BEFORE
THE OHIO POWER SITING BOARD

In the Matter of Columbia Gas of Ohio, Inc.'s for a Certificate of Environmental Compatibility and Public Need for the Construction of the Northern Columbus Loop – Phase VII.	)))))	Case No. 20-1236-GA-BTX

APPLICATION OF COLUMBIA GAS OF OHIO, INC.

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PROJECT SUMMARY AND APPLICATION INFORMATION

4906-05-02 - Project Summary and Application Information

(A) The applicant shall provide a summary of the proposed project. The summary should be suitable as a reference for state and local governments and for the public. The summary shall include the following:

(1) A statement explaining the general purpose of the facility.

Columbia Gas of Ohio, Inc. ("Columbia") proposes to construct its seventh phase of the Northern Columbus Loop ("Project").

Starting in 1991, Columbia began implementing a long-term plan to position Columbia to serve the then projected growth in western and northern Franklin and southern Delaware County while continuing to provide safe and reliable service to existing customers. In general, the plan was scoped to develop the necessary gas infrastructure to deliver reliable gas supplies to the Greater Columbus Region, generally defined at the time to include Franklin, Delaware, and Union counties. The plan was designed to be flexible and constructed in phases to match growth and reliability needs as they emerged.

In the 1990's, Columbia completed the first three phases of the long-term plan by constructing new laterals on its North Columbus High Pressure ("NCHP") system. Most of the NCHP system had been constructed throughout Columbus in the 1950's and 60's, and the extensions were constructed to deliver gas to the western and northern portions of Franklin County, including Hilliard and areas west of Dublin. The NCHP system forms the backbone of the Columbia distribution system in northern Columbus. It spans from Gahanna to Worthington, Dublin, Plain City, and Hilliard; mostly north of I-70 and inside the I-270 outer belt.

In the 2000's, Columbia completed a Plain City Connector as part of the NCHP system as well as phases four, five, and six of the long-term plan, which became known as the Northern Columbus Loop ("NCL") high pressure system.[1] The NCL system originates from a point of delivery in New Albany.

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[1] *See In the Matter of the Application of Columbia Gas of Ohio, Inc. for a Certificate of Environmental Compatibility and Public Need for the Construction of the Northern Columbus Loop Natural Gas Pipeline Project (Phase IV and V)*, Case No. 04-1620-GA-BTX, Application (December 2, 2004); *see also In the Matter of the Application of Columbia Gas of Ohio, Inc. for a Certificate of Environmental Compatibility and Public Need for*

It travels northerly towards Sunbury and crosses beneath Hoover Reservoir south of Galena. It continues westerly around the southern end of Alum Creek Lake, across Lewis Center, and into Powell where the Project originates. Another segment of the NCL system continues northerly to Delaware.

This Project is the final phase of the long-term plan and it completes the Northern Columbus Loop system. The Project will create a key supply point for the NCHP system from the Northern Columbus Loop high pressure system. The proposed Project will enable Columbia to meet projected natural gas commodity supply needs as well as provide operational flexibility to reliably serve customers in the Franklin, Delaware, Union, and Madison counties.

(2) A description of the general location, size, and operating characteristics of the proposed facility.

Columbia proposes to construct approximately 12 miles of new 24-inch steel high pressure gas main with a Maximum Allowable Operating Pressure ("MAOP") of 720 psig and approximately 4 miles of 16-inch diameter steel high pressure gas main with an MAOP of 190 psig.

The Project will generally run through Union and Delaware Counties. More specifically, the Project starts east of the junction of Sawmill Parkway and Hyatts Road in Liberty Township (Delaware County) at the tie-in site of the existing Northern Columbus Loop system, and the Project ends at a tie-in site to the existing North Columbus High Pressure System located east of the junction of McKitrick Road and Hyland-Croy Road in Jerome Township (Union County). Additionally, the route options also connect to a district regulator station on Watkins-California Road, approximately one mile northwest of the junction with United States ("U.S.") Route 42, in Jerome Township. A detailed description of the proposed routing of the Project is included in response to Ohio Adm.Code 4906-05-04 of this Application.

(3) A discussion of the suitability of the preferred and alternate routes for the proposed facility.

Construction of the Northern Columbus Loop Natural Gas Pipeline Project (Phase VI), Case No. 04-1621-GA-BTX, Application (December 2, 2004).

Columbia provides a detailed description of its evaluation of the suitability of the preferred and alternate routes in response to Ohio Adm.Code 4906-05-04. Columbia selected the preferred and alternate routes as they are both constructible and meet the applicable rule requirements for the Project.

(4) An explanation of the project schedule.

The detailed proposed Project schedule with important activities and milestones can be found in Table 1. Generally, for the balance of 2020 and for calendar year 2021, Columbia will secure necessary approvals (including this OPSB certificate), any remaining permits, and the land rights needed for the Project. Columbia will then construct and place in service the Project in calendar year 2022.

(B) The applicant shall provide a brief description of the applicant's history, affiliate relationships, and current operations, and a description of the company that will construct and operate the facility, if different from the applicant.

A subsidiary of NiSource Inc. ("NiSource"), Columbia is a regulated public utility primarily engaged in the distribution and transportation of natural gas. Columbia serves approximately 1.3 million residential customers and over 110,000 commercial and industrial customers, spread across 61 of Ohio's 88 counties. Columbia will construct the Project using a construction contractor and operate the NCL after its completion.

NiSource is one of the largest natural gas utility companies in the United States. NiSource is headquartered in Merrillville, Indiana and maintains a significant corporate presence in Columbus, Ohio. NiSource utilities serve approximately 3.5 million natural gas and 500,000 electric customers across seven states. NiSource is traded on the New York Stock Exchange under the symbol NI. More information about NiSource is available at www.nisource.com.

4906-05-03

REVIEW OF NEED AND SCHEDULE

4906-05-03 – Review of Need and Schedule

(A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable).

(1) The applicant shall explain the purpose of the proposed facility.

The Project addresses several reliability and operational issues on the Columbia gas system that serves the Greater Columbus Region. The following benefits will be recognized from this Project:

- Provide reliability enhancements in Columbia's west Columbus market by providing an additional source of supply from east Columbus;
- Meet expected load growth and increased demand in the Greater Columbus Region;
- Connect to the Marysville Connector (Case No. 19-2148-GA-BLN) to provide a new source of natural gas to Marysville and surrounding areas in Union County; and
- Provide Columbia important operational flexibility that will enhance Columbia's ability to provide reliable and safe service to all its current customers, as well as projected future customers, on Columbia's system in the Greater Columbus Region.

(2) The applicant shall provide specific projections of system conditions, local requirements, or any other pertinent factors that impacted the applicant's opinion on the need for the proposed facility.

Enhancements to Reliability and Improvements to Operational Flexibility
The Project will provide Columbia with important reliability enhancements and improved operational flexibility in serving the Greater Columbus Region specifically as well as Columbia's overall system generally.

The Project will provide enhanced reliability for Columbia's customers (current and projected) on both the NCL and NCHP systems.

Presently, even without additional growth of any kind, current operation of the system is near capacity. The Project will also mitigate low-pressure

contingencies in Columbia's NCL and NCHP systems by providing additional system capacity. These reliability enhancements result from the additional supply feeds to both the NCL and NCHP systems.

The additional supply feeds also provide Columbia with additional mechanisms to respond to any forced or unforced outages on other parts of Columbia's system in the Greater Columbus Region. Once the Project is completed, it will provide Columbia with the capability to respond to disruptions on other parts of the system. For instance, the completion of the NCL system would allow Columbia to reroute gas flows to address the loss of a system component due to a dig-in or other incident. These enhanced capabilities may prevent service disruptions to existing customers. Without the completion of the NCL system, the operational flexibility to address these types of service contingencies is limited, with a resulting system-wide reduction in overall reliability.

Additionally, the Project affords Columbia additional flexibility in managing its system on a day-to-day basis. Columbia must balance its system every day to match expected demand with expected supplies to safely and reliably serve its customers. This complex and coordinated undertaking must occur daily. The Project offers Columbia another valuable option to manage daily flows on its system as it adapts to weather or other external factors that impact flows on its system. The completion of the Project will significantly improve the ability of Columbia to manage the flows on its system, which in turn improves reliability for its customers.

The Project also affords Columbia additional operational flexibility to manage it system as it undertakes the work mandated to comply with federal pipeline safety requirements required by the Pipeline and Hazardous Materials Safety Administration ("PHMSA"). In 2019, PHMSA finalized new gas pipeline safety regulations entitled *Pipeline Safety: Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related Amendments*.[2] These new rules, sometimes collectively called the Mega Rule, require Columbia to perform certain tasks (*e.g.,* MAOP and records verification) on the existing NCL and NCHP systems. The Project will provide

[2] 84 FR 52180

Columbia with operational options to reliably serve its customers while complying with this new rule. Specifically, the Project gives Columbia the ability to manage its system while Columbia impacts a particular portion of either the NCL or NCHP systems to undertake pipeline safety verification or replacement activities.

Growth

Columbia expects load growth and increased capacity demand to continue in the Greater Columbus Region. Central Ohio is the fastest growing region in the Midwest and is one of the fastest growing in the entire country.[3] From 2010 – 2018, Delaware and Franklin Counties gained around 180,000 residents.[4] MORPC's models show expected population growth, in the next 30 years, of 28% in Franklin County,[5] 35% in Delaware County,[6] 30% in Union County,[7] and 15% in Madison County.[8]

Under current modeling and projections, without the Project, Columbia will be unable to serve additional customers in the Greater Columbus Region beginning in 2023. Columbia has consistently added customers over the past two decades and expects continued growth in the Greater Columbus Region. Consequently, and taking into account the current load on the Columbia system, construction of the Project is reasonably timed to address anticipated future growth in the Greater Columbus Region on a "just in time" basis and will enable Columbia to reliably serve all current customers plus the projected growth in the Greater Columbus Region.

Finally, the Project allows Columbia to relieve certain known constraint points. For example, in Madison County, over the past few years Columbia has

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[3] *See* 2020-2050 Metropolitan Transportation Plan by MORPC, Chapter 2 Regional Trends at 2-1 (last accessed May 18, 2020: https://www.morpc.org/wordpress/wp-content/uploads/2020/03/2_RegionalTrends.pdf)

[4] *Id.* at 2-4.

[5] *See 2020-2050 Metropolitan Transportation Plan Land Use Appendix* at Appendix A, page 8, Table 1. Population Control Totals (Franklin County has a projected total population of 1,348,203 in 2020 and 1,737,041 in 2050) (last accessed May 18, 2020: https://www.morpc.org/wordpress/wp-content/uploads/2020/04/A_LandUse.pdf)

[6] *See Id.* (Delaware County has a protected total population of 211,050 in 2020 and 285,853 in 2050).

[7] *See Id.* (Union County has a protected total population of 60,415 in 2020 and 78,614 in 2050).

[8] *See Id.* (Madison County has a protected total population of 44,938 in 2020 and 51,759 in 2050).

responded to proposed economic development or expansion inquires that it could not serve the hypothetical projects due to a lack of capacity. Currently, the supply point to deliver gas to Madison County is in southwest Franklin County. However, Columbia currently needs the gas coming into southwest Franklin County to serve existing Franklin, Union and Delaware county customers. The Project, by bringing new gas supplies into another part of the Greater Columbus Region, will free up sufficient capacity on Columbia's system for Madison County (and surrounding areas) to support economic growth for the foreseeable future.

(3) The applicant shall provide relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvements.

Columbia utilizes a commercially available, customizable, steady-state modeling software called Synergi Gas to represent and optimize its natural gas pipeline system. The software was originally developed by Stoner Associates. It is regarded as one of the premier modeling engines for pipeline simulation. Model simulations portray the behavior of real-life systems and permit the testing of experimental changes to said systems without the expense, time, or cost of actually testing pipelines in the ground.

The Synergi model contains critical energy infrastructure information, trade secret, and business confidential information. Columbia will make the Synergi analyses available on a confidential basis to Ohio Power Siting Board Staff.

(4) For electric power transmission facilities, the applicant shall present load flow data in the form of transcription diagrams depicting system performance with and without the proposed facility.

N/A

(5) For gas pipeline projects, the applicant shall provide one copy in electronic format of the relevant base case system data on diskette, in a format acceptable to the board staff, with a description of the analysis program and the data format.

Columbia's models contain critical energy infrastructure information, trade secret, and business confidential information. Columbia will make these studies available on a confidential basis to Ohio Power Siting Board Staff.

(B) The applicant shall explain how the facility fits into regional expansion plans.

(1) For electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:

(a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.

(b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.

(c) Reference to regional expansion plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).

N/A

(2) For gas pipelines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:

(a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.

Pursuant to R.C. 4929.04(A), a natural gas company may seek an exemption from Chapter 4935, with the exception of R.C. 4935.01 and 4935.03.

R.C. 4935.04(C) requires a person owning or operating a major utility facility in Ohio or furnishing natural gas to submit a long-term forecast report. Columbia submitted an exemption application on January 30, 2009, in Case No. 08-1344-GA-EXM, and this exemption was approved by Opinion and Order of the Public Utilities Commission of Ohio ("the Commission") on December 2, 2009. Columbia likewise filed a motion to modify the Commission's Order in Case No. 12-2637-GA-EXM on October 4, 2012. This motion to modify was approved by Opinion and Order of the Commission on January 9, 2013. Columbia's approved exemption remains in effect today and, as such, Columbia is exempt from filing a long-term forecast.

(b) If no description was contained in the most recent long-term gas report, an explanation as to why none was filed in the most recent long-term gas forecast report.

N/A

(C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.

N/A

(D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.

N/A

(E) The applicant shall describe why the proposed facility was selected to meet the projected need. The applicant shall also describe how the facility will serve the public interest, convenience, and necessity.

Please refer to Columbia's descriptions in Ohio Adm.Code 4906-5-03(A)(1), (2), and (3) for a description of the projected need for the Project as well as how the Project will serve the public interest, convenience, and necessity.

(F) The applicant shall provide a detailed project schedule.

