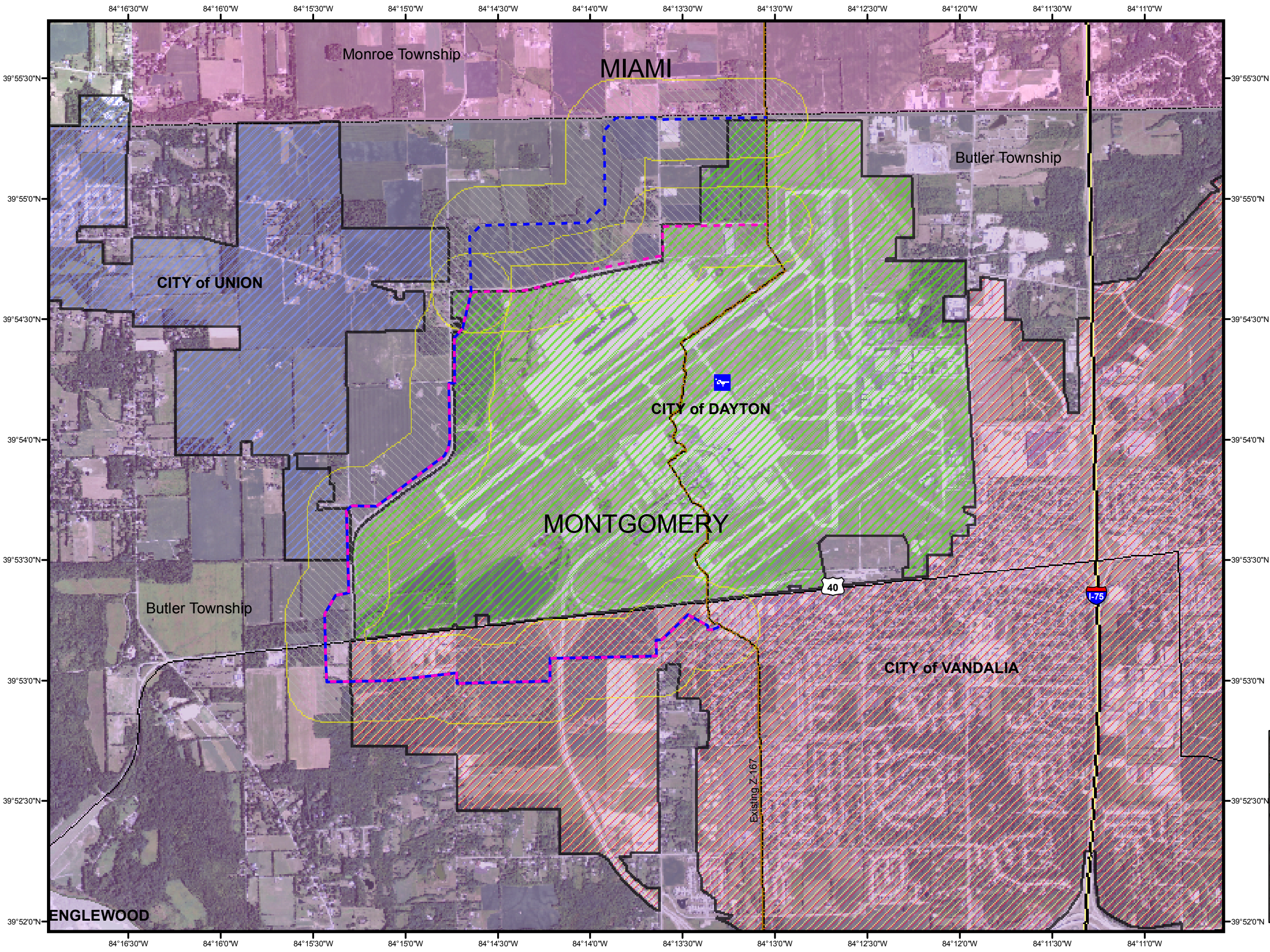
Operation of the proposed natural gas pipeline will not produce any audible noise. Infrequent maintenance noise will include vehicles related to ROW clearing and integrity checks.

(3) Mitigation Procedures

Mitigation procedures will include properly maintained construction equipment with mufflers, construction predominately during daylight hours, and noise related procedures done according to OSHA requirements. No additional noise mitigation is expected as noise impact will be limited to construction equipment and will be temporary in nature.

(H) OTHER SIGNIFICANT ISSUES

There are no other significant socioeconomic or land use impact issues anticipated beyond those addressed elsewhere in this application.

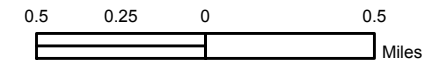


Utility Technologies International
4700 Homer Ohio Lane
Groveport, OH 43125
(614) 482-8080



Z-167 Proposed Route Relocation

County, Township, and City Map
Figure 6-1



1:36,000

Legend

- Preferred Route
- Alternate Route
- Common Shared Segment
- 1000' Corridor
- Existing Z167 Line

City

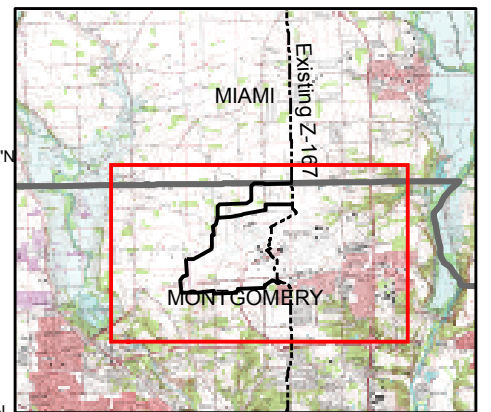
- CITY of DAYTON
- CITY of UNION
- CITY of VANDALIA

Township

- BUTLER
- MONROE
- County Line



Site Reference Map



4906-15-07 **Social and Ecological Data**

This section of the Application provides a summary of the studies that have been conducted to document potential ecological impacts from the proposed Z-167 Relocation Project around the Dayton International Airport. Information is provided for the Preferred and Alternate Routes and is based on published data within 1,000 feet of the routes and field evaluation studies within 100 feet of the proposed Preferred and Alternate Routes.

Additional ecological information will be supplied at a later date for the slight adjustment in the pipeline route at the southwest corner of the airport discussed in Section 4906-15-06(D)(3), as well as the laydown and pull-back areas for the pipe. This adjustment increases the overall route by 340 feet and is not anticipated to change any of the results summarized in the following sections. The adjustment is shown in on Figures 4-2, 4-5 as well as Figures 7-2.

(A) SUMMARY OF ECOLOGICAL

(B) IMPACT STUDIES

As part of the preparation of this Application, an ecological survey was conducted for the proposed Preferred and Alternate Routes including a field reconnaissance to document the occurrence of the endemic vegetation and wildlife within 100 feet of the proposed pipeline centerline. The field reconnaissance was conducted by EMH&T on July 24 and 25, 2013 and included a pedestrian survey of the Routes. The Preferred and Alternate Routes are discussed fully in Section 4906-15-04(A)(1)(a) of this Application and are shown in Figures 4-1 through 4-6.

Current ecological information was supplemented by the review of available aerial imagery, United States Geologic Survey (USGS) 7.5-minute topographic maps, National Wetlands Inventory (NWI) and United States Department of Agriculture (USDA) Natural

Resource Conservation Service (NRCS) soil survey data for Montgomery and Miami Counties using ArcGIS. Additional information regarding endemic vegetation and wildlife was obtained from the ODNR-Division of Natural Areas and Preserves and the US Fish and Wildlife Service (USFWS) through literature reviews. The results of this survey are presented in the wetland delineation and stream assessment, Appendix 7-1 and the Threatened and Endangered Species Habitat Assessment Memo, Appendix 7-2. The ecological findings are also discussed under the appropriate headings throughout the remainder of this Section.

(C) ECOLOGICAL FEATURES

Maps at a scale of 1:12,000 illustrating the proposed Preferred and Alternate Routes, including 1,000 feet on each side of the proposed pipeline, are presented in Figures 7-1 through 7-3. Features within 1,000 feet were derived from published data supplemented, where possible, with the pedestrian survey. The focus of the pedestrian survey was the 100 feet corridor on either side of the Project centerline.

(1) Transmission Line Alignments

The proposed route alignments are presented for the Preferred and Alternate Routes in Figures 7-1 through 7-3 and are discussed in Section 4906-15-04(A)(1)(a) of this Application.

(2) Substation or Compressor Station Locations

No new compressor stations are planned for this Project.