(1) The applicant shall provide a proposed schedule in Gantt chart format covering all major activities and milestones, including:

(a) Preparation of the application.

(b) Submittal of the application for certificate.

(c) Issuance of certificate.

(d) Receipt of grid interconnection studies and other critical path milestones for project construction.

(e) Acquisition of rights-of-way and land rights for the certified facility.

(f) Preparation of the final design.

(g) Construction of the facility.

(h) Placement of the facility in service.

Project schedule is provided below in Table 1 in Gantt Chart format.

(2) The applicant shall describe the potential impact of critical delays on the in-service date.

The Project will meet, on a "just in time" basis, the anticipated growth needs in the Greater Columbus Region. Any significant delays would prevent new customer additions after 2023 and the benefits of the Project to growth areas in the Greater Columbus Region. Moreover, the Project is currently scheduled in Columbia's 2022 construction plans; however, if there is a delay in the review and final decision of this Application, it may be difficult for the Project to fit into Columbia's future construction plans if it isn't constructed in 2022.

From an operational flexibility perspective, any significant delays would delay implementation of the new tools available to Columbia to respond to unexpected interruptions, manage its system generally, and undertake pipeline safety verification activities.

Table 1. The Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) schedule including all major activities and milestones

Task	Start	Finish	2019	2020												2021												2022											
			N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Preparation of OPSB application	13-Apr-20	5-Nov-20																																						
Submittal of the application for certificate		13-Nov-20																																						
Issuance of certificate		22-Feb-22																																						
Acquisition of rights-of-way and land rights for the certified pipeline	05-Jun-20	14-Dec-21																																						
Preparation of final pipeline design	21-May-21	15-Jul-21																																						
Construction of pipeline	04-Mar-22	04-Nov-22																																						
Placement of the pipeline in service		06-Dec-22																																						

4906-05-04

ROUTE ALTERNATIVES ANALYSIS

4906-05-04 – Route Alternatives Analysis

(A) The applicant shall conduct a site and route selection study prior to submitting an application for an electric power transmission line or gas pipeline, and associated facilities. The study shall be designed to evaluate all practicable sites, routes, and route segments for the proposed facility within the study area.

(1) The applicant shall provide a description of the study area, or the geographic boundaries of the area considered for development of the project, including the rationale for the selection.

The Project, as proposed by Columbia, consists of a new 16-inch and 24-inch diameter, high pressure natural gas pipeline. The route selection process employed by Columbia for the Project started with the identification of a Study Area that would be analyzed for routing options. The Study Area was defined by the tie-in locations to access the existing NCL system and the existing NCHP system. The Study Area is approximately 37,800 acres in size and is shown in Figure 1 and Figure 2. The northeastern part begins near the junction of Hyatts Road and Liberty Road in Liberty Township, Delaware County and the southern part ends near the junction of Hyland-Croy Road and McKitrick Road in Jerome Township, Union County. The majority of the Study Area follows U.S. Route 42, between U.S. Route 33 in Jerome Township, Union County, and Scioto River in Concord Township, Delaware County, and a portion of U.S. Route 33 near the junction with U.S. Route 42. The Study Area is relatively undeveloped. The primary land use within the study area is agriculture, specifically row cropping of soybean and corn. Recently, however, there have been an increasing number of residential and commercial developments planned and under construction in the Study Area.

Rationale for Selection: The Study Area was defined in a manner that allowed consideration of potential project routing options that met the need to develop a centerline that ties into the existing NCL system. The area included in the Study Area was further refined due to consideration of various constraints. For instance, construction will take place within a 50-foot permanent easement and 75 feet of temporary construction workspace in upland habitat. When the centerline crosses wetlands and streams, Columbia plans to neck down the workspace to 50 feet of permanent easement to minimize impacts to wetlands and streams. Columbia will also need temporary laydown areas for

construction equipment storage. Through the identification of, and consideration of these basic project requirements and area constraints, Columbia was able to identify a Study Area that provides the basis for identifying and comparing routing options for the Project.

(2) The applicant shall provide a map of suitable scale that depicts the boundary of the study area and all site constraints and/or suitability analysis utilized for the study.

Figure 2 shows the boundary of the Study Area as well as constraints Columbia was aware of within the Study Area.

(3) The applicant shall provide a map of suitable scale that depicts the boundary of the study area and the routes, route segments, and sites which were evaluated.

Figure 1 shows the Project Preferred and Alternate Routes.

(4) The applicant shall provide a comprehensive list and description of all qualitative and quantitative siting criteria utilized by the applicant, including any weighting values assigned to each.

Columbia considered multiple factors and criteria on the physical landscape between the three necessary Project gas structures (the existing NCL system tie-in point, the proposed district regulator station at Watkins California Road, and the existing North Columbus High Pressure system tie-in point). However, Columbia did not use a specific quantitative weighted system to identify the Preferred Route. The Preferred Route was chosen by comparing the number of limiting factors/criteria with those identified on the Alternate Route, and in most categories, the Preferred Route was a superior choice.

The process of identifying candidate routes included consideration of, and qualitative comparison of various relevant construction, environmental, cultural and social factors within the Study Area. Factors considered included:

- Constructability;
- Wetland and waterbody crossings;

- Rare species and their habitats;
- Road crossings;
- Railroad crossings;
- Scenic river crossings;
- Protected natural resources areas;
- Historic Properties;
- Cultural Resources; and
- Existing and proposed land use designations.

In the route selection process, preference was given to routes that:

- Abut existing utility and road corridors, especially if they are compatible with the proposed new use;
- Result in little to no change in land use (*e.g.*, avoid clearing forest for right-of-way ("ROW");
- Avoid unnecessary splitting of parcels, and paralleling parcel boundaries;
- Involve as few landowners as reasonably possible, which can be achieved by including fewer, larger parcels or more parcels owned by the same landowners; and
- Cause few aesthetic, cultural resource, wetland, stream, and vegetation impacts as reasonably possible. These are further minimized if an existing utility ROW or easement is used.

Other limiting factors became apparent as Columbia analyzed the Study Area. The liming factors identified below are included in Figure 2:

- Schools – Columbia worked to keep the route at least 1,000 feet from schools and school playgrounds. This is a safety consideration and best practice for a gas pipeline project.
- Roadway projects – Columbia received information regarding a potential road widening project on U.S. Route 42 and other various roadway projects that were planned near the Project. This information was used to assess an appropriate distance between the Project routes and the roadway projects.
- Future mining/quarry operations – Cooperating landowners informed Columbia that a mining company purchased mineral rights of several

parcels within the Study Area. Columbia used this information to avoid these parcels.

- Future residential and commercial development – Several agricultural fields are currently in the beginning stages of residential or commercial developments. Columbia has requested and received information regarding proposed construction from the developers and used this information to attempt to maximize the distance between the proposed Project route and new residential housing or commercial shopping centers.
- Current residential properties – Columbia worked to maximize the distance between the centerline and residential homes and involve as few residences as possible. Columbia also worked to parallel parcel boundaries to minimize impacts to property owners.
- Existing electrical transmission lines – Columbia worked to parallel and abut existing electrical transmission lines and utility easements.
- Known cultural and ecological features – Columbia worked to avoid areas where there are known cultural sites, wetland and stream areas, or large forested tracts to reduce impacts to these features.
- Columbia worked to create the shortest route options possible taking into account all other considerations.

(5) The applicant shall provide a description of the process by which the applicant utilized the siting criteria to determine the preferred and alternative routes and sites.

The route selection study was performed to identify potential routes for the Project within the Study Area that minimized impacts to ecological, socioeconomic, and land use features, while taking into consideration constructability and construction needs and limitations. Columbia, assisted by Stantec Consulting Services, Inc. ("Stantec") and Enersurv, conducted a route selection analysis for the proposed Project in late 2019 and early 2020. The overall objective was to find the optimum route alternatives to connect the existing NCL system tie-in site, located east of the junction of Sawmill Parkway and Hyatts Road in Liberty Township, Delaware County, to tie into the North Columbus High Pressure System, located east of the junction of McKitrick Road and Hyland-Croy Road in Jerome Township, Union County. Additionally, the route options also needed to connect to a new district

regulator station on Watkins California Road, approximately one mile northwest of the junction with U.S. Route 42, in Jerome Township, Union County. The Watkins California Road district regulator station is where the gas pipeline will transition from 24-inch diameter to 16-inch diameter pipe. Length of the route options was also a consideration.

As is the standard industry practice for linear utility projects, the route selection study began with a desktop analysis of publicly available information for the Study Area. Data considered in desktop analysis for the Project included the following:

- Road locations and road types (e.g., U.S. highway, county highway, etc.);
- Locations of populated areas;
- Soil types, conditions, and depth of bedrock;
- Existing land use;
- Information on potential locations of environmental features (i.e., wetlands, streams);
- Threatened and endangered species ranges;
- Topography of route; and
- Cultural and historic features.

Columbia assessed and considered during the initial desktop analysis information on a mix of constructability, and environmental factors derived from the following sources:

- U.S. Department of Agriculture Natural Resources Conservation Service ("NRCS") for soil types and conditions;
- Landscape imagery for forested areas;
- U.S. Geological Survey ("USGS") Land Cover Data and the county auditor websites for existing land use;
- County auditor websites for the location of agricultural district lands;
- U.S. Fish and Wildlife Service ("USFWS") National Wetland Inventory ("NWI") and USGS National Hydrography Data ("NHD") for potential environmental feature locations;
- Federal Emergency Management Agency ("FEMA") for the location of floodplains;

- USFWS and Ohio Department of Natural Resources ("ODNR") for county lists of state and federally threatened and endangered species;
- USGS topographic elevations;
- Ohio Historic Preservation Office and the National Register of Historic Places for cultural and historic feature information;
- Protected Areas Database of the United States ("PADUS") for Ohio;
- ODNR karst data; and
- Ohio Environmental Protection Agency ("OEPA") drinking water source protection areas.

Desktop review of available public information sources was used to identify the locations of other existing utilities, such as electric and other gas utilities, within the Study Area. Geographical Information System ("GIS") software was the primary tool used to compile and analyze this data. Data collected from sources that was not available electronically was hand digitized. All of the complied information was then used to develop and consider routing options that took into account all relevant factors, including the minimization of the crossings of other utilities, and to maximize the use of routing options that abutted other utility ROWs when possible.

Using this desktop information, Columbia identified the two Project route alternatives within the Study Area that were further assessed during the field study phase.

On the ground field observations were then collected and used to both field verify the desktop information and further refine the routing options available for the Project. Field surveys of the two Project route alternatives identified in the desktop survey process, which were ultimately identified for purposes of this Application as the Preferred and the Alternate routes, began in early 2020 and included:

- Wetland and waterbody delineation surveys;
- Civil surveys;
- Cultural and historical resource surveys; and
- Habitat assessments.

These surveys allowed for verification of the data collected during the desktop analysis. Results of these surveys are discussed in more detail in the following sections. During this phase of the routing process, Columbia discussed the Project in more detail with local agencies and landowners and collected information on local road projects, residential and commercial construction projects, and community infrastructure projects that allowed Columbia to further refine the Project route options to minimize impacts.

Specific Route Selection Constraints – Crossing the Scioto River

The planned method for crossing the Scioto River on the Preferred Route includes a horizontal directional drill ("HDD"). Refer to the HDD Feasibility Analysis Report (Appendix A) for details on the analysis and bore profile.

For HDD installation, a pilot hole will be drilled along the proposed pipeline centerline. Then, the pilot hole will be enlarged, which is known as the reaming process. Finally, the pipe will be pulled back through the reamed hole. During HDDs, a drilling fluid is utilized to assist with the mechanical drilling process. The fluid needs to be constantly monitored during the drilling process for an inadvertent release of the drill fluids. The most obvious signs of a release is the visible pooling of drilling mud on the surface, a sudden decrease in mud volume returns at the entry site, or a loss in drilling mud pump pressure. Refer to Horizontal Directional Drill Inadvertent Release Avoidance Plan (Appendix B) for the containment and clean-up plans should an inadvertent release occur.

Due to the location of the Project, the crossing of the Scioto River was identified as a specific constraint that required the identification and consideration of multiple criteria relevant to the selection of routing options.

As shown in Figure 2, the Source Water Assessment and Protection ("SWAP") management zone, which includes the drinking water source protection area, is located along the Scioto River and ends on the northernmost part of the reservoir where Mill Creek flows into the Scioto River. The Preferred Route is in this narrow area and includes a crossing within the source water protection area that is 3,119 feet (0.60 mile) long. This crossing area was considered significantly less impactful than the Alternate Route, which has 4,461 feet (0.84

mile) at its location from the drinking water source protection area. It is important to note that in the case of both the Preferred and Alternate Routes, the construction within the drinking water source protection area is acceptable provided the appropriate best management practices are installed during construction that avoid impacting these areas, taking into account other relevant routing considerations.

Another related factor with respect to the Scioto River crossing that was considered in the route selection study is the width of the river at the crossing point. Columbia determined that it was preferable to cross the Scioto River either upstream of the impounded area or downstream of the O'Shaughnessy Dam, where the Scioto River is narrower, taking into account other relevant routing constraints. Since it was determined that crossing the Scioto River south of the dam was not practical given other routing considerations, the identification of shorter crossing points of the river upstream of the dam was considered preferable. The Preferred Route crosses the Scioto River north of the impounded area where the width of the crossing is approximately 427 feet and the Alternate Route crosses the impounded area of the Scioto River within the impounded area where the crossing is greater than 1,000 feet wide. When considered in conjunction with other relevant siting constraints and opportunities, the minimization of the crossing distance of the Scioto River is preferable and was one factor used to identify the Preferred Route.

The planned method for crossing the O'Shaughnessy Reservoir on the Alternate Route includes a "HDD." In this location open cut trench installation cannot be utilized due to the depth of the Reservoir. For HDD installation, a pilot hole will be drilled along the proposed pipeline centerline. Then, the pilot hole will be enlarged, which is known as the reaming process. Finally, the pipe will be pulled back through the reamed hole. During HDDs, a drilling fluid is utilized to assist with the mechanical drilling process. The fluid needs to be constantly monitored during the drilling process for an inadvertent release of the drill fluids. The most obvious signs of a release is the visible pooling of drilling mud on the surface, a sudden decrease in mud volume returns at the entry site, or a loss in drilling mud pump pressure. Refer to Horizontal Directional Drill Inadvertent Release Avoidance Plan (Appendix B) for the containment and clean-up plans should an inadvertent release occur.

Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received.

Specific Route Selection Constraints – Sensitive Ecological, Social and Cultural Resources.

Of the two routes identified through the route selection process for the Project, Columbia identified and considered the impact of both route alternatives on sensitive features. Overall, the Alternate Route crosses more sensitive features that the Preferred Route. Specifically, significantly more wetlands and waterbodies, including forested wetlands, streams, and forested areas were observed on the Alternate Route as compared with the Preferred Route. In general, when considered in the route selection process, avoidance of these ecological features is preferable.

The Preferred Route has 12 wetlands and 13 streams delineated within the field survey corridor totaling 3.06 acres of wetland and 8,307 linear feet of stream. Through minimization and avoidance, the Preferred Route will impact 6 wetlands and 9 streams, totaling 0.44 acre of wetland and 912 linear feet of stream. The Alternate Route has 23 wetlands and 17 streams delineated within the field survey corridor, totaling 2.71 acres of wetland and 4,039 linear feet of streams. Through minimization and avoidance, the Alternate Route will impact 17 wetlands and 13 streams, totaling 0.72 acre of wetland and 725 linear feet of stream. Wetlands and streams are discussed in more detail in the Ohio Adm.Code 4906-05-08(B)(3) section. The Preferred Route requires approximately 16.92 acres of tree removal while the Alternate Route would require approximately 32.59 acres of tree removal.

Columbia plans to open trench road crossings wherever possible, especially smaller, two-lane roads and highways. The Preferred Route has 18 road crossings that consist mostly of local/county routes or two-lane highways, such as U.S. Route 42. Columbia has coordinated directly with regulatory entities to determine the recommended installation method at each road crossing. Of the 18 road crossings, 9 will be open-cut, 8 will utilize jack and

bore methods, and one will be HDD method. With the jack and bore horizontal boring method, a hydraulic tool pushes a casing through the subsurface. Cuttings generated from the process are contained in the casing pipe and removed by gravity or vibration after the pullback of the pipe. The Alternate Route has 21 road crossings, including two U.S. highways. One of the highways on the Alternate Route is the four-lane U.S. Route 33, which would be crossed twice using HDD method. Columbia concluded that when considering existing road crossings, the Preferred Route has fewer overall adverse impacts when compared to the Alternate Route.

Columbia further reviewed applicable routing criteria as required by Ohio Adm.Code 4906-05-04(A)(4) and assessed the relative impacts on the applicable criteria as between the two routes initially identified. This analysis concluded that the Preferred Route was a superior routing option. A summary of the routing criteria considered and the specific applicability of the criteria on each route option is summarized below:

- Roadway projects – the route selection process took into account the planned widening of U.S. Route 42 and other various planned roadway projects. Both Project route options parallel U.S. Route 42 road ROW in sections and they were both routed outside the impact areas of the road widening and other roadway projects. This was verified via civil survey. Additionally, Columbia was able to route the Project parallel to road corridors for approximately 2.4 miles on the Preferred Route and approximately 3.3 miles on the Alternate Route;
- Future mining/quarry operations – Columbia routed the Preferred Route to avoid a potential quarry operation and future mining activities;
- Future residential and commercial development – several existing agricultural fields are currently being considered for residential or commercial development. Columbia requested construction schedules and development plans from the developers to maximize the distance between the proposed Project route and planned residential housing or commercial shopping centers. Columbia attempted to maximize the distance between known potential residential and commercial developments and the Project wherever possible;
- Current residential and commercial properties – Columbia selected routing options for consideration that maximized the distance between

the Project centerline and current structures, particularly residences. Table 2 summarizes the distance between the Project and residences on the Preferred and Alternate Routes. The Preferred Route had less residences and residential structures at the various distances than the Alternate Route. The Alternate Route had less commercial and agricultural structures;

Table 2. Count of Various Structure Types and Distance Categories near the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Centerline in Delaware and Union Counties, Ohio

Structure Type	100 feet from Centerline	200 feet from Centerline	1,000 feet from Centerline
Preferred Route			
Agricultural Structure (e.g., barn, silo)	0	4	80
Church or Worship Center	0	0	0
Commercial/Industrial Structure (e.g., business condos/suites)	0	2	47
Residence (e.g., house)	2	13	218
Residential Structure (e.g., outbuilding, garage)	3	15	119
School	0	0	0
Other Structure (e.g., cell tower)	1	3	8
Alternate Route			
Agricultural Structure (e.g., barn, silo)	1	6	70
Church or Worship Center	0	0	1

Structure Type	100 feet from Centerline	200 feet from Centerline	1,000 feet from Centerline
Commercial/Industrial Structure (e.g., business condos/suites)	1	1	30
Residence (e.g., house)	2	29	296
Residential Structure (e.g., outbuilding, garage)	6	17	124
School	0	0	0
Other Structure (e.g., cell tower)	0	2	6

- Existing utility and road corridors – to the maximum extent feasible, the Project route options parallel and abut existing utility and road easements to minimize or avoid additional land use encumbrances to the property owners. Road corridors provide easy construction access and minimize construction maintenance disruption for surrounding land users. Columbia located the Project Preferred Route parallel to overhead electric powerline ROW for approximately 4.6 miles and on the Alternate Route for approximately 2.6 miles. A further discussion of the route selection value of paralleling existing utilities is included below;
- Crossing other utility lines – Columbia attempted to minimize the number of utility line crossings for both routes. The Preferred Route crosses 38 other utilities, including: 5 fiber optic lines, 5 underground electric lines, 9 water lines, 7 telephone lines, 3 sanitary sewer lines, 2 storm sewer lines, and 7 natural gas lines. The Alternate Route crosses 39 other utilities, including: 5 sewer lines, 7 telephone lines, 3 fiber optic lines, 8 water lines, 14 natural gas lines, and 2 underground electric lines.
- Known cultural and ecological features – Columbia worked to avoid areas where there are known cultural sites, wetland and stream areas, or large forested tracts to reduce impacts to these features; and

- Columbia worked to create the shortest route options possible taking into account all other considerations.

Columbia considers the Preferred Route to be a superior routing option for the Project based on the following criteria:

- Avoids crossing the impounded area of the Scioto River;
- Increased distance between the Project and Del-Co water intake;
- Minimizes impacts to forested areas;
- Minimizes number of stream and wetland crossings;
- Shorter length of centerline;
- Greater amount of length abutting other easements (e.g., utility, roadway);
- Fewer landowners and parcels within 100 feet of the Project centerline;
- Fewer residences and residential structures within various distances of the Project centerline; and
- Smaller amount of erodible soils present on Preferred Route.

The Alternate Route was superior in a few criteria when compared to the Preferred Route. These include:

- Less impact acreage, due to less temporary laydown acreage;
- Less impact acreage to parks (i.e., Glacier Ridge Metro Park and O'Shaughnessy Reservoir Park); and
- Less impacts to agriculture and agricultural structures.

Routing preference is also given to other existing corridors such as road ROW. Road corridors provide easy construction access and minimize construction maintenance disruption for surrounding land users. The Preferred Route uses many road corridors. In heavily developed areas, roads are often the only available routes through which a utility line can be placed with minimum impacts. Developed areas offer a suite of challenges to the construction of new utility lines, including existing overhead lines, buildings, traffic signals and their associated poles and wires, electric light poles, street and business signs, sewer lines, and buried cables.

In less developed areas, cross-country routes are considered favorable, especially if they can be routed along fencerows to minimize impact to actively farmed areas, or in anticipation of future development of those parcels. A cross-country route is the preferred option for the Project, due to the high amount of undeveloped and agricultural land within both alternatives.

The Preferred and Alternate Routes parallel or are adjacent to overhead electric power lines for long sections (4.6 miles and 2.6 miles, respectively). In many ways, electric power lines provide the optimum route for a pipeline ROW. Use of the ROW results in minimal disruption to local residents, restricts easement negotiations to a single entity, does not change land use for that portion of the route, and does not restrict future land use of the properties crossed.

Utility Route Selection Candidates: In most utility line route selection studies, preference is given to existing utility corridors, especially if they are compatible with the proposed new use. Additionally, routes that include one or more of the following are typically given preference:

- Little to no change in land use (e.g. forest to cleared right-of-way);
- A natural gas transmission line ROW that was originally developed with additional capacity for future upgrades;
- A route that does not unnecessarily split parcels;
- A route with as few landowners as possible, which can be achieved by including fewer, larger parcels or more parcels owned by the same landowners; and
- As few aesthetic, cultural resource, wetland, stream and vegetation impacts as reasonably possible. These are further minimized if an existing ROW or easement is used.

Specific Route Selection Constraints – Additional Project Specific Considerations

Additional considerations/constraints to the final route selection include future construction plans of schools and mining activity along the Project.

Dublin City Schools has completed the construction of a new elementary school on the north end of Hyland-Croy Road and is currently constructing a new middle school facility directly adjacent the elementary school. Columbia's routes ensure the centerline is at least 1,000 feet from that location.

One of the participating property owners on the Alternate Route sold their mineral rights to a mining company and in the future, the property may be opened up as a gravel quarry. Columbia's routes have taken this potential mining activity into account. The Preferred Route avoids the parcels completely and the Alternate Route parallels U.S. Route 42 ROW to avoid conflicts with the future mining operations.

Columbia compared the number of limiting factors on each route option, such as environmental or sensitive features crossed, and situations where the centerline could not be greater than 1,000 feet from schools, churches, cultural sites, etc. The results of this analysis were compiled, and the best route option was chosen.

In conclusion, based on consideration of all of the constraints and opportunities presented in the route selection study process, the Preferred Route minimizes impacts taking into account all relevant factors and criteria.

(6) The applicant shall provide a description of routes and sites selected for evaluation, and the factors and rationale used by the applicant for selecting the preferred and alternate routes and sites.

The Preferred Route and Alternate Route were initially identified and examined using desktop analysis of existing publicly available information. The route options were subsequently refined following field assessments and verification activities. The amount of overlap between the routes was estimated to be 13.5%.

Preferred Route: The 24-inch diameter portion of the Preferred Route begins on Hyatts Road, 0.28 mile east of Sawmill Parkway, tying into the existing NCL system. The centerline parallels Hyatts Road for 170 feet, then turns north for 0.10 mile through agricultural fields along parcel lines. The centerline turns west for 0.10 mile through agricultural fields along property boundaries, avoiding residential parcels. The centerline then turns directly north for 0.10 mile through agricultural fields and turns northwest. The centerline follows an overhead electric power line ROW for 2.57 miles northwest through agricultural fields, crossing Sawmill Parkway, Clark Shaw Road, and Bean-Oller Road. The centerline bends north for 0.1 mile, then bends west for

approximately 0.72 mile, crossing South Section Line Road and agricultural fields. The centerline then turns southwest to parallel U.S. Route 42 for 0.64 mile, crossing Riverside Drive and the Scioto River. The centerline bends south for 0.23 mile, paralleling Dublin Road, and crossing residential parcels. The centerline briefly bends west to cross Dublin Road, then south for 0.05 mile. The centerline bends west for 0.38 mile to U.S. Route 42, then parallels U.S. Route 42 in a southwest direction for 0.03 mile, then bends south 0.08 mile. The centerline turns southwest to parallel an overhead electric power line ROW for 1.14 miles, roughly following U.S. Route 42, crossing Concord Road. The centerline parallels Watkins Road (also called Moore Road) in a western direction for 0.06 mile then bends south for 0.17 mile, crossing Watkins Road. The centerline bends southeast for 0.12 mile, then turns south for 0.77 mile through agricultural fields and along the edge of a forested parcel line. The centerline turns west for 0.60 mile, crossing Jerome Road. Directly after crossing Jerome Road, the centerline bends south for 0.25 mile along parcel boundaries, avoiding residential parcels. The centerline turns west and parallels Harriott Road on the north side for 0.67 mile through agricultural fields and within road ROW, then turns south briefly to cross Harriott Road then turns back west. The centerline crosses U.S. Route 42 and travels west for 0.24 mile. The centerline then turns south for 0.18 mile toward U.S. Route 42, but then turns back west for 0.67 mile. The centerline bends south for 0.57 mile along parcel boundaries in agricultural fields. The centerline turns southwest for 0.19 mile along parcel boundaries and through agricultural fields then turns approximately west for 0.61 mile through agricultural fields and a small amount of second growth forest, crossing Bell Road. The centerline turns north briefly to avoid tree clearing for 0.06 mile, then it bends southwest for 0.61 mile to intercept the Watkins California Road district regulator station, crossing through agricultural fields and Watkins California Road.

The 16-inch diameter, high pressure pipe leaves the Watkins California Road district regulator station, crosses Watkins California Road, running parallel to the 24-inch diameter pipeline for 0.23 mile. The centerline turns southeast for 1.04 miles through agricultural fields along parcel boundaries, crossing U.S. Route 42. The centerline travel east for 0.95 mile through forest and agricultural fields, mostly along parcel boundaries, then bends south. The centerline travels south for 0.32 mile, crossing Brock Road and entering Glacier Ridge Metro Park. The centerline turns approximately east for 0.74 mile through an old field habitat and paralleling the multi-use trail within the park. The centerline turns

approximately south for 0.62 mile, avoiding the forested areas of the park, but crossing the main entrance driveway for the park. The centerline turns east for 0.12 mile to avoid residential parcels, then bends south for 0.10 mile. The centerline bends east to parallel McKitrick Road for 0.12 mile, crossing Hyland-Croy Road. The centerline turns south to cross McKitrick Road and tie-in to the existing North Columbus High Pressure System pipeline, located 325 feet east of the Hyland-Croy Road and McKitrick Road junction.

Alternate Route: The 24-inch diameter portion of the Alternate Route begins on Hyatts Road, 0.28 mile east of Sawmill Parkway, tying into the existing NCL system. The centerline parallels Hyatts Road for 170 feet, then turns north for 0.10 mile through agricultural fields along parcel lines. The centerline turns west for 0.10 mile through agricultural fields along property boundaries, avoiding residential parcels. The centerline then turns directly north for 0.20 mile through agricultural fields and turns west for 1.40 miles, crossing Sawmill Parkway, along property boundaries though agricultural fields and construction areas for residential development. The centerline turns slightly to travel northeast for 0.55 mile, through a residential development construction area. The centerline turns briefly northwest for 187 feet, then bends back northeast for 0.35 mile, crossing South Section Line Road. The centerline then turns southwest for 0.13 mile through agricultural fields, avoiding residential properties. The centerline turns south for 0.32 mile between an agricultural field and residential properties. The centerline bends southeast for 0.96 mile, crossing Riverside Drive, the Scioto River, and Dublin Road. The centerline bends slightly west along property lines for 0.31 mile, then bends southwest again briefly for 0.06 mile. The centerline turns south through agricultural fields for 0.38 mile and crosses Moore Road then turns west through an agricultural field for 0.25 mile. To avoid residential parcels, the centerline briefly turns south for 0.06 mile, then bends west for 0.91 mile along property boundaries through agricultural fields and crossing Concord Road. The centerline turns southwest through agricultural fields for 1.08 miles, crossing Jerome Road.

The Alternate Route bends mostly west to parallel Harriott Road for 0.11 mile on the north side of the road, then crosses Harriott Road. After crossing Harriott Road, the centerline turns west to parallel Harriott Road again for 0.24 mile and crosses U.S. Route 42. The centerline turns south for 0.18 mile toward U.S. Route 42, then the centerline bends west (and avoids U.S. Route 42) for

0.67 mile. The centerline bends south for 0.57 mile along parcel boundaries in agricultural fields. The centerline bends southwest for 0.25 mile, then begins to parallel an overhead electrical line ROW for 0.57 mile through an agricultural field and crosses Bell Road. The centerline bends south for 0.22 mile to intercept U.S. Route 42 and parallel the road ROW southwest for 0.63 mile. The centerline bends northwest, paralleling Watkins California Road for 1.0 mile, then bends west to cross Watkins California Road to the Watkins California Road district regulator station. A new 16-inch pipe then leaves the district regulator station, crosses Watkins California Road parallel within the 24-inch diameter pipe ROW. After crossing Watkins California Road, the centerline bends southeast for 2.65 miles through agricultural fields and second growth forest. The centerline crosses U.S. Route 42 and Brock Road. Next, the centerline turns southwest for 0.09 mile to cross U.S. Route 33, then bends southeast for 0.09 mile to cross Mitchell Dewitt Road. After crossing Mitchell Dewitt Road, the centerline bends 0.06 mile to parallel the parcel boundary southeast for 0.28 mile through agricultural fields. The centerline bends northeast for 0.09 mile to cross U.S. Route 33 for a second time. The centerline bends southeast for 0.10 mile to avoid residential properties, then the centerline turns northeast for 0.06 mile to intercept Mitchell Dewitt Road. The centerline parallels Mitchell Dewitt Road southeast for 0.22 mile. The centerline turns northeast to cross Mitchell Dewitt Road then parallels it on the north side for 0.19 mile, crossing Waterford Road. The centerline then turns north for 0.06 mile away from Mitchell-Dewitt Road along property lines. The centerline turns east for 0.07 mile then north in agricultural fields, avoiding residential properties. The centerline travels north through agricultural fields and a forested area for 0.55 mile.

The centerline bends northeast and intercepts McKitrick Road and parallels road ROW for 0.08 mile. The centerline bends northwest to cross McKitrick Road, then bends northeast again for 0.12 mile to parallel the road ROW. The centerline turns southeast to cross McKitrick Road for the second time and parallels the road ROW for 0.46 mile. The centerline turns north to cross McKitrick Road for a third time. The centerline parallels the road ROW for 0.09 mile to the east, crossing Hyland-Croy Road, then it crosses McKitrick Road south for the fourth time to tie-in to the existing North Columbus High Pressure system.

(B) The applicant shall provide a summary table comparing the routes, route segments, and sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.

The Project is located in part of central Ohio that remains primarily rural and agricultural in nature. Agriculture is the primary land use type within both route options. Based on available data, 218 potentially occupied residences have been identified within 1,000 feet of the Preferred Route centerline and 2 potentially occupied residences were identified within 100 feet of the centerline. Comparatively, 296 potentially occupied residences have been identified within 1,000 feet of the Alternate Route centerline and 2 potentially occupied residences have been identified within 100 feet of the centerline. The Alternate Route crosses some land previously classified as agricultural land that is transitioning into residential or commercial use through development of these areas. For this reason, it is likely that if the Project is approved, the above numbers will underestimate residences within these categories for the Alternate Route following construction. Table 3 shows a comparison of various parameters evaluated for each Project centerline option.

Table 3. Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Comparisons, Considering Technical, Financial, Environmental, and Socioeconomic Variables, Delaware and Union Counties, Ohio

Variable	Preferred Route	Alternate Route
Technical		
# Road Crossings	18	21
Significant Changes in Direction	25	38
Length Parallel Other ROW	1.92 miles road ROW 4.6 miles overhead electric line ROW	4.14 miles road ROW 2.6 miles overhead electric line ROW
Length of Route	16.59	16.86
Financial		
Total Project Cost	$105.4 million	$107.5 million
Environmental		
Wetland Impacts (Type/Impact Acreage)	3 palustrine emergent – 0.246 acres temporary impacts	12 palustrine emergent – 0.268 acre temporary impacts

Variable	Preferred Route	Alternate Route
	2 palustrine forested – 0.119 acres permanent impacts 1 palustrine emergent/palustrine forested – 0.056 acre temporary and 0.02 acre permanent impacts	4 palustrine forested – 0.32 acre permanent impacts 1 palustrine emergent/palustrine forested – 0.045 acre temporary and 0.09 acre impacts
Wetland Impacts (Category/Impact Acreage)	3 Category 1 – 0.12 acre of impacts 3 Category 2 – 0.46 acre of impacts 0 Category 3 – 0 acre	11 Category 1 – 0.26 acre of impacts 6 Category 2 – 0.46 acre of impacts 0 Category 3 – 0 acres
Stream Impacts (Flow Regime)	1 ephemeral – 51 linear feet of temporary impacts 8 intermittent – 863 linear feet of temporary impacts	3 ephemeral – 126 linear feet of temporary impacts 9 intermittent – 534 linear feet of temporary impacts 1 perennial – 65 linear feet temporary impacts
Forest Clearing (acres)	16.92	32.59
Threatened or Endangered Species	25	25
Protected/Critical Habitat for Threatened/Endangered Species	0	0
Socioeconomic		
Land use designations (acres)	187.44 agricultural 12.02 residential 1.19 commercial 0 industrial 23.07 park	164.60 agricultural 3.61 residential 3.63 commercial 0 industrial 1.83 park
Residential encroachments	0	0
# Parcels	135	114
Institutional encroachments	0	0
Other sensitive areas	Glacier Ridge Metro Park 22.27 acres O'Shaughnessy Reservoir Park = 0.80 acres	Glacier Ridge Metro Park = 1.38 acres O'Shaughnessy Reservoir Park = 0.45 acres

(C) The applicant shall describe all public involvement that was undertaken in the site/route selection process. The applicant shall provide a description of how many and what types of comments were received.

Throughout the easement acquisition and right of entry process, Columbia has partnered with landowners to engage in minor reroutes to reflect landowner preferences for the centerline's location. Columbia has included all of the major reroutes that have been discussed with property owners as of the date of the filing of the Application in the proposed Preferred and the Alternate routes. There are a few minor reroutes on the Preferred Route that are currently being evaluated with the property owners to determine if they are feasible for the Project. Columbia will file an addendum to the Application, if necessary, to provide updated information pertaining to those reroute areas if they are approved by the landowner and Columbia.

Columbia also hosted a virtual public informational meeting on Monday, August 17 from 6:00 pm to 8:00 pm. At this public meeting, Columbia received questions from several landowners regarding the proposed routes, but Columbia did not receive any feedback regarding the routes.

FIGURE 1

STUDY AREA AND ROUTES

Figure No.
1

Title
Study Area and Routes

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055
Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

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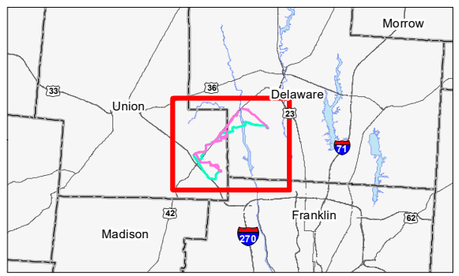
N

Legend
- Preferred Route
- Alternate Route
- Study Area



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, USGS
3. Background: Esri

Stantec

FIGURE 2

ROUTE CITING CONSIDERATIONS

Figure No.
2

Title
Route Siting Considerations

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055
Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

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1:24,000 (At original document size of 11x17)

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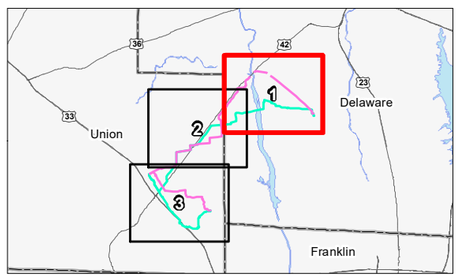
Legend

- Study Area
- Preferred Route
- Alternate Route
- Columbia Gas of Ohio Existing Gas Main
- American Electric Power Transmission Line
- ODOT Active Rail Line
- FedEx Proposed Location
- Schools and Places of Worship
- Commercial/Agricultural
- Residential
- SHPO Archaeology Sites
- SHPO Historic Structures
- SHPO OAI Site Boundary
- SHPO Phase 1
- Forested Area
- National Wetlands Inventory Feature
- SWAP Corridor Management Zone
- Parcel Boundary

ODOT Projects by Year
- 2020
- 2021
- 2022
- 2023

Parcel Considerations
- 1 - Proposed Residential Developement
- 2 - Landowner Considerations
- 3 - Dublin City School Construction
- 4 - Proposed Pulte Developement
- 5 - Metro Park
- 6 - Wicked Chicken Development

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, Ohio SHPO, USFWS, USGS, ODOT, PennWell
3. Orthophotography: 2018 OGRIP

Stantec

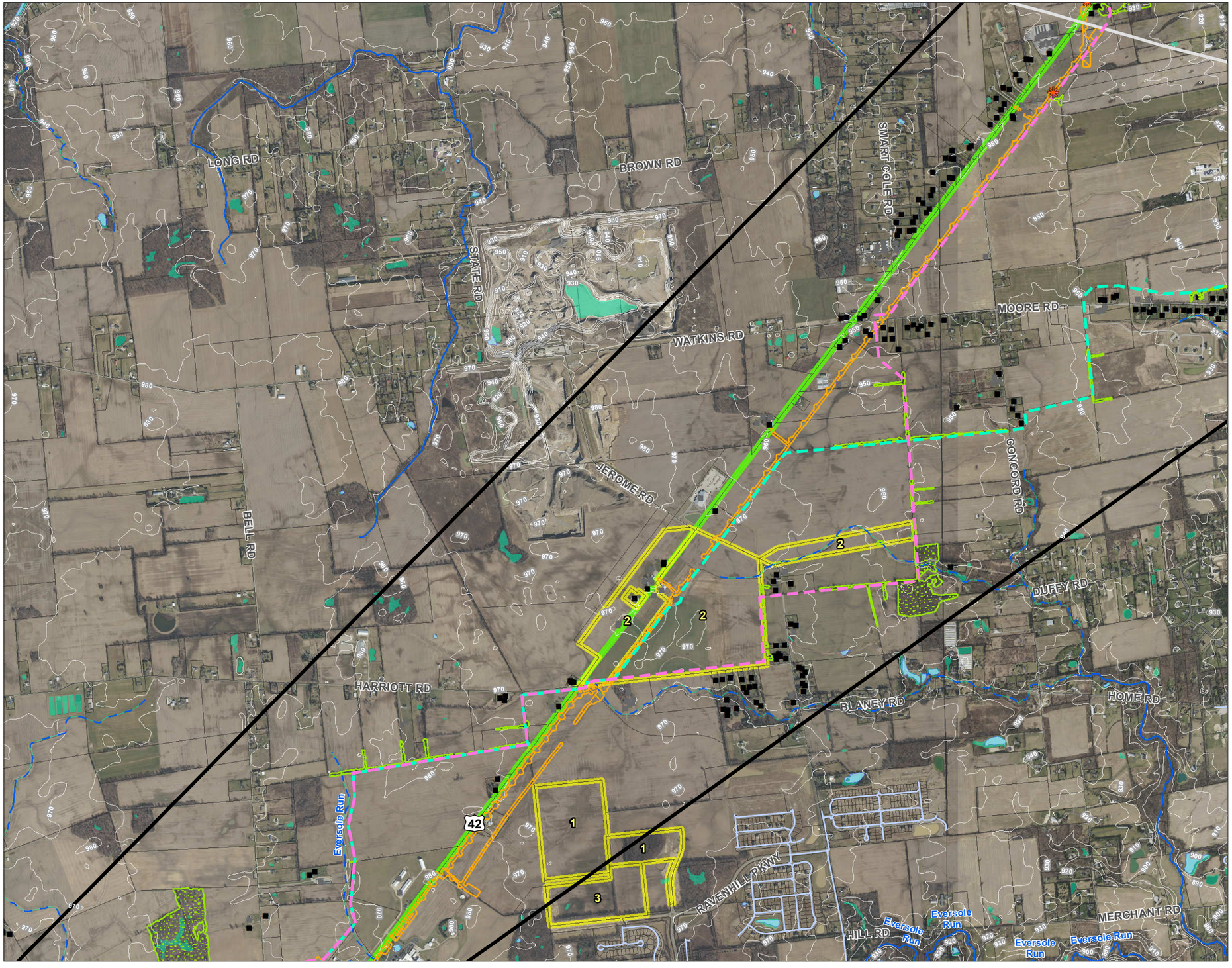


Figure No.