(3) Undeveloped Areas**(a) Streams and Drainage Channels**

The surface water features along the proposed Preferred and Alternate Routes, including perennial streams, intermittent streams, and ephemeral ditches, are discussed below, and are depicted on Figures 7-1 through 7-3. Data forms for the stream crossings along the Preferred and Alternate Routes are included in the Wetland Delineation and Stream Assessment Report in Appendix 7-1. Table 7-1 is a summary of the Headwater Habitat Evaluation Index (HHEI) and Qualitative Habitat Evaluation Index (QHEI) data forms on the streams assessed. All of the tributaries along the length of the Preferred and Alternate Routes drain to the Stillwater River. Both Routes cross two perennial, one intermittent, and two ephemeral streams.

TABLE 7-1- HHEI AND QHEI STREAM HABITAT ASSESSMENT RESULTS

Stream Number* and Route	Substrate	Riparian Habitat	Riparian Width	OEPA Score and Classification	Proposed Crossing Method
1 Preferred	Silt/Muck	Wooded	<5m	HHEI 26 Class I PHWH	Bore
2 Preferred	Cobble, Gravel, Sand, and Silt	Wooded	<5m	QHEI 43 Warm Water Habitat	Bore
2 Alternate	Gravel, Sand, and Silt	Wooded	5-10m	QHEI 34 Modified Warm Water Habitat	Bore
3 Both	Cobble, Gravel, and Sand	Wooded	<5m and 5-10m	HHEI 67 Class II PHWH	Bore
4 Both	Sand and Silt	Shrub and Grass	none	HHEI 17 Class II PHWH	Trench or Bore
5 Both	Artificial	Row Crop	none	HHEI 40 Modified Class II PHWH	Trench or Bore

* Accompanying HHEI & QHEI stream crossing forms are located in Appendix 7-1. Geographic locations of stream crossings are shown on Exhibit 6A - 6E

(b) Lakes, Ponds, and Reservoirs

There are no lakes, ponds or reservoirs within 100 feet of the Preferred or Alternate Routes. No water bodies mapped in the 1,000-foot corridors are expected to be impacted by the proposed Routes. Best Management Practices (BMP) including silt fencing and hay bales will be used during construction to minimize runoff from the Project area.

(c) Marshes, Swamps, and Other Wetlands

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

To identify whether wetlands exist along the Preferred and Alternate Routes, wetland criteria, as established by the United States Army Corps of Engineers (USACE) Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, and Manual for Identifying and Delineation of Jurisdictional Wetlands (1987), were evaluated by conducting a desktop study and field wetland delineation for the Project. USFWS, NWI, OWI, and USDA/NRCS data was reviewed for areas within 1,000 feet of the Preferred and Alternate Routes. The field wetland delineation was conducted within 100 feet of the centerline of the proposed Routes on July 24th and 25th 2013.

There were two potentially USACE jurisdictional wetlands that were identified by EMH&T that were within 100 feet of the Preferred and Alternate Routes and are discussed in more detail in Section 4906-15-07(D) below. Wetlands mapped within the 1,000-foot corridors are not expected to be permanently impacted by the proposed routes. BMP including silt-fencing and hay bales will be used during construction to minimize runoff from the Project area.

(d) Woody and Herbaceous Vegetation Land

Woody and herbaceous lands are limited within 1,000 feet of the Preferred and Alternate Routes due to the agricultural nature of the Project area. Based off a review of the available aerial imagery for the Project study area, approximately 10% of the Preferred Route and 14% of the Alternate Route are located within wooded areas and 11% of the Preferred Route and 24% of

the Alternate Route are within herbaceous (non-agricultural) areas with the balance being agricultural lands.

Woodland Types: The land identified along the routes is primarily used for crop row agricultural purposes. There are a couple woodlots within the Project area as well as a few wooded fence rows, between the agricultural fields, which are relatively small in nature. Seven woodlots were surveyed with by EMH&T that were within 100 feet of the Routes. The pipeline route intersects with two of these woodlots, woodlot #3 and #5 in the Threatened and Endangered Species Memo attached to this Application in Appendix 7-2.

Woodlot #3 is located north of West National Road, west of Dog Leg Road. The canopy is dominated by silver maple (*Acer saccharum*) and black walnut (*Juglans nigra*) with black locust (*Robinia pseudoacacia*) also moderately present. The understory is dominated by honeysuckle (*Lonicera morrowii*) and multiflora rose (*Rosa multiflora*) with poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*) and spring avens (*Geum vernum*) present as ground cover.

Woodlot #5 is located south of West National Road at the back edge of the National Road Driving Range. The canopy is dominated with black locust (*Robinia pseudoacacia*). Black walnut (*Juglans nigra*) and slippery elm (*Ulmus rubra*) were also present in moderate amounts. The understory was covered heavily with honeysuckle (*Lonicera morrowii*). An Unnamed Tributary to Stillwater River runs through the western edge of this woodlot.

(e) Locations of Threatened or Endangered Species

The Ohio Department of Natural Resources Division of Natural Areas and Preserves and the Division of Wildlife, along with the USFWS were contacted regarding the potential for occurrence of rare, threatened, and endangered species within the Project study area. In a letter

dated August 12, 2013, ODNR stated that six species are listed as a state threatened or endangered species, or are of high interest, and are located within the Project area. In a letter dated July 18, 2013 the USFWS stated that there are five federally protected species that are within the Project area. Both of these letters have been included with the Application with the Threatened and Endangered Species Habitat Memo located in Appendix 7-2. Additionally, responses from the USFWS and ODNR regarding using open trench methods to cross several delineated surface waters have been included in Appendix 6-2. Table 7-2 provides information regarding agency comments and proposed impacts to this species and Vectren's plans to address protected species.

Birds: The bald eagle (*Haliaeetus leucocephalus*) was identified by the USFWS as being in the range of the proposed Project and although this species has been removed from the federal list of threatened and endangered species, it is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. However, due to the Project type, location, and onsite habitat it was unlikely that this species would be within the Project area and no impact to the species is expected.

Additionally, ODNR identified the upland sandpiper (*Bartramia longicauda*) as being in range of the Project and is listed as a state endangered bird. The upland sandpiper utilizes dry grasslands including native grasslands, seeded grasslands, grazed and un-grazed pasture, hayfields, and grasslands established through the Conservation Reserve Program. Therefore, ODNR stated that construction activities must be avoided in these areas during their nesting period of April 15 through July 31. Ecological surveys conducted in July indicated that impacts to this species are unlikely due to the lack of suitable habitat. However, Vectren will provide threatened and endangered species awareness training for personnel working on the pipeline and

work activities will cease in the immediate vicinity in the event an upland sandpiper is observed within the construction ROW during the nesting period. Vectren will also notify the ODNR and OPSB within 24-hours of an encounter.

Mammals: One mammal species, the Indiana bat (*Myotis sodalist*), was identified by ODNR and USFWS as being in the range of the proposed Project. The Indiana bat is considered by both the USFWS and ODNR to be an endangered species. The Indiana bat habitat consists of suitable 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. Both agencies stated that if suitable habitat must be removed for the construction of the pipeline cutting must occur between October 1 and March 31. The clearing of any potential Indiana bat roost trees will occur between October 1 and March 31, when the Indiana bat is in winter hibernacula. Vectren will consult with the USFWS and ODNR should circumstances require working in areas where, or during time when impacts to listed species might occur.

Mussels: Two mussel species of concern were identified by the ODNR and USFWS as being located within the range of the Project, the rayed bean (*Villosa fabalis*), and the snuffbox (*Epioblasma tiquetra*). The rayed beans generally lives in smaller headwater creeks, but are sometimes found in large rivers and wave-washed areas of glacial lakes. They prefer gravel or sand substrates, and are often found in and around roots of aquatic vegetation. The snuffbox is usually found in small to medium-sized creeks, inhabiting areas with a swift current, although it is also found in Lake Erie and some larger rivers. Due to the Project location and use of directional drilling methods to cross perennial streams, no impacts are expected for these species.

Reptilian Species: One reptilian species was identified by the ODNR and USFWS as being located within the range of the Project, the eastern massasauga (*Sistrurus catenatus*). The

eastern massasauga is a small, docile rattlesnake that is currently a State endangered and a Federal candidate species. The species has been listed by the State of Ohio as endangered since 1996. Its habitat includes bogs, fens, wet prairies, delineated wetlands and other moist grasslands. However, USFWS did not believe significant impacts should be expected. Vectren will train all construction personnel, stop construction if species are identified and coordinate with the ODNR, USFWS, and staff at the OPSB.

Amphibian Species: The eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) was identified by ODNR as being in the range of the Project and is currently listed as a State endangered species and a Federal species of concern. The hellbender is a long-lived, entirely aquatic salamander that inhabits perennial streams with large flat rocks. In-water work can reduce availability of large cover rocks and can destroy hellbender nests and/or kill the adults and juveniles. Increased sediment to the stream can also smother large cover rocks and gravel/cobble substrate making them unsuitable for refuge and nesting. Additionally, altered flow regimes can also adversely affect their habitat. Due to the Project location and use of HDD methods to cross perennial streams, no impacts are expected for these species.

Fish: No specified fish species of concern were identified in any agency correspondence.

Plant Species: No specific plant species of concern were identified in any agency correspondence.

TABLE 7-2- FEDERAL AND STATE OF OHIO PROTECTED SPECIES REPORTED IN THE VICINITY OF THE Z-167 PIPELINE RELOCATION PROJECT

Species Common Name (Scientific Name)	Federal Protection (State Protection)	Summary of USFWS and ODNR Comments	Vectren Comments and Plans
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Protected	USFWS: Due to the project type, location, and onsite habitat, this species would not be expected within the project area, and no impact to this species is expected.	1. USFWS commented in their correspondence that they believe the project will not impact the species
Upland Sandpiper (<i>Bartramia</i>)	(Endangered)	ODNR: Nesting upland sandpipers utilize dry grasslands,	1. EMH&T's report stated that there was limited to no

Species Common Name (<i>Scientific Name</i>)	Federal Protection (State Protection)	Summary of USFWS and ODNR Comments	Vectren Comments and Plans
<i>longicauda</i>)		grazed and un-grazed pasture, hayfields and grasslands established through the Conservation Reserve Program. Construction must be avoided in these habitats between 4/15 and 7/31.	habitat favorable for the species. And due to the lack of suitable habitat, impacts to the species are unlikely. 2. Provide T&E training to construction personnel 3. Stop construction activities if the species is identified within the Project limits 4. Coordinate with ODNR/OPSB
Indiana Bat (<i>Myotis sodalist</i>)	Endangered (Endangered)	ODNR & USFWS: Recommend saving any trees exhibiting any characteristics, as well as surrounding trees, for habitat for the Indiana Bat. Tree cutting should only occur between 10/1 and 3/31. Net surveys are required if suitable trees must be cut between 6/15 and 7/31.	1. Project will cross small sections of forested areas 2. Suitable habitat is within 100' of the project centerline 3. Habitat trees will be avoided when possible 4. Remove trees between 10/1 and 3/31 5. Coordinate with ODNR/OPSB if need to be removed during summer 6. Conduct net surveys as required
Rayed Bean (<i>Villosa fabalis</i>)	Endangered (Endangered)	ODNR & USFWS: Due to the use of HDD to cross perennial streams along the Route, no impacts are expected for these species. Impacts are unlikely on the open trench crossings of streams 4 & 5. ODNR: Contact John Navarro, ODNR-DOW, (614) 265-6346 if mussels are encountered during the restoration.	1. Propose to HDD perennial stream crossings 2. No in-water work is proposed 3. HDD should minimize potential impacts to water quality and stream bed habitat utilized by the species 4. Mussel survey will not be conducted
Snuffbox (<i>Epioblasma triquetra</i>)	Endangered (Endangered)	ODNR & USFWS: Due to the use of HDD to cross perennial streams along the Route, no impacts are expected for these species. Impacts are unlikely on the open trench crossings of streams 4 & 5. ODNR: Contact John Navarro, ODNR-DOW, (614) 265-6346 if mussels are encountered during the restoration.	1. Propose to HDD perennial stream crossings 2. No in-water work is proposed 3. HDD should minimize potential impacts to water quality and stream bed habitat utilized by the species 4. Mussel survey will not be conducted
Eastern Massasauga (<i>Sistrurus catenatus</i>)	Candidate (Endangered)	USFWS: Due to limited onsite habitat, the project location, and the avoidance of impacts to wetlands; no significant impacts are expected for this species.	1. USFWS commented in their correspondence that they believe the project will not significantly impact the species

Species Common Name (<i>Scientific Name</i>)	Federal Protection (State Protection)	Summary of USFWS and ODNR Comments	Vectren Comments and Plans
		<p>USFWS/ODNR: Impacts are unlikely using open trench methods on wetland #2.</p> <p>ODNR: Contact Frank Lopez, ODNR-DOW, (419) 625-8062, in the event an eastern massasauga is encountered during construction.</p>	<p>2. Habitat is highly fragmented for species and is unlikely to be encountered</p> <p>3. Provide T&E training for all construction personnel</p> <p>4. Stop construction activities if the species is identified within the Project limits</p> <p>5. Coordinate with ODNR/OPSB</p>
Eastern Hellbender (<i>Cryptobranchus alleganiensis alleganiensis</i>)	Concern (Endangered)	<p>ODNR: Due to the location and the characteristics of the streams being crossed, this project is not likely to impact this species. Impacts are unlikely on the open trench crossings of streams 4 & 5.</p>	<p>1. Propose to HDD perennial stream crossings</p> <p>2. No in-water work is proposed</p> <p>3. HDD should minimize potential impacts to water quality and stream bed habitat utilized by the species</p>

(4) Soil Associations in the Corridor

The soil associations that are within 1,000 feet of the Preferred and Alternate Routes are shown on Figures 7-1 through 7-3. Major associates include the Miamian-Celina association, Brookston-Crosby association, Milton-Ritchey-Millsdale association in Montgomery County (U.S. Department of Agriculture, 2004) and the Crosby-Miamian-Brookston association in Miami County (U.S. Department of Agriculture, 2004). These associates are briefly discussed in the following sections:

Miamian-Celina Association: These soils are characterized by nearly level to rolling areas on glacial till plains and hilly moraines that are dissected by streams. This association occupies about fifty-one percent of Montgomery County. The Miamian and Celina soils are moderately deep to calcareous till. The Miamian soils are well drained where the Celina soils are moderately well drained. The Miamian soils typically occupy knolls and are rolling to moderately steep adjacent to drainage-ways where the Celina soils are gently sloping. The main

concern with farm management is runoff and erosion control. They present moderately slow permeability and slope limitations to many other nonfarm uses.

Brookston-Crosby Association: This association is characterized with deep soils that are mainly nearly level to gently sloping. They are very poorly drained and somewhat poorly drained soils that have moderately fine textured and fine textured subsoil formed in the loess and glacial till. This association occurs in one large, nearly level to undulating area in the northwestern corner of Montgomery County and in medium-sized to small areas scattered throughout the rest of the County. The association occupies about eighteen percent of Montgomery County. The Brookston soils are dark colored, very poorly drained, and typically nearly level to depressional. Whereas the Crosby soils are somewhat poorly drained and occur on gently undulating, low knolls. Crosby soils are lighter colored than the Brookston soils and are nearly level to gently sloping. The dominant soils in this association are seasonally wet. Farming is delayed in the spring unless the soils are artificially drained by tile. Moderately slow permeability and a seasonal high water table are soil limitations for many nonfarm uses.

Milton-Ritchey-Millsdale Association: This association is characterized by nearly level to very steep terrain. They are well and very poorly drained soils that have moderately fine textured and fine textured subsoil that were formed in glacial till over limestone. This association occurs in small, scattered areas throughout the county. This association occupies about five percent of Montgomery County. The Milton soils are moderately deep, well drained, and nearly level to moderately steep. Limestone bedrock occurs at a depth of twenty- to forty-inches. Surface runoff and erosion are the major farming concerns in management of the Milton and Ritchey soils. Seasonal wetness is the dominant limitation of the very poorly drained Millsdale soils.

Crosby-Miamian-Brookston Association: This association consists of well drained to very poorly drained, deep, nearly level to sloping soils that formed on the uplands of loam glacial till. The most extensive area of this association is in the eastern part of Miami County. The association makes up about twenty-nine percent of the county. Crosby soils are light colored, somewhat poorly drained, and nearly level to gently sloping. Miamian soils are also light colored, and are well drained and mainly gently sloping to sloping. Brookston soils are dark colored and very poorly drained, and are in depressions and drainage-ways. Most areas of this association have been cleared and are used for crops or pasture. A few areas are wooded. The seasonal wetness of Crosby and Brookston soils and the hazard of erosion on the Miamian soils are the main limitations to use. The moderately slow permeability of the Miamian soils is an additional limitation for some nonfarm uses. Crosby and Brookston soils can be farmed intensively if they are artificially drained. The eastern part of this association is characterized by glacial boulders on the surface and in the soils. These boulders hinder farming and construction.