2

Title

Route Siting Considerations

Client/Project

Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location

Union and Delaware Counties
Ohio

193707055

Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
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- ODOT Active Rail Line
- FedEx Proposed Location
- Schools and Places of Worship
- Commercial/Agricultural
- Residential
- SHPO Archaeology Sites
- SHPO Historic Structures
- SHPO OAI Site Boundary
- SHPO Phase 1
- Forested Area
- National Wetlands Inventory Feature
- SWAP Corridor Management Zone
- Parcel Boundary

ODOT Projects by Year

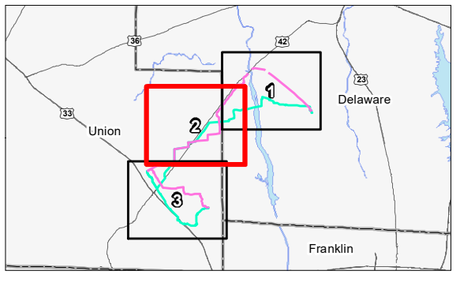
- 2020
- 2021
- 2022
- 2023

Parcel Considerations

- 1 - Proposed Residential Developement
- 2 - Landowner Considerations
- 3 - Dublin City School Construction
- 4 - Proposed Pulte Developement
- 5 - Metro Park
- 6 - Wicked Chicken Development

National Hydrography Dataset

- Perennial Stream
- Intermittent Stream
- Waterbody



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, Ohio SHPO, USFWS, USGS, ODOT, PennWell
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
2

Title
Route Siting Considerations

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055

Prepared by JD on 2020-06-07
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Legend

- Study Area
- Preferred Route
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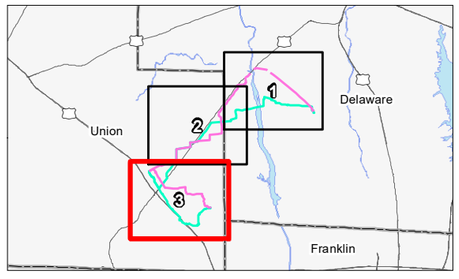
- ODOT Active Rail Line
- FedEx Proposed Location
- Schools and Places of Worship
- Commercial/Agricultural
- Residential
- SHPO Archaeology Sites
- SHPO Historic Structures
- SHPO OAI Site Boundary
- SHPO Phase 1
- Forested Area
- National Wetlands Inventory Feature
- SWAP Corridor Management Zone
- Parcel Boundary

ODOT Projects by Year
- 2020
- 2021
- 2022
- 2023

Parcel Considerations
- 1 - Proposed Residential Developement
- 2 - Landowner Considerations
- 3 - Dublin City School Construction
- 4 - Proposed Pulte Developement
- 5 - Metro Park
- 6 - Wicked Chicken Development

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, Ohio SHPO, USFWS, USGS, ODOT, PennWell
3. Orthophotography: 2018 OGRIP

Stantec

4906-05-05

PROJECT DESCRIPTION

4906-05-05 – Project Description

(A) The applicant shall provide a description of the project's geography, topography, population centers, major industries, and landmarks.

The Project is located in central Ohio, northeast of Columbus, in Union and Delaware Counties. These counties are located within the Till Plains physiographic section and the Central Ohio Clayey Till Plain physiographic region. This region is described as having moderate relief with elevations ranging from 700 – 1,150 feet (ODGS 1998).

The closest cities to the Project include Dublin and Powell, Ohio. The major industries in these two cities are included in Table 4.

Table 4. Major industries in the Two Major Cities near the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Delaware and Union Counties, Ohio

Industries	Dublin, Ohio	Powell, Ohio
Professional, Scientific, Technical services	12.7%	16.5%
Finance and Insurance	9.2%	7.4%
Educational Services	9.0%	5.5%
Healthcare	8.6%	13.0%
Accommodation and Food Service	4.2%	5.6%
Transportation Equipment	3.9%	-
Broadcasting and Telecommunications	3.7%	-
Construction	-	4.8%
Public Administration	-	3.9%
Miscellaneous	48.7%	43.3%

Source: City-Data 2020

(1) The applicant shall provide a map of not less than at least 1:24,000 scale, including the area one thousand feet on each side of a transmission line or pipeline alignment, and the area within one thousand feet of a substation site or compressor station site, which shall include the following features:

Figure 3 includes the list of items in a – g below.

(a) The proposed transmission line or pipeline alignments.

Please see Figures 1, 3 – 4, 6 – 7, and 9.

(b) The proposed substation or compressor station site locations.

N/A

(c) Roads and railroads.

The Preferred Route crosses a total of 18 roads and the Alternate Route crosses a total of 21 roads. The Preferred Route crosses U.S. Route 42 twice and the Alternate Route crosses it once. U.S. Route 42 is a major roadway within the Project area and Columbia plans utilize a jack and bore construction method for both centerline options. With the jack and bore horizontal boring method, a hydraulic tool pushes a casing through the subsurface. Cuttings generated from the process are contained in the casing pipe and removed by gravity or vibration after the pullback of the pipe.

The Alternate Route also crosses U.S. Route 33 in two locations, which will be installed utilizing a HDD method.

Ohio Department of Transportation ("ODOT") Right of Way Plan Manual, Section 8102.05.D.4 states "The ODOT policy on open cuts of existing pavement is that the installation of underground facilities by open cutting pavement will not be considered unless it is demonstrated that there is no reasonable alternate method available. Casing, pipe or conduit crossings of the highway shall be installed under the conditions outlined in Section 8106.06 and 8106.07 by auguring, driving, boring, jacking or tunneling without disturbing the pavement or paved shoulders." to determine the best installation method. Columbia is currently coordinating directly with ODOT for all crossings within ODOT jurisdiction with the Preferred Route.

Other roads within the Study Area are smaller, township and county roads that Columbia anticipates using open cut or jack and bore installation on based upon coordination with the regulatory entities on each crossing. Columbia will either maintain one lane to traffic or detour around Columbia's construction for these smaller routes.

One railroad line is located 0.20 mile east of the tie-in location to the existing NCL system. However, both the Preferred and Alternate Routes avoid crossing the railroad.

(d) Major institutions, parks, and recreational areas that are publicly identified and publicly owned.

Glacier Ridge Metro Park and O'Shaughnessy Reservoir Park are both crossed by the Preferred and Alternate route options. Both parks are owned and operated by public agencies, serving citizens of the Central Ohio region.

Glacier Ridge Metro Park is part of the Columbus and Franklin County Metro Park system, and the park properties are located near the existing North Columbus High Pressure system tie-in point. O'Shaughnessy Reservoir Park is part of the City of Columbus Park system, and the park property is located to the east of the Scioto River.

(e) Existing gas pipeline and electric transmission line corridors.

The Preferred Route crosses 38 existing utilities including 7 natural gas pipeline corridors and 5 electric transmission line corridors. The Alternate Route crosses 39 existing utilities including 14 natural gas pipeline corridors and 7 electric transmission line corridors.

Existing utilities within or near the Preferred Route and Alternate Route, consist of the following:

- American Electric Power overhead electric transmission and distribution lines;
- AEP substations;
- First Energy overhead electric transmission and distribution lines;
- Consolidated Electric Co-op electric lines;
- Union Rural Electric Co-op electric lines;
- Del-Co water pipeline;
- Frontier Communications fiber optic and telephone lines;
- Charter Communications fiber optic and telephone lines;

- Madison Energy Cooperative natural gas pipelines;
- Columbia Gas of Ohio natural gas pipelines;
- City of Dublin public utilities;
- City of Marysville public utilities; and
- ODOT utilities.

(f) Named lakes, reservoirs, streams, canals, and rivers.

The Preferred Route crosses two named streams: Eversole Run and the northmost part of the impounded Scioto River within the O'Shaughnessy Reservoir.

The Alternate Route crosses three named streams: Eversole Run, the Scioto River, and North Fork Indian Run. North Fork Indian Run is within the Alternate Route, according to NHD; however, based on field surveys for the Project, the stream does not appear on the surface and is likely piped underground.

(g) Population centers and legal boundaries of cities, villages, townships, and counties.

Table 5 shows the various legal boundaries crossed by each of the Project centerline options. The two centerlines are similar with the exception of the Preferred Route avoiding the incorporated area of New California, Ohio. These legal boundaries are also shown in Figure 3.

Table 5. Counties, Townships, and Municipalities Crossed by Each of the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Route Options, Union and Delaware Counties, Ohio

	Preferred Route	Alternate Route
Counties	Union, Delaware	Union, Delaware
Townships	Jerome, Millcreek, Concord, Liberty	Jerome, Millcreek, Concord, Liberty
Villages/Towns	-	New California
Cities	Dublin	Dublin

(2) The applicant shall provide the area, in acres, of the proposed right-of-way for the facility, the length of the transmission line or pipeline, in miles, and the number of properties crossed by the facility.

The length of the Preferred Route is 16.59 miles long and crosses 115 parcels owned by 76 different landowners. The total footprint of the Preferred Route, including the pipeline ROW, laydown areas, additional temporary workspace, and temporary access roads is 261.05 acres.

The Alternate Route is 16.86 miles long and it crosses 101 parcels owned by 72 landowners. The total footprint of the Alternate Route, including the pipeline ROW, laydown areas, additional temporary workspace, and temporary access roads is 233.14 acres.

(B) The applicant shall provide information on the facility layout for each route/site alternative, and a description of the installation methods as detailed in this rule.

(1) The applicant shall describe the proposed site clearing, construction methods, and reclamation operations, including:

(a) Surveying and soil testing.

A civil survey was completed on both the Preferred Route and the Alternate Route during route development. It was done using conventional surveying methods. Man-made facilities along the centerline that may affect pipeline design were located during the survey. Offsets were used to survey around large obstructions. The centerline of the approved route will be staked prior to construction.

A desktop geotechnical overview was performed on both the Preferred and Alternate Routes and Columbia has initiated further geotechnical investigations starting with the Preferred Route that has included the collection of subsurface soil data. The final geotechnical report will be provided to the Board once it has been completed.

Due to the requirements of the Project construction, regardless of the route selected, the collection of additional geotechnical information will occur during

the construction process. The collection of this additional geotechnical information is necessary for proper construction but was not necessary to ensure that the Project meets applicable legal and practical criteria for approval.

(b) Grading and excavation.

The final Project ROW will be graded, as necessary, to provide a safe and efficient work area for construction equipment and personnel. Both the Preferred and Alternate Routes are relatively level, so grading requirements will be minimal. Temporary erosion and soil controls will be installed and functioning properly prior to ground disturbance activities. Existing vegetation will be removed. Along the ROW, topsoil will first be segregated and stockpiled.

After grading, a trench will be excavated. For the 24-inch pipe, the trench size will be approximately 3 feet wide by 8 feet deep. An approximately 2 feet wide by 7 feet deep trench will be excavated for the 16-inch pipe. The pipe will then be installed as described below, and the trench will be backfilled. Excess backfill material will be distributed over the trench and spoil areas or hauled from the site. Warning tape will be installed over all open cut pipeline installation. This tape will be installed on average, 6-inches to 12-inches below planned final grade, although the depth will be deeper in agricultural areas. Finally, the trenches will be backfilled primarily utilizing native spoils, and will then have the segregated topsoil replaced restoring he land surface to its original contours. Potential drainage tile locations were avoided to the extent possible during the routing process by routing along parcel and field edges. Drainage tile that could not be avoided and may be damaged during the pipeline installation process will be repaired or replaced.

The planned method for crossing the Scioto River on the Preferred Route includes a HDD. Refer to the HDD Feasibility Analysis Report (Appendix A) for details on the analysis and bore profile.

For HDD installation, a pilot hole will be drilled along the proposed pipeline centerline. Then, the pilot hole will be enlarged, which is known as the reaming process. Finally, the pipe will be pulled back through the reamed

hole. During HDDs, a drilling fluid is utilized to assist with the mechanical drilling process. The fluid needs to be constantly monitored during the drilling process for an inadvertent release of the drill fluids. The most obvious signs of a release is the visible pooling of drilling mud on the surface, a sudden decrease in mud volume returns at the entry site, or a loss in drilling mud pump pressure. Refer to Horizontal Directional Drill Inadvertent Release Avoidance Plan (Appendix B) for the containment and clean-up plans should an inadvertent release occur.

The planned method for crossing the O'Shaughnessy Reservoir on the Alternate Route includes a HDD. For HDD installation, a pilot hole will be drilled along the proposed pipeline centerline. Then, the pilot hole will be enlarged, which is known as the reaming process. Finally, the pipe will be pulled back through the reamed hole.

During HDDs, a drilling fluid is utilized to assist with the mechanical drilling process. The fluid needs to be constantly monitored during the drilling process for an inadvertent release of the drill fluids. The most obvious signs of a release is the visible pooling of drilling mud on the surface, a sudden decrease in mud volume returns at the entry site, or a loss in drilling mud pump pressure. Refer to Horizontal Directional Drill Inadvertent Release Avoidance Plan (Appendix B) for the containment and clean-up plans should an inadvertent release occur.

Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received.

(c) Construction of temporary and permanent access roads and trenches.

No permanent access roads are proposed for the Project. Columbia typically uses existing roads whenever possible. New access roads are only built if existing roads are not adequate. Access roads need to be at least 25 feet wide with additional width in areas of tight turns. Access roads should also be as flat as possible in elevation. Temporary access roads will be returned back to pre-construction conditions after the Project is complete,

if the landowner desires. The Preferred Route has 4 proposed temporary access roads associated with it and the Alternate Route has 7 proposed temporary access roads. In addition, there are 53 temporary construction entrances ("TCEs") on the Preferred Route and 52 TCEs on the Alternate Route as shown on Figure 4.

(d) Laying of pipe.