(D) STREAMS AND BODIES OF WATER

(1) Construction Impact

Five potentially USACE jurisdictional streams were identified within the Project corridor by EMH&T in their Investigation of Waters of the United States Report, Appendix 7-1. These consist of two perennial, two ephemeral and one intermittent streams and are shown in Exhibit 6 of their Report. Vectren proposes to cross the two perennial streams, Mill Creek (Stream 2) and an un-named tributary to Stillwater River (Stream 3), and one ephemeral stream, Brush Creek (Stream 1), using HDD methodology. The two others, a concrete lined channel (Stream 5) and an un-named tributary to Stillwater River (Stream 4), will be crossed using low impact open-trench methods or with HDD depending on field conditions at the time of construction.

Care will be taken at the crossings to avoid soil erosion, sedimentation and vegetation removal that could occur as a result of construction activities. Vectren will evaluate the construction method to be employed for the channels on a case-by-case basis in accordance with the OEPA, USACE, and OPSB regulations. The ephemeral channel (Stream 4) and intermittent channels (Stream 5) are proposed to be crossed using open trenching methods. Low-flow conditions and the presence of in-channel herbaceous and shrub vegetation are expected to limit erosion and sedimentation at these locations.

There are two main methods of crossing a stream, each has its advantages and disadvantages depending on the site-specific conditions. The most expeditious and common method is trenching. This involves digging a trench across the stream, lifting the welded pipe into place using side booms and track hoes, laying the pipe into the trench, and backfilling and re-contouring. Where the streambed is comprised of cobbles or flags, these will be replaced on top of the backfilled material to restore the streambed to as near to original condition as possible. This is all achieved in one pass in a single day during low-flow conditions. Construction at each stream location can be scheduled to proceed at low-flow conditions, independent of the remainder of the pipeline construction. The relatively short time frame minimizes potential erosion problems. The relatively flat topography of the Project area means that erosion potential is relatively low, making trenching an attractive option.

The second method involves directional boring under the channel. This method is usually limited to streams with significant flow, which have a sensitive biological community or are navigable and would be disrupted by channel obstruction. Most of the streams in the Project area do not exhibit these characteristics. A directional bore is, however, not free of its own drawbacks. First, the boring machines are rather large and require access to the stream bank

areas. The impact on the adjacent properties used for access for this machinery has to be weighed against the potential impact of trenching the stream. Second, the drilling operation uses bentonite mud slurry that is transported to the site and stored in a tank. In shallow bores, there is a risk that the drilling mud can find its way to the surface through natural fissures and pathways. Third, the drilling process is more time consuming than trenching and more costly. Based on this combination of factors, it is considered preferable to limit drilling to those streams that have significant biota, flow conditions and sensitive habitats.

Vectren will utilize directional drilling methods to reduce impacts on at least three of the streams. The directional boring equipment will be set up on upland surfaces, outside of the stream's riparian zone. Silt fence or other appropriate erosion controls will be installed between the bore entrance and exit pits and the stream. As mentioned above, during the directional bore process, there is a risk of an inadvertent return or frac-out. An inadvertent return of drilling lubricant is typically non-toxic, fine clay bentonite slurry that can be forced through cracks in bedrock and surface soils. Containment measures taken during an inadvertent return will include reduction or elimination of drilling pressure, straw bale containment, and removal of drilling mud. The area affected by an inadvertent return will be restored as closely as possible to original conditions. Directional boring will not continue until the inadvertent return is completely contained and any impact remedied. Vectren will have an environmental inspector on site during the stream crossing activities to ensure requirements near these sensitive ecological resources are met. Stream crossing methods and an Inadvertent Return (Frac-Out) Contingency Plan have been written for this Project and are located in Appendix 4-1.

(2) Operation and Maintenance

Once the natural gas pipeline is in operation, and land restoration is complete, the Project ROW will require only periodic woody species removal. Details of this maintenance is provided in the Environmental Construction Standards for the Project located in Appendix 4-1. No significant impacts to streams or drainage channels along the Preferred or Alternate Route are expected from the operation or maintenance of the pipeline. No major lakes, ponds, or reservoirs will be affected by the operation or maintenance of the Preferred or Alternate Route.

(3) Mitigation Procedures

A Storm Water Pollution Prevention Plan (SWP3) and Best Management Practices (BMPs) will be implemented during construction to control erosion. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation. Following the installation of the pipeline, Vectren will need to maintain a clear ROW along the entire route of the pipeline. Tree and vegetation clearing within the Project ROW will be a fifty-foot wide corridor within the riparian zone of the streams (Mill Creek, Brush Creek, and the un-named tributary to Stillwater River) stumps and root systems from these trees will be left in these riparian zones to ensure bank stabilization for the stream channels. Vectren will remove only select trees within 25 feet of high quality stream channels to minimize impacts. Prior to any clearing activities, these trees will be clearly identified and marked on construction drawings and in the field by Vectren. An environmental inspector will be on site during tree removal activities to ensure requirements near these sensitive ecological resources are met.

(E) WETLANDS IMPACT

Two potentially jurisdictional wetlands were identified within 100-foot of the Preferred and Alternate Route by EMH&T biologists. Both of these wetlands were classified on EMH&T's Report, Appendix 7-1, as emergent, category 1 wetlands. Wetland 1 as shown on Exhibit 6E in

Appendix 7-1 will be avoided with the construction of the pipeline and protected with BMPs. Wetland 2 will be crossed by the Project. All wetland delineations obtained from the NWI, OWI, and EMH&T field survey are shown in Figures 7-1 through 7-3.

(1) Construction Impact

Two wetlands were identified during the field survey of the Preferred and Alternate Routes, constituting a total of 0.35 acres, Appendix 7-1, Exhibit 6E. One wetland (Wetland 1) will be avoided using best management practices within the corridor. However, the other wetland (Wetland 2) will be temporarily impacted with the construction of the pipeline. It is anticipated that this wetland will be crossed using open trench methods under the USACE NWP 12. However, directional drilling may also be employed if field conditions warrant. Excavation within the delineated wetland area will be limited to the required area for the pipeline installation. The anticipated total temporary impact to the wetlands within this Project is less than 0.15 acre.

All wetland dredge materials will be stored in an upland location and unless saturated, the topsoil segregated so that at least the top six to twelve-inches of backfill over the pipeline will consist of topsoil material removed from the trench, as per USACE NWP 12 requirements. It is expected that this project will be 404 authorized under NWP 12 for Utility Line Discharges. According to the USACE, for linear projects each separate wetland and stream crossing is considered as a separate project. Cumulative impact to the water of the United States will remain well under 1,500 linear feet as stated in the NWP 12 requirements.

Vehicle traffic will be limited within the wetland and no excavated materials will be placed within the delineated wetland areas. It is not anticipated that construction activities adjacent to the wetlands will result in erosion and water quality degradation. As appropriate,

timber matting will be used in wetland areas to limit adverse wetland impacts from vehicles. Best Management Practices including silt-fencing and hay bales will be used during construction to minimize runoff from the Project area. Wetland crossing techniques are discussed in the Environmental Construction Standards for the Project located in Appendix 4-1.

(2) Operation and Maintenance

No wetlands will be affected by the operation or maintenance of the natural gas pipeline along either the Preferred or Alternate Route.

(3) Mitigation Procedures

No wetland impacts are expected. No additional mitigation procedures are proposed.

(F) VEGETATION IMPACT

(1) Construction Impact

Potential construction impacts to herbaceous vegetation along the Preferred and Alternate Routes are expected to be temporary in nature as these areas will likely seed from adjacent vegetation and would be expected to recover within a year of Project completion. Potential construction impacts on woody and herbaceous vegetation will be limited to those areas adjacent to agricultural fields. Trees identified as suitable habitat for the Indiana bat, within the ecological survey conducted by EMH&T in July 2013 (Appendix 7-2), will be avoided to the greatest extent possible.

In order to efficiently and effectively conduct integrity management assessments on the pipeline, a fifty-foot ROW will need to be maintained along the entire pipeline route. A few trees will need to be removed from the riparian zones of the streams that were directionally drilled with the installation of the pipeline. These trees will only be removed between October

1st and March 31st. Further details regarding this impact are discussed in Section 4906-15-07(C)(3) above.

(2) Operation and Maintenance

During the operation of the pipeline along either the Preferred or Alternate Routes, the impacts on vegetated land will be negligible. Agricultural land use along the pipeline route will not be adversely affected. Seasonal mowing will be necessary along portions of the ROW that are not utilized for agriculture. This is not expected to result in a significant environmental impact to the vegetation.

(3) Mitigation Procedures

Areas that are temporarily disturbed will be re-vegetated as soon as practical within the OEPA Permit OHC000004 requirements. These measures should preserve the aesthetic qualities along the route to the extent practical, prevent erosion, and promote habitat diversity. Seeding and mulching practices will be specified in the SWP3 and construction drawings.

(G) COMMERCIAL, RECREATIONAL AND THREATENED/ENDANGERED SPECIES IMPACT

Commercial Species: The commercially important species along the proposed routes consist of those hunted or trapped for fur or other byproduct, including the following:

Beaver (*Castre canadensis*) The beaver is found throughout the state of Ohio in areas adjacent to rivers, lakes, streams, or marshes, where they construct dams that incorporate a lodge. This species is expected to inhabit the proposed routes but was not observed.

Muskrat (*Ondatra zibethicus*) The muskrat is abundant throughout Ohio and prefers areas near intermittent streams, drainage courses, and farm ponds. It is the most extensively

trapped fur-bearer in the State of Ohio. This species is expected to inhabit the proposed routes but was not observed.

Red Fox (*Vulpes vulpes*) The red fox occurs throughout Ohio and is most prevalent in area of maximum interspersed of woodland and agricultural lands. This species is expected to inhabit the proposed routes but was not observed.

Raccoon (*Procyon lotor*) The raccoon is abundant and widespread in Ohio, even in many suburban areas. Raccoons are found principally around aquatic and woodland habitats, with occasional forages into croplands. This species is expected to inhabit the proposed routes but was not observed.

Striped Skunk (*Mephitis mephitis*) The skunk prefers a semi-open habitat of mixed woods, brush, farmland, open grassland, and small caves in proximity to water. These mammals are common statewide. Dead individuals of this species were observed along roadways within the vicinity of the project route.

Opossum (*Didelphis virginiana*) The opossum's preferred habitat is farmland, especially wooded pastures adjacent to woodland streams and ponds. Dead individuals of this nocturnal species were observed along roadways within the vicinity of the project route.

Long-tailed Weasel (*Mustela frenata*) The long-tailed weasel is found throughout the state of Ohio in areas adjacent to rivers, lakes, streams, or marshes, where they feed on small mammals. This species is expected to inhabit the proposed routes but was not observed.

Recreational Species: Suitable habitat for recreationally important species are present along the proposed routes. Recreational species include those hunted or fished as game, including the following:

Cottontail Rabbit (*Sylvilagus floridanus*) The cottontail rabbit is Ohio's number one game species. It is abundant in both rural and urban areas and prefers field borders, brushy areas, and thickets that occur along the proposed routes. This species was observed along the proposed route.

Woodchuck (*Marmota monax*) The woodchuck or groundhog is a common ground squirrel found throughout Ohio. It prefers sloped areas at the fringe of wooded and open areas. This species is expected to inhabit the proposed routes but was not observed.

Gray, Red, and Fox Squirrels These tree squirrel species occur throughout the State of Ohio. The fox squirrel (*Sciurus niger*) is primarily an inhabitant of small, typically isolated woodlots. Indications of this species were observed along the proposed routes. The gray squirrel (*Sciurus carolinensis*) and red squirrel (*Tamiasurius hudsonicus*) prefer more extensive woodland areas. These species are expected to inhabit the study area but were not observed.

White-Tailed Deer (*Odocoileus virginianus*) White-tailed deer occur throughout Ohio. Deer prefer wooded areas with occasional foraging into croplands. Indications of this species (i.e. tracks and scat) were observed within 100 feet of the Preferred and Alternate Routes during the field survey. White-tailed deer use the wooded portions along the proposed routes for cover and concealment, and they forage in the croplands periodically. Deer normally have a home range of less than 3 square miles.

Wild Turkey (*Meleagris gallopavo*) Wild turkeys are very adaptable animals and found throughout Ohio. Although they prefer mature forests, with substantial cover and suitable food sources, they can live successfully in areas with as little as fifteen percent forest cover. This species is expected to inhabit the study area but was not observed.

Game Fish No game fish are anticipated to inhabit the streams within 100 feet of the Preferred or Alternate Routes. The waterways crossed by the Preferred and Alternate Routes are too shallow to support game fish. Even so, Best Management Practices will be used during construction to minimize erosion and possible temporary water quality degradation. Erosion control measures may include installing silt fences and protecting exposed areas with mulch, matting, or similar materials until vegetation can be reestablished. Stream turbidity resulting from construction activities, if occurring, should be of short duration compared to that caused by natural high water flow. Agricultural practices and site preparation for residential and commercial developments are far more disruptive, and have far greater potential impacts, than the proposed Project.

Protected Species: Correspondence with the ODNR and USFWS, and reviews of published information indicated that the proposed routes are within the range of a number of species that are on federal and/or state lists of threatened or endangered species, or are of high interest. These species are discussed below. No critical habitats were observed on the Preferred or Alternate Routes. Protected species identified by the USFWS and ODNR will be reviewed with personnel working on the Relocation Project, as described in Appendix 4-1. Vectren will notify the USFWS, ODNR and the staff at the OPSB within 24-hours if a State or Federal listed species is encountered during construction activities.

Protected Plants No protected plants were recorded by the ODNR or USFWS as being in or adjacent to the proposed routes.

Protected Wildlife The Federal and State threatened or endangered animal species potentially present along the Preferred and Alternate Routes during any part of the year are described below. It should be noted that while potentially suitable habitats for some of these

species are available along the Preferred and Alternate Routes, these habitats are generally limited in nature and are unlikely to represent critical habitat.

In addition, regular disturbance in these areas further limits the opportunities for species of concern to become established. Nearly the entire length of the Preferred and Alternate Routes cross areas of routine disturbance such as agricultural farmland.

Potentially suitable habitat observed for Montgomery Counties threatened, endangered, or protected species during field surveys, within 100 feet of the Preferred and Alternate Routes are as follows. Reference to original documentation appears in Appendix 7-2.

Bald eagle (*Haliaeetus leucocephalus*) The bald eagle is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. They inhabit forests near rivers and lakes and prefer to nest in tall trees near open water. They generally feed on fish, which they sometimes steal from other predators, but they also feed on small mammals and carrion if readily available. According to the USFWS the project lies within the range of the bald eagle. However, due to the project type, location, and onsite habitat, the USFWS did not expect that this species to be within the project area and no impact to the species is expected.

Upland sandpiper (*Bartramia longicauda*) The upland sandpiper is often referred to as the shorebird of the prairies and is a State endangered bird that has been recorded within the vicinity of the Project area. Once abundant in the Great Plains, it has undergone a steady population decline since the mid-19th century, because of hunting and loss of habitat. These birds utilize grasslands, pastures, unkempt agricultural land, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Programs and sometimes the grassy expanses of airports. The upland sandpiper is a migratory bird that

winters in southern Argentina. Limited to no suitable habitat was observed during the ecological survey conducted in July 2013.

Indiana bat (*Myotis sodalist*) Indiana bats are considered by the Federal government and the State of Ohio to be an endangered species and are within the range of the project study area. The USFWS reported that since they were first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large mature trees. Fragmentation of forest habitat may also contribute to the declines. Most recently a fungal pathogen, white-nose syndrome, has caused serious declines in the Indiana bat population in the northeastern United States. White-nose syndrome has also been documented in Ohio and declines of the Indiana bats during winter censuses have been noted. However, the full impact of the disease in Ohio is not yet known.

Indiana bats hibernate in caves and abandoned mines in the winter. The summer habitat requirements for the species are not well defined but they typically roost under the exfoliating (loose) bark of live or dead trees or in cavities or hollow areas formed from broken branches or tops of various rough-barked tree species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark 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*). Suitable roosting and foraging habitat for the Indiana bat was observed along

both the Preferred and Alternate Routes. These trees are shown on Exhibit 2A through 2E in Appendix 7-2 and Figures 7-1 through 7-3. The highest quality Indiana bat habitat trees were observed along the wooded fencerows adjacent to active agricultural fields.

Eastern massasauga (*Sistrurus catenatus*) The eastern massasauga is a federal candidate species and a State of Ohio endangered species. Massasaugas live in an area that extends from western New York and southern Ontario to Southern Iowa. The eastern massasauga is listed as endangered, threatened, or a species of concern in every state and province in which it lives. This species is known to live near wet areas, including wetlands, wet prairie, or nearby woodland or shrub edge habitat. It is noted that massasauga snakes also occupy dry goldenrod meadows with early successional woody species such as dogwood or multiflora. Massasaugas depend on wetlands for food and shelter but often use nearby upland areas during part of the year. Draining wetlands for farms, roads, homes, and urban development has eliminated much of the massasauga habitat in many states. ODNR-DOW indicated that the Project is unlikely to affect this species, but if an Eastern massasauga is encountered during Project construction, work will immediately stop, and ODNR Department of Wildlife will be contacted for further direction.