Columbia anticipates the pipe will be installed using open trench methods for a vast majority of the Preferred Route and Alternate Route. Individual sections of pipe will be strung along the ROW, then welded together. The welds will then be visually inspected by qualified personnel, radiographic inspected (x-rayed), coated and then lowered into the trench. Pipe will be installed such that secondary stresses are kept to a minimum to avoid abrasions, scuffing, sharp protrusions, and cracking. Well tamped earth fill or other continuous support will be used to prevent shearing. Any supported pipe will be insulated at the point of contact with a suitable insulating material such as rock shield or fiberglass sheeting.

(e) Installation of electric transmission line poles and structures, including foundations.

N/A

(f) Post-construction reclamation.

After construction, the Project ROW will be restored to pre-construction conditions or better after construction is complete. Pre-construction photographs and video will be taken of the entire route to provide a record for comparison to ensure the adequacy of restored conditions after construction.

Restoration will include the permanent repair of agricultural fences and other private or public surface facilities; the restoration of drainage ditches; fertilizing, seeding, and mulching of non-cultivated, non-farmland areas; and the removal of temporary soil erosion and sedimentation control measures after sufficient vegetative cover has been established. Soil associated with agricultural fields, that was segregated during construction, will be returned

to its original location. Drainage tile that could not be avoided and may have been damaged during the pipeline installation process will be repaired or replaced.

Stream and wetland crossings were minimized to the extent possible and the width of workspace was reduced to a 50-foot ROW width within streams and wetlands as part of the route selection process. Streams and wetlands and their adjacent areas will be restored to original conditions using methods to minimize soil erosion and degradation. Modification or removal of habitat in stream and wetland crossings will be temporary because Columbia will return the streams back to original contours and replace native substrates. Line markers will be installed along the Project centerline to warn against excavation in the vicinity of the Project ROW.

Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received.

(2) The applicant shall provide the layout of facilities. The applicant shall:

(a) Provide a map of at least 1:12,000 scale of the transmission line or pipeline routes and associated facilities such as substations, compressor stations, and other stations, showing the following proposed features:

i. Temporary and permanent access roads, staging areas, and laydown areas.
ii. Proposed location of major structures, including transmission line poles and structures, and buildings.
iii. Fenced-in or secured areas.

See Figure 4.

(b) Describe reasons for the proposed layout and any unusual features.

The layout of the proposed pipeline is based upon the tie-in locations to the existing NCL system and the North Columbus High Pressure system to meet

the purpose of the Project. The Project is tying into the existing NCL system off Hyatts Road and from there the 24-inch centerline travels to the district regulator station located off Watkins California Road. The district regulator is located in this location in order to reduce the pressure from the 24-inch line (720 psig MAOP) to the 16-inch line (190 psig MAOP) that travels to the tie-in location off of McKitrick Road east of the intersection of McKitrick Road and Hyland-Croy Road into the existing North Columbus High Pressure System.

The centerline layout is set by the siting features (constructability, environmental, cultural, current/proposed development) based upon the engineering standards that Columbia must adhere to when designing pipelines. Each laydown area is strategically placed to provide storage area for the pipe and allow access to the centerline easement during construction to minimize construction traffic on existing roadways. The layout of all Project components for both centerline options are shown in Figure 4. There are no unusual features involved with this Project.

(c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.

Columbia does not have any future planned modifications in the proposed layout; however, Columbia has partnered with landowners to engage in minor reroutes to reflect landowner preferences for the centerline's location. Columbia has included all of the major reroutes that have been discussed with property owners as of the date of the filing of the Application in the proposed Preferred and the Alternate routes. There are a few minor reroutes on the Preferred Route that are currently being evaluated with the property owners to determine if they are feasible for the Project. Columbia will file an addendum to the Application, if necessary, to provide updated information pertaining to those reroute areas if they are approved by the landowner and Columbia.

(C) The applicant shall provide a description of the proposed transmission lines or pipelines, as well as switching, capacity, metering, safety, and other equipment pertinent to the operation of the proposed electric power transmission lines and gas pipelines and associated facilities. Include any provisions for future expansion.

(1) The applicant shall provide the following information for electric power transmission lines:

(a) Design voltage.
(b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
(c) Base and foundation design.
(d) Cable type and size, where underground.
(e) Other major equipment or special structures.

N/A

(2) The applicant shall provide a single-line diagram of electric power transmission substations and a description of the proposed major equipment, such as:

(a) Breakers.
(b) Switchgear.
(c) Bus arrangement and structures.
(d) Transformers.
(e) Control buildings.
(f) Other major equipment.

N/A

(3) The applicant shall describe the following for gas pipelines:
(a) Maximum allowable operating pressure.
(b) Pipe material.
(c) Pipe dimensions and specifications.
(d) Control buildings.
(e) Heaters, odorizers, and above-ground facilities.
(f) Any other major equipment.

(a) For the 24-inch pipeline, the MAOP is 720 psig, and for the 16-inch pipeline the MAOP is 190 psig.

(b) Both pipelines will be carbon steel with fusion-bonded or Powercrete coating.
(c) The 24-inch pipeline will have an outside diameter of 24-inches, with a wall thickness equal to 0.375 inches, manufactured in accordance with American Petroleum Institute ("API") Specification 5L, Grade X-65. The 16-inch pipeline will have an outside diameter of 16-inches, with a wall thickness equal to 0.375 inches, and manufactured in accordance with API Specification 5L, Grade X-52.
(d) The 24-inch and 16-inch pipeline will feed into a district regulator station.
(e) No heaters, odorizers or above ground associated facilities.
(f) None.

FIGURE 3

PROJECT LOCATION

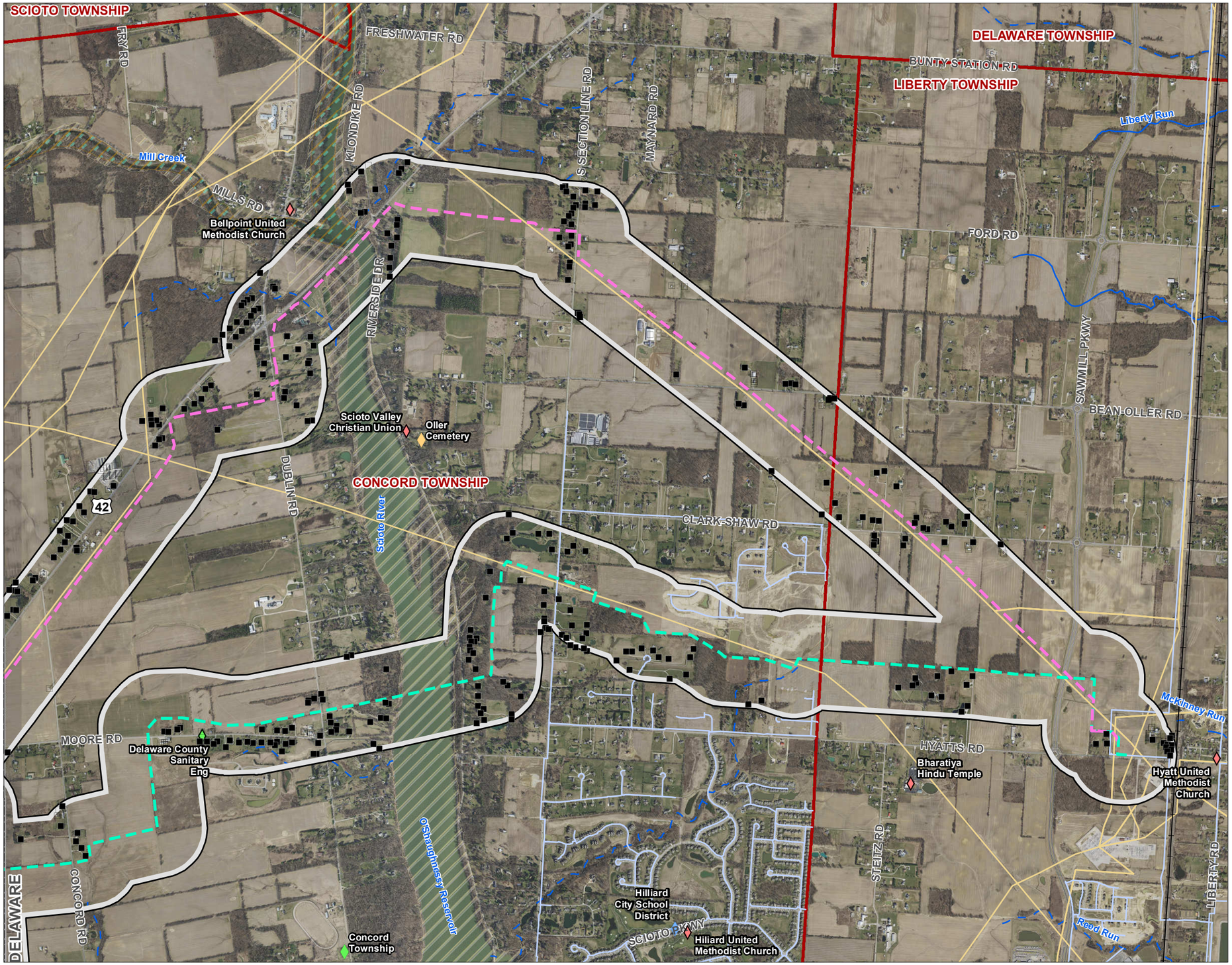


Figure No.
3

Title
Project Location

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055
Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

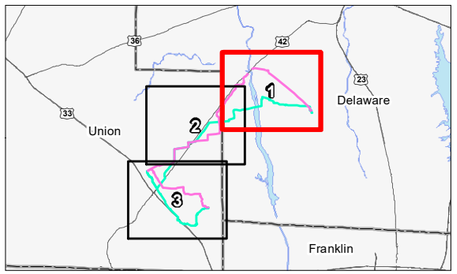
0 1,000 2,000 Feet
1:24,000 (At original document size of 11x17)

N

Legend
- 1,000 ft Study Corridor
- Preferred Route
- Alternate Route
- Columbia Gas of Ohio Existing Gas Main
- Electric Transmission Line
- ODOT Active Rail Line
- Cemetery
- Government Office
- Place of Worship
- School
- Commercial/Agricultural
- Residential
- Park

FEMA Flood Hazard Area
- 100-year Flood Zone
- 100-year Floodway

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream



Notes
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2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, USGS, ODOT, PennWell
3. Orthophotography: 2018 OGRIP

Stantec

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- Place of Worship
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FEMA Flood Hazard Area
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National Hydrography Dataset
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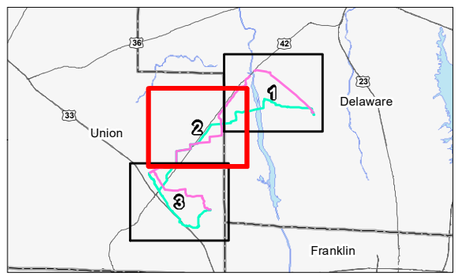

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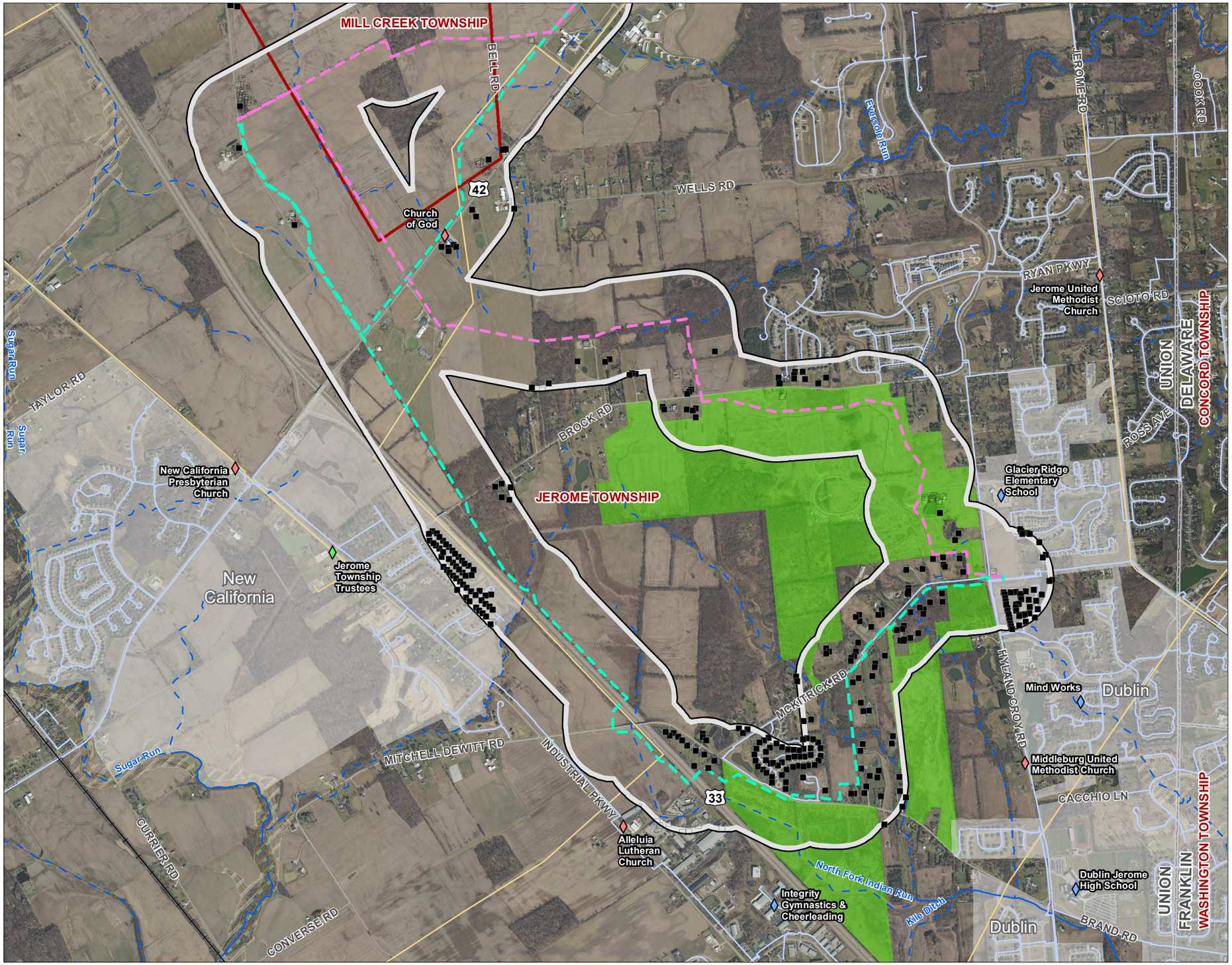