Rayed bean (*Villosa fabalis*) The rayed bean is listed as endangered by both the State of Ohio and the USFWS. The rayed bean is a small mussel, less than 1.5-inches long that generally live in smaller headwater creeks, but are sometimes found in large rivers and wave-washed areas of glacial lakes. They prefer gravel or sand substrates, and are often found in and around roots of aquatic vegetation.

The rayed bean historically was found across a wide expanse that included parts of the Midwest and eastern United States and north to Ontario, Canada. The species has been

extirpated from Illinois, Kentucky, and Virginia but is still found in Indiana, Michigan, New York, Ohio, Pennsylvania, and Ontario, Canada. After extirpation from Tennessee and West Virginia, reintroductions have restored the rayed bean to these states. Several factors have contributed to the decline of the rayed bean which includes; the disruption of natural river flow patterns, scouring of river bottoms and changing temperatures associated with dams; pollution from accidental spills, factory discharges, sewage treatment plants and surface runoff from cultivated fields, pastures, mines, construction sites, and roads; sedimentation from poor land use practices, dredging and impoundments; and the invasion of non-native species.

Snuffbox (*Epioblasma triquetra*) The snuffbox like the rayed bean is also listed as an endangered mussel by both the State of Ohio and the USFWS. The snuffbox is a small to medium-sized freshwater mussel ranging in size from 1.8 to 2.8-inches. Historically the snuffbox was widespread occurring 18 states and Ontario, Canada. The snuffbox is currently found in Alabama, Arkansas, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin, and Ontario, Canada. Most Populations are small and geographically isolated from one another, which further increases their risk of extinction. They are usually found in small to medium-sized creeks, inhabiting areas with a swift current, although it is also found in Lake Erie and some larger rivers. The same factors listed for the decline of the rayed bean affect the snuffbox.

Eastern hellbender (*Cryptobranchus alleganiensis*) The hellbender is a long-lived, entirely aquatic salamander that inhabits perennial streams with large flat rocks. The species is listed as endangered in the State of Ohio and is a candidate species for the USFWS. In-water work can reduce availability of large cover rocks and can destroy hellbender nests and/or kill the adults and juveniles. Increased sediment to the stream can also smother large cover rocks and

gravel/cobble substrate making them unsuitable for refuge and nesting. Additionally, altered flow regimes can also adversely affect their habitat.

(1) Construction Impact

Commercial Species The commercially important species along the proposed routes include those species that are hunted or trapped for fur or other byproducts. The following commercially important species may be affected by construction.

Beaver (*Castre canadensis*) It is possible for this species to inhabit the streams along the routes and as these features are to be directional bored no impacts on this species are expected.

Muskrat (*Ondatra zibethicus*) It is possible for this species to inhabit the streams along the routes and as these features are to be directional bored no impacts on this species are expected.

Red Fox (*Vulpes vulpes*) Suitable habitat for this species is readily available throughout the project area. This highly mobile species if present would be expected to leave during construction and return once the project is completed.

Raccoon (*Procyon lotor*) This species is very adaptable to changes in the habitats in which it occurs, and as a result, construction along the proposed routes is anticipated to have negligible impact on the raccoon population. Similar habitats are readily available adjacent to the right-of-way corridor. Therefore, no impact on the raccoon is anticipated.

Striped Skunk (*Mephitis mephitis*) It is not anticipated that construction of the proposed routes should alter a significant portion of this species preferred habitat, because of the presence of readily available similar habitats. Therefore, no impact on the striped skunk is anticipated.

Opossum (*Didelphis virginiana*) It is not anticipated that construction of the proposed routes should alter a significant portion of this species preferred habitat, because of the presence of readily available similar habitats. Therefore, no impact on the opossum is anticipated.

Long-tailed Weasel (*Mustela frenata*) It is possible for this species to inhabit the streams along the routes and as these features are to be directional bored no impacts to the long-tailed weasel is expected.

Recreational Species: Recreational species will experience different levels of impact, depending on the species habitat and home range requirements. Impacts on recreational species observed during the field survey or expected to be within the study area discussed below.

Cottontail Rabbit (*Sylvilagus floridanus*) Cottontails should migrate from the ROW area during construction and move into adjacent areas that provide adequate cover and needed forage resources. After construction, this species preferred habitat should be increased along the proposed routes as scrub/shrub and herbaceous growth will increase. Therefore, impacts to this species are expected to be temporary and negligible.

Woodchuck (*Marmota monax*) Woodchucks typically hibernate between October and February. Construction activities are scheduled to begin during the spring and wrap up in the fall. Suitable alternative habitats are available close to the proposed routes. Following the clearing of the right-of-way, this species preferred habitat should increase. Therefore, impacts to this species are expected to be negligible.

Gray, Red, and Fox Squirrels (*Sciurus niger*, *Sciurus carolinensis*, and *Tamiasuris hudsonicus*) The elimination of minimal quantities of the suitable habitat of these species within the right-of-way will cause the resident squirrels to move into nearby woodlands during construction. It is anticipated that additional squirrels can be assimilated into adjacent habitats

without significant competition pressures from, or on resident species. The loss of mass-producing trees offering a food source for the squirrels should be low. Thus the impact of construction on the resident squirrels is anticipated to be negligible, considering the availability of similar habitat and forage elsewhere.

White-Tailed Deer (*Odocoileus virginianus*) White-tailed deer uses the wooded and scrub/scrub portions along the proposed routes for cover and concealment, and they forage in the agricultural areas periodically. Deer normally have a home range of less than 3-square miles. The availability of similar wood and pastureland surrounding the study area indicates that the impact of construction will likely be negligible for this species.

Wild Turkey (*Meleagris gallopavo*) Wild turkeys are highly mobile species and if present would be expected to leave during construction and return once the project is completed.

Game Fish No game fish are anticipated to inhabit the streams within 100 feet of the Preferred or Alternate Routes. The waterways crossed by the Preferred and Alternate Routes are too shallow to support game fish. Even so, Best Management Practices will be used during construction to minimize erosion and possible temporary water quality degradation. Erosion control measures may include installing silt fences and protecting exposed areas with mulch, matting, or similar materials until vegetation can be reestablished. Stream turbidity resulting from construction activities, if occurring, should be of short duration compared to that caused by natural high water flows.

Protected Species: Correspondence with the ODNR and USFWS indicated that the proposed routes are within the range of a number of species that area on federal and/or state lists of threatened or endangered species, or are of high interest. These species are discussed below. No critical habitat for species of concern was identified along the Routes. Moderately good to

good quality streams and adjacent riparian woodlands are planned to be directionally drilled, therefore no impacts are expected to these areas of the species located therein. Additionally, the USFWS and ODNR were both consulted regarding using open trench methods to cross wetland 2 and streams 4 and 5. Both agencies responded that it was unlikely to impact any protected species using this method. Correspondences with these agencies have been included with this Application in Appendix 6-2.

Protected Plants No protected plants were recorded by the ODNR or USFWS as being in or adjacent to the proposed routes.

Protected Wildlife No wildlife species considered endangered or threatened by the State of Ohio or the Federal government were observed or reported along the proposed routes during the ecological survey. Many of the protected or high interest wildlife species found in Ohio are not expected to inhabit the proposed routes because the area either does not provide any or enough suitable habitats or it is out of the range of such species. Further discussion of Federal and State threatened or endangered species potentially present within the study area during any portion of the year are described below.

Bald eagle (*Haliaeetus leucocephalus*) The bald eagle is not expected within the project area, therefore no impacts to this species are anticipated.

Upland sandpiper (*Bartramia longicauda*) Although this species may have a possible range which would include the proposed routes, the threatened and endangered species habitat assessment survey conducted along the Preferred and Alternate Route indicate that there is limited to no habitat favorable for the upland sandpiper. Impacts to this species are unlikely due to the lack of suitable habitat. However, in the event they are present, this mobile species would escape mortality during construction activities, with the exception of during their nesting season,

where it is anticipated that the upland sandpiper would utilize better quality habitat that is available on adjacent lands (airport). Therefore, the Project is not expected to affect this species. If this species is identified prior to or during project activities, work activities will cease in the area and coordination with ODNR and OPSB will be initiated.

Indiana bat (*Myotis sodalist*) The Indiana bat may occur in the Preferred and Alternate Route corridors due to suitable habitat recorded during the ecological field investigation in July 2013. EMH&T's biologists documented 78 potential Indiana bat maternity roosting trees within 100 feet on either side of the Preferred and Alternate Route's centerline. The pipeline route will be designed to run parallel with these fencerow habitat trees and not disturb the trees. However, a few small areas will need to be removed for the construction of the pipeline. Vectren will avoid impacts to the Indiana bat through seasonal restrictions on tree clearing: any suitable roost tree will be cleared between October 1 and March 31. Vectren will coordinate with the USFWS, ODNR, and OPSB in the event that any recorded habitat trees, as well as the surrounding trees, will need to be removed between April 1st and September 30th.

Eastern massasauga (*Sistrurus catenatus*) Although it is very unlikely to encounter this species along the Route, due to the habitat fragmentation in the area, there is a small potential for this species to inhabit the two small wetlands identified within 100 feet of the centerline for the Project. It is the intention of Vectren to avoid any protected species habitats along the pipeline Route. Vectren will coordinate with the USFWS, ODNR, and OPSB in the event that potential habitat for this species needs to be crossed using open trench techniques instead of directional boring. Additionally, in the event an eastern massasauga is encountered on the Project, Vectren will immediately suspend construction activities in the area and contact Frank Lopez with the

ODNR Division of Wildlife. No impacts to this species are anticipated with the relocation of the pipeline.

Rayed bean (*Villosa fabalis*), snuffbox (*Epioblasma triquetra*), and eastern hellbender (*Cryptobranchus alleganiensis*) These species are not likely to be impacted with the construction of the pipeline due to directional boring techniques that will be employed to cross streams which they may inhabit. However, as discussed in Section 4906-15-04(B)(1)(b) there is the risk of inadvertent returns during directional drilling. Procedures for handling inadvertent returns are located in Appendix 4-1.

(2) Operation and Maintenance

During the operation of the pipeline along either of the proposed routes, the impacts on wildlife should be negligible. Undeveloped land not disturbed by construction will retain its current vegetation composition and be available to wildlife. There will be little need for additional ROW maintenance because much of the proposed routes are already being managed for row crop agriculture.

(3) Mitigation Procedures

Habitat areas for commercial, recreational, and special status species along the Preferred and Alternate Routes will be negligibly changed with the construction of the replacement pipeline. Efforts will be made to avoid habitat trees for the Indiana bat where possible, as well as the habitat areas for the upland sandpiper and eastern massasauga. Vectren will consult with the USFWS, ODNR and OPSB prior to any construction activity occurring within these habitat areas outside of the allotted time periods given by ODNR and USFWS.

(H) SLOPES AND ERODIBLE SOILS**(1) Construction Impact**

In general, slope mechanics are not anticipated to present a significant concern for this Project on either the Preferred or Alternate Route. Slopes in areas crossed by the Preferred and Alternate Routes do not exceed twelve-percent. A SWP3 will be implemented during construction to control erosion.

The soil associations crossed by the Preferred and Alternate Routes are discussed in Section 4906-15-07(B)(4) of this Application and area shown on Figures 7-1 through 7-3. Any impacts to soils crossed are expected to be temporary in nature, as these soils will be replaced once construction is complete. Contours will be restored to pre-existing conditions in an effort to minimize soil erosion and degradation. Seed mixes of species native to the area will be used to re-establish herbaceous and shrub vegetation. Temporary soil erosion and sedimentation control measures will be removed after vegetative cover has been established.

(2) Operation and Maintenance

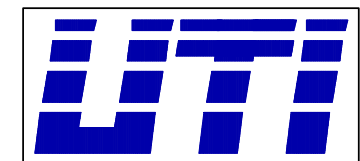
No impacts are expected once the pipeline is in place, and restorative measures have been implemented. The area will return to its former land use. Maintenance activities that involve excavation are anticipated to be rare, but in these cases, standard measures will be used to prevent sedimentation into any nearby surface waters.

(3) Mitigation Procedures

Best management practices will be used during construction and protective measures will be taken with construction adjacent to streams. The erosion and sedimentation control measures will be consistent with that described in the SWP3 for this Project.

(I) OTHER ISSUES

No other ecological issues are anticipated.

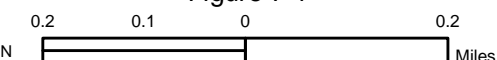


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Z-167 Proposed Route Relocation

Ecological Map
Figure 7-1



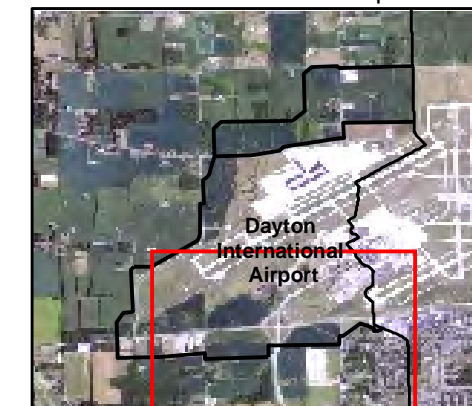
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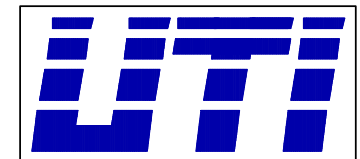
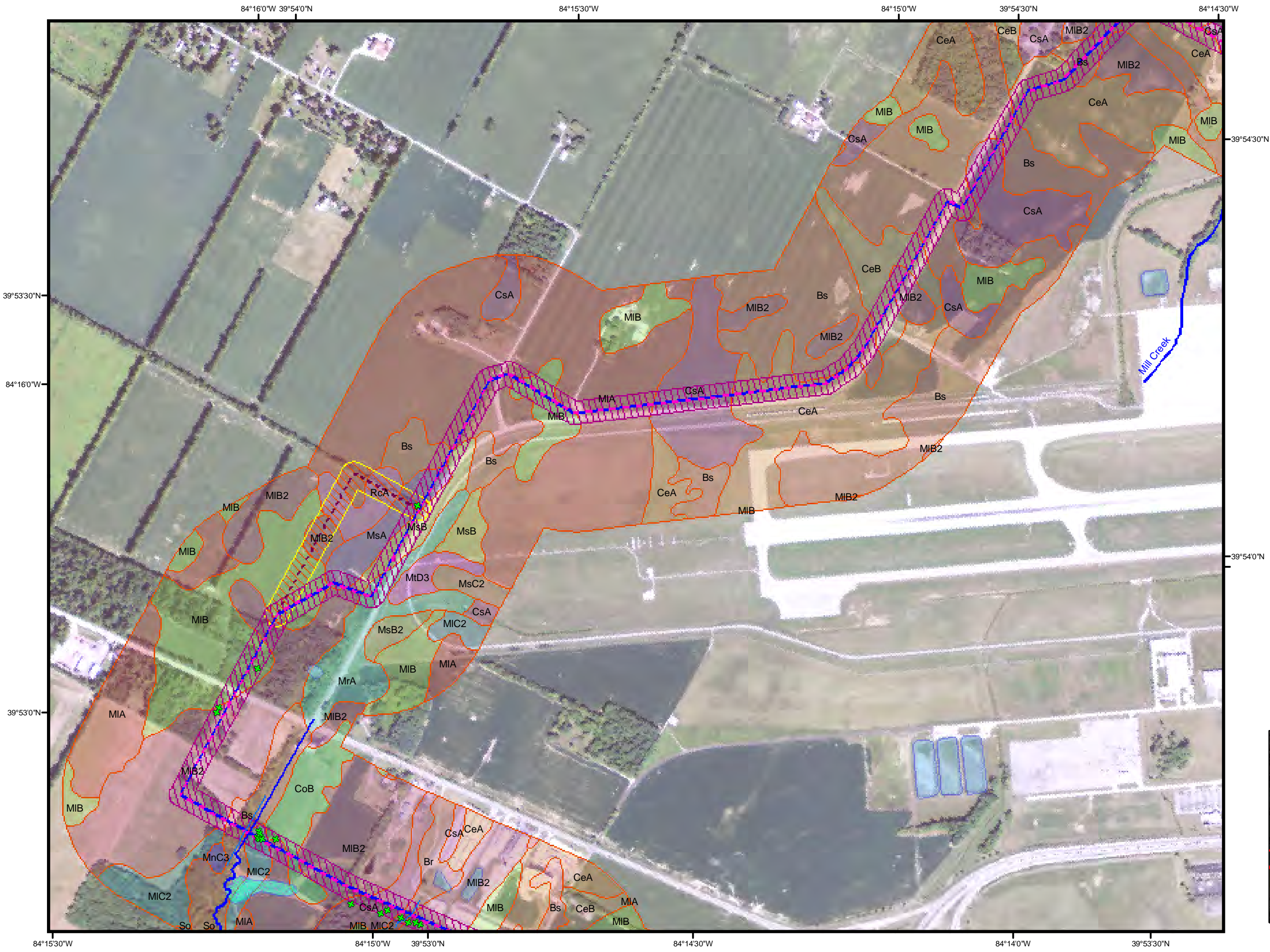
Legend