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FEMA Flood Hazard Area
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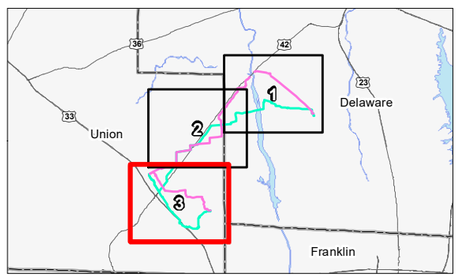

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3. Orthophotography: 2018 OGRIP

Stantec

FIGURE 4

PROJECT LAYOUT

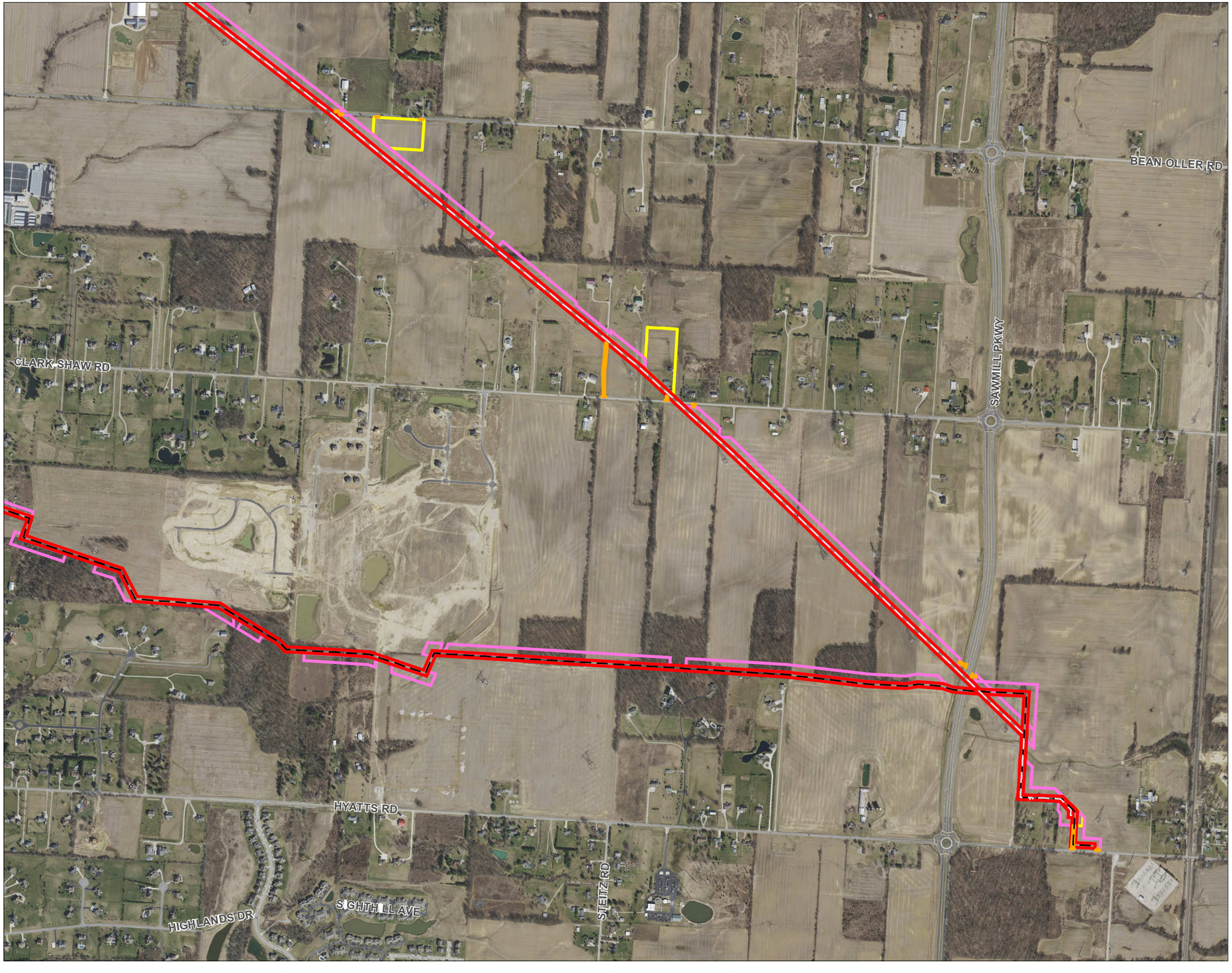

Figure No.
4

Title
Project Layout

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Project Location
Union and Delaware Counties
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Independent Review by KC on 2020-08-07

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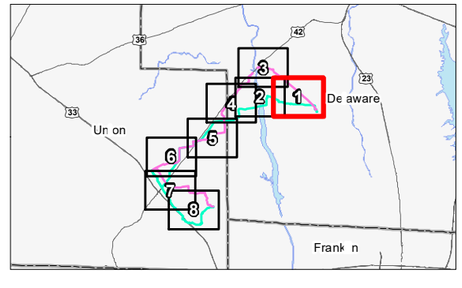
N

Legend
- Preferred Route - HDD
- Preferred Route
- Alternate Route
- Access
- Additional Temporary Workspace
- Laydown Area
- Permanent Easement
- Temporary Easement



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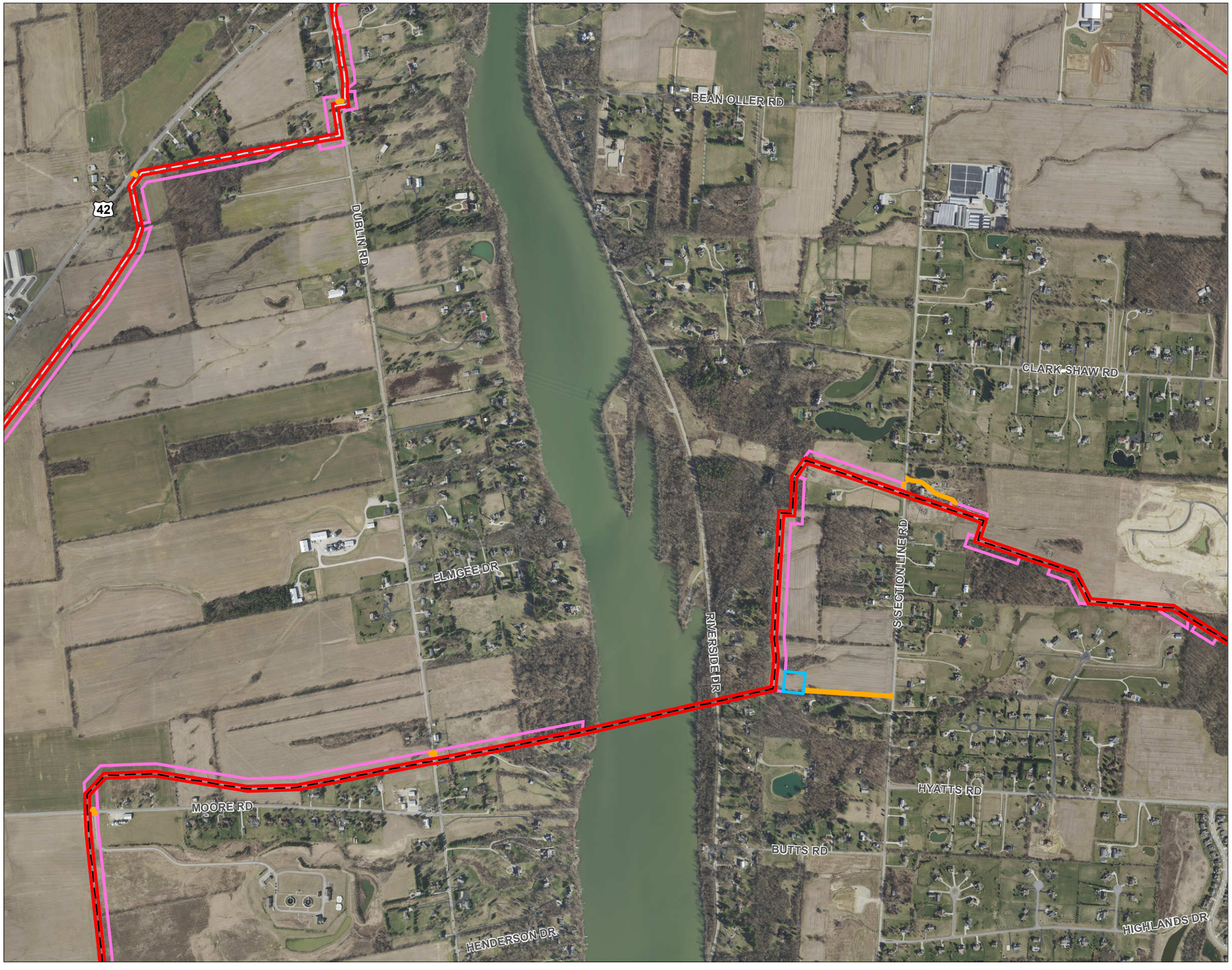

Figure No.
4

Title
Project Layout

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Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
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- Laydown Area
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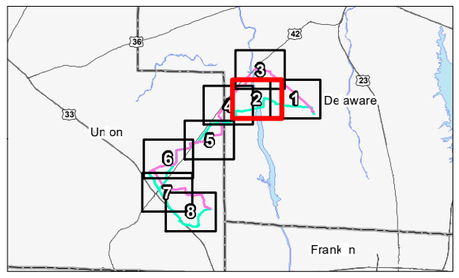

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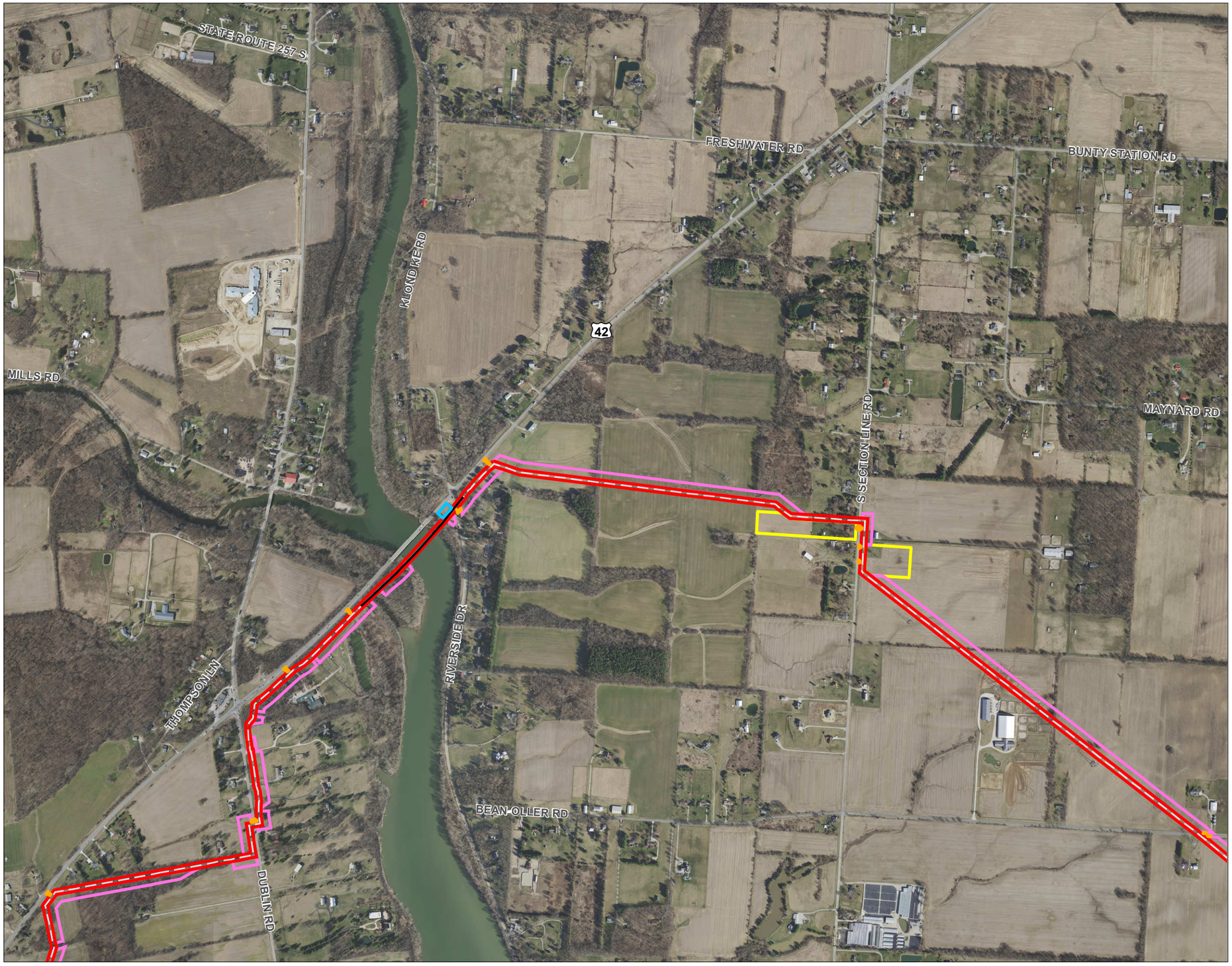

Figure No.
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Title
Project Layout

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Union and Delaware Counties
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Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

0 500 1,000 Feet
1:12,000 (At original document size of 11x17)