- | | |
|------------------------------|------|
| Bat Tree | CeB2 |
| Field Streams | CoB |
| Streams | CrA |
| Field Wetlands | CrB |
| Emergent Wetland | CsA |
| Forested/Shrub Wetland | CtB |
| Pond | Cu |
| Riverine | HeE2 |
| StormwaterBasin | MhB2 |
| Preferred Route | MIA |
| Alternate Route | MIB |
| Common Shared Segment | MIB2 |
| Adjusted Route | MIC2 |
| 100' Corridor | MnC3 |
| Adjusted 100' Corridor | MrA |
| Existing Z167Line | MsA |
| Soils 1000Ft Corridor | |
| Br | MsB |
| Bs | MsB2 |
| Bu | MsC2 |
| CeA | MTD3 |
| CeB | RcA |
| | So |



Site Reference Map



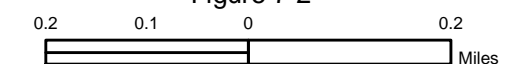


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Z-167 Proposed Route Relocation

Ecological Map
Figure 7-2



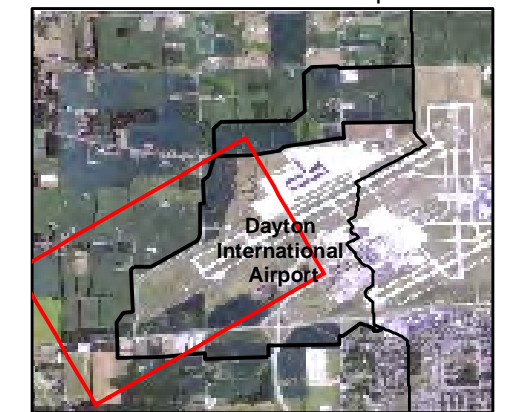
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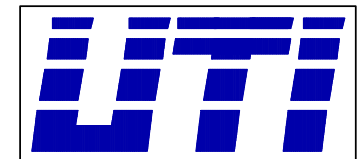
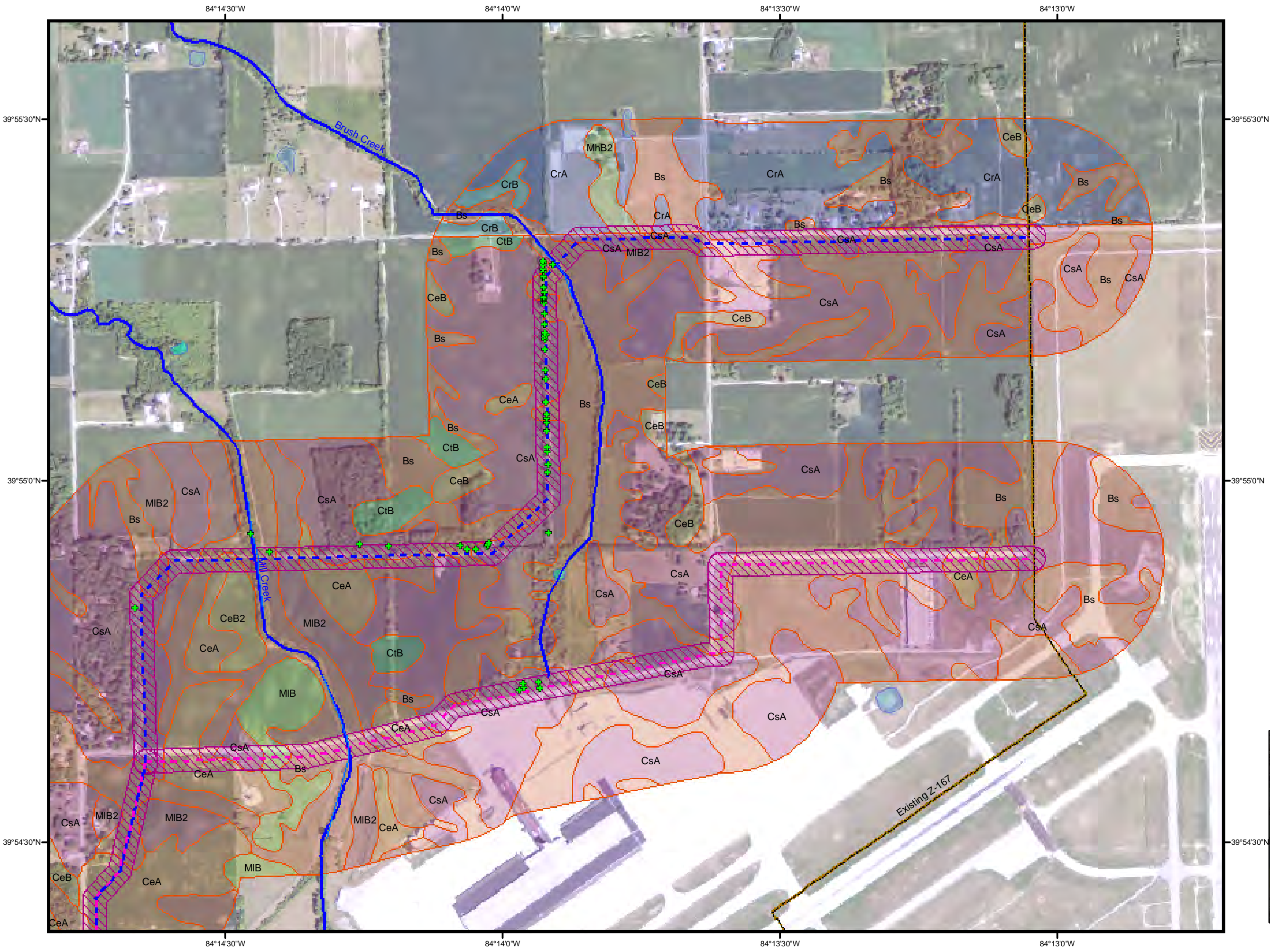
Legend

- | | |
|------------------------------|------|
| Bat Tree | CeB2 |
| Field Streams | CoB |
| Streams | CrA |
| Field Wetlands | CrB |
| Emergent Wetland | CsA |
| Forested/Shrub Wetland | CtB |
| Pond | Cu |
| Riverine | HeE2 |
| StormwaterBasin | MhB2 |
| Preferred Route | MIA |
| Alternate Route | MIB |
| Common Shared Segment | MIB2 |
| Adjusted Route | MIC2 |
| 100' Corridor | MnC3 |
| Adjusted 100' Corridor | MrA |
| Existing Z167 Line | MsA |
| Soils 1000Ft Corridor | |
| Br | MsB |
| Bs | MsB2 |
| Bu | MsC2 |
| CeA | MtD3 |
| CeB | RcA |
| | So |



Site Reference Map



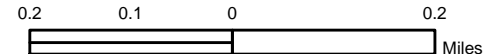


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Z-167 Proposed Route Relocation

Ecological Map
Figure 7-3



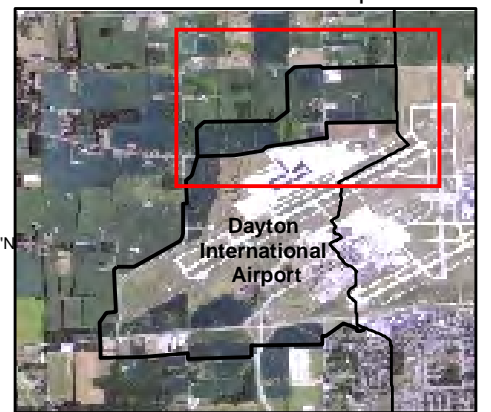
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Legend

- | | |
|------------------------|------|
| Bat Tree | CeB2 |
| Field Streams | CoB |
| Streams | CrA |
| Field Wetlands | CrB |
| Emergent Wetland | CsA |
| Forested/Shrub Wetland | CtB |
| Pond | Cu |
| Riverine | HeE2 |
| StormwaterBasin | MhB2 |
| Preferred Route | MIA |
| Alternate Route | MIB |
| Common Shared Segment | MIB2 |
| Adjusted Route | MIC2 |
| 100' Corridor | MnC3 |
| Adjusted 100' Corridor | MrA |
| Existing Z167Line | MsA |
- Soils 1000Ft Corridor**
- | | |
|-----|------|
| Br | MsB |
| Bs | MsB2 |
| Bu | MsC2 |
| CeA | MtD3 |
| CeB | RcA |
| | So |



Site Reference Map



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in

Case No(s). 13-1651-GA-BTX

Summary: Application of Vectren Energy Delivery of Ohio, Inc. for a Certificate of Environmental Compatibility and Public Need electronically filed by Teresa Orahood on behalf of Sally Bloomfield