N

Legend
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- Preferred Route
- Alternate Route
- Access
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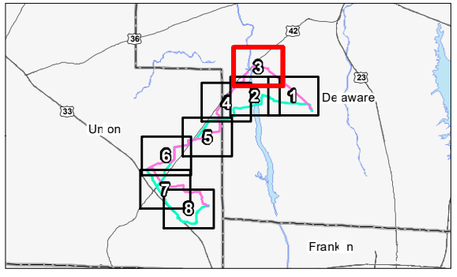
- Permanent Easement
- Temporary Easement



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, USGS
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
4

Title
Project Layout

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

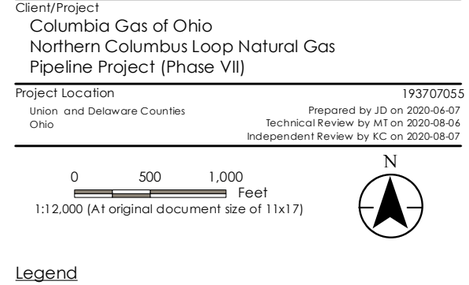
193707055

Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

0 500 1,000 Feet
1:12,000 (At original document size of 11x17)

N

Legend
- Preferred Route - HDD
- Preferred Route
- Alternate Route
- Access
- Additional Temporary Workspace
- Laydown Area
- Permanent Easement
- Temporary Easement



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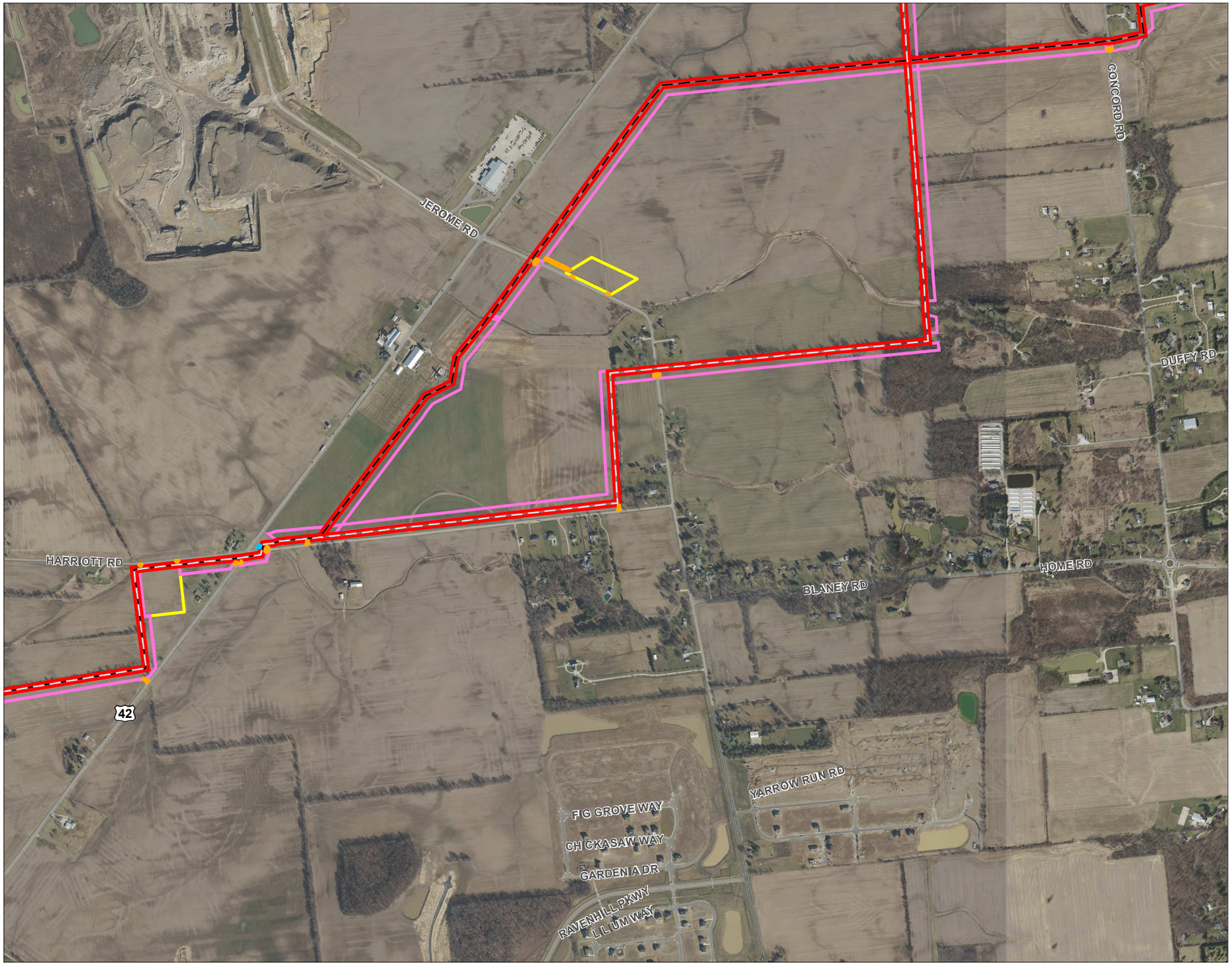

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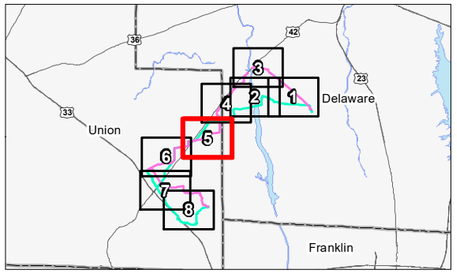

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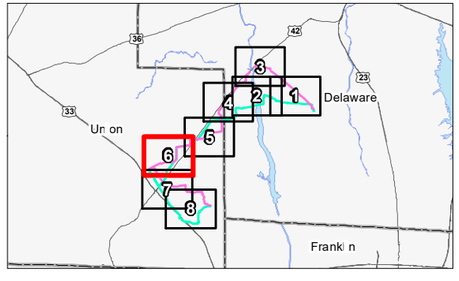

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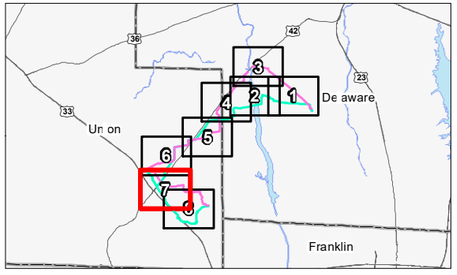

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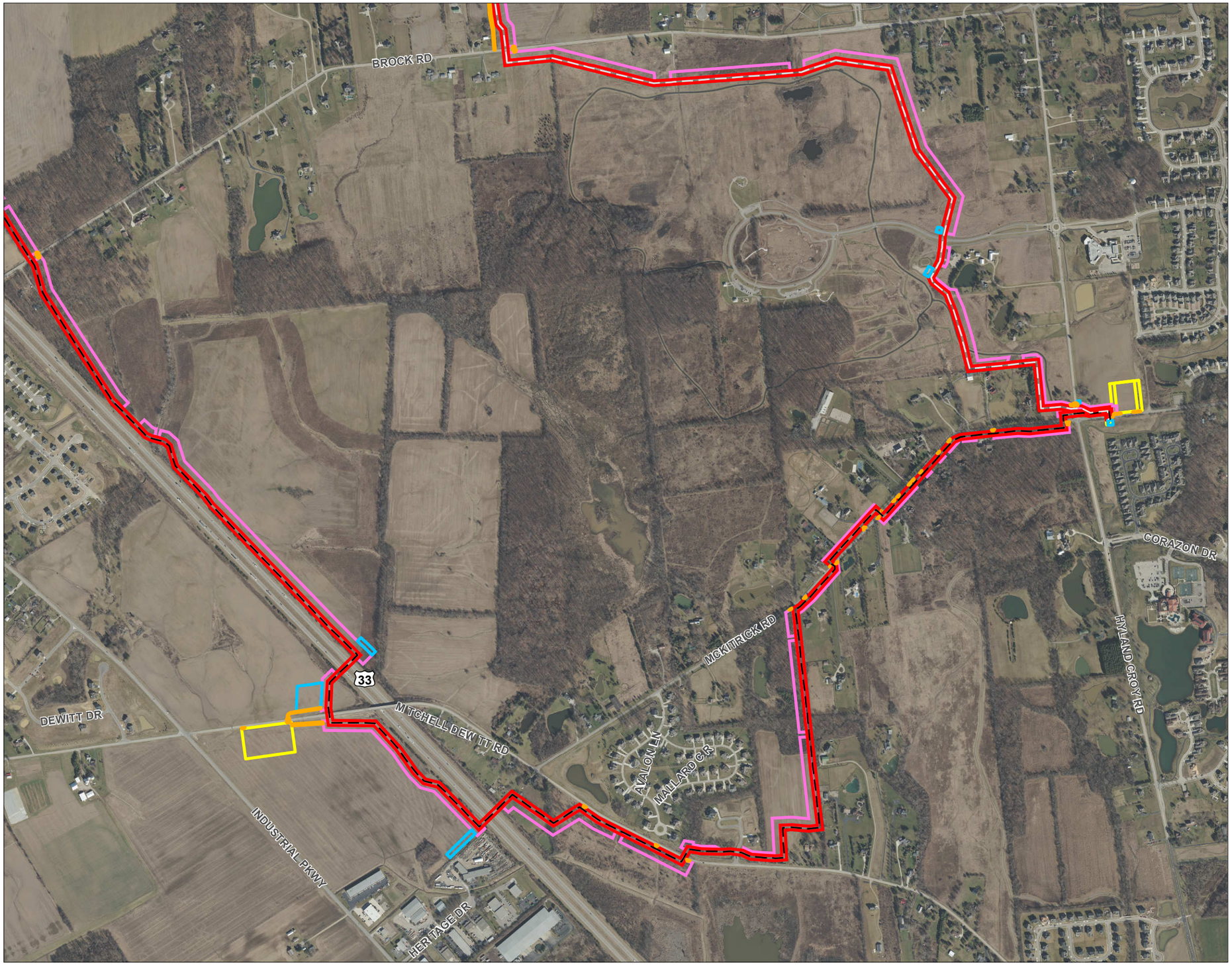

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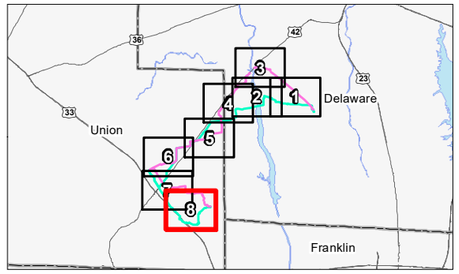

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Stantec

4906-05-06

ECONOMIC IMPACT AND PUBLIC INTERACTION

4906-05-06 – Economic impact and public interaction

(A) The applicant shall state the current and proposed ownership status of the proposed facility, including leased and purchased land, rights-of-way, structures, and equipment.

Columbia will construct, own, operate, and maintain the proposed new natural gas pipeline and appurtenances. Columbia has been in contact with property owners to begin negotiating and acquiring easements for the centerline and the district regulator station locations for the Preferred route. Appendix C contains lists of property owners that Columbia is working with to obtain permanent easements and temporary rights-of-way for construction and land purchases for the centerline on both the Preferred and Alternate Routes.

(B) The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905 of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimate shall include:

(1) Land and land rights.
(2) Structures and improvements.
(3) Substation equipment.
(4) Poles and fixtures.
(5) Towers and fixtures.
(6) Overhead conductors.
(7) Underground conductors and insulation.
(8) Underground-to-overhead conversion equipment.
(9) Right-of-way clearing and roads, trails, or other access.

N/A

(C) The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas pipeline facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905 of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:

(1) Land and land rights.
(2) Structures and improvements.
(3) Pipes.
(4) Valves, meters, boosters, regulators, tanks, and other equipment.
(5) Roads, trails, or other access.

(1) Columbia has budgeted [redacted] for land acquisition, but this is an estimate prior to all of the land rights being acquired.
(2) [redacted].
(3) The estimated cost of pipes and its installation, engineering, and design is [redacted].
(4) The estimated cost of associated equipment, other than pipes, and its installation, engineering, and design is [redacted].
(5) The estimated cost of roads, trails, and its installation, engineering, and design is [redacted].

The total project cost of approximately $105,434,897 will be captured in FERC Account 101, Plant in Service, when the Project is placed in service in 2022.

(D) The applicant shall provide information regarding public interaction and the economic impact for each of the site/route alternatives.

(1) The applicant shall provide a list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.

Table 5 (in Columbia's Ohio Adm.Code 4906-05-05 (A)(1)(g)) and Figure 3 shows the county, township, and municipal boundaries within 1,000 feet of

both centerline options. The Project centerline options are similar with respect to these boundaries with the exception of the Alternate Route overlapping with an additional incorporated area, the Village of New California, Ohio.

(2) The applicant shall provide a list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.

Table 6. List of Public Officials and Contact Information

Public Official	Office Address	Office Telephone Number
Governor Mike DeWine (Staff)	77 S. High Street, 30th Floor, Columbus, OH 43215	(614) 466-3555
Senator Dave Burke	1 Capitol Square, Ground Floor, Columbus, OH 43215	(614) 466-8049
Senator Bob Hackett	1 Capitol Square, 1st Floor, Columbus, OH 43215	(614) 466-3780
Representative Tracy Richardson	77 S. High Street, 13th Floor, Columbus, OH 43215	(614) 466-8147
Representative Bill Reineke	77 S. High Street, 14th Floor, Columbus, OH 43215	(614) 466-1374
Representative Rick Carfagna	77 S. High Street, 13th Floor, Columbus, OH 43215	(614) 466-1431
Representative Jon Cross	77 S. High Street, 13th Floor, Columbus, OH 43215	(614) 466-3819
Congressman Steve Stivers (Staff)	3790 Municipal Way, Hilliard, OH 43016	(614) 771-4968
Commissioner Tim Hansley	233 W. 6th Street, Marysville OH 43040	(937) 645-3012
Commissioner Chris Schmenk	233 W. 6th Street, Marysville OH 43040	(937) 645-3012
Commissioner Charles Hall	233 W. 6th Street, Marysville OH 43040	(937) 645-3012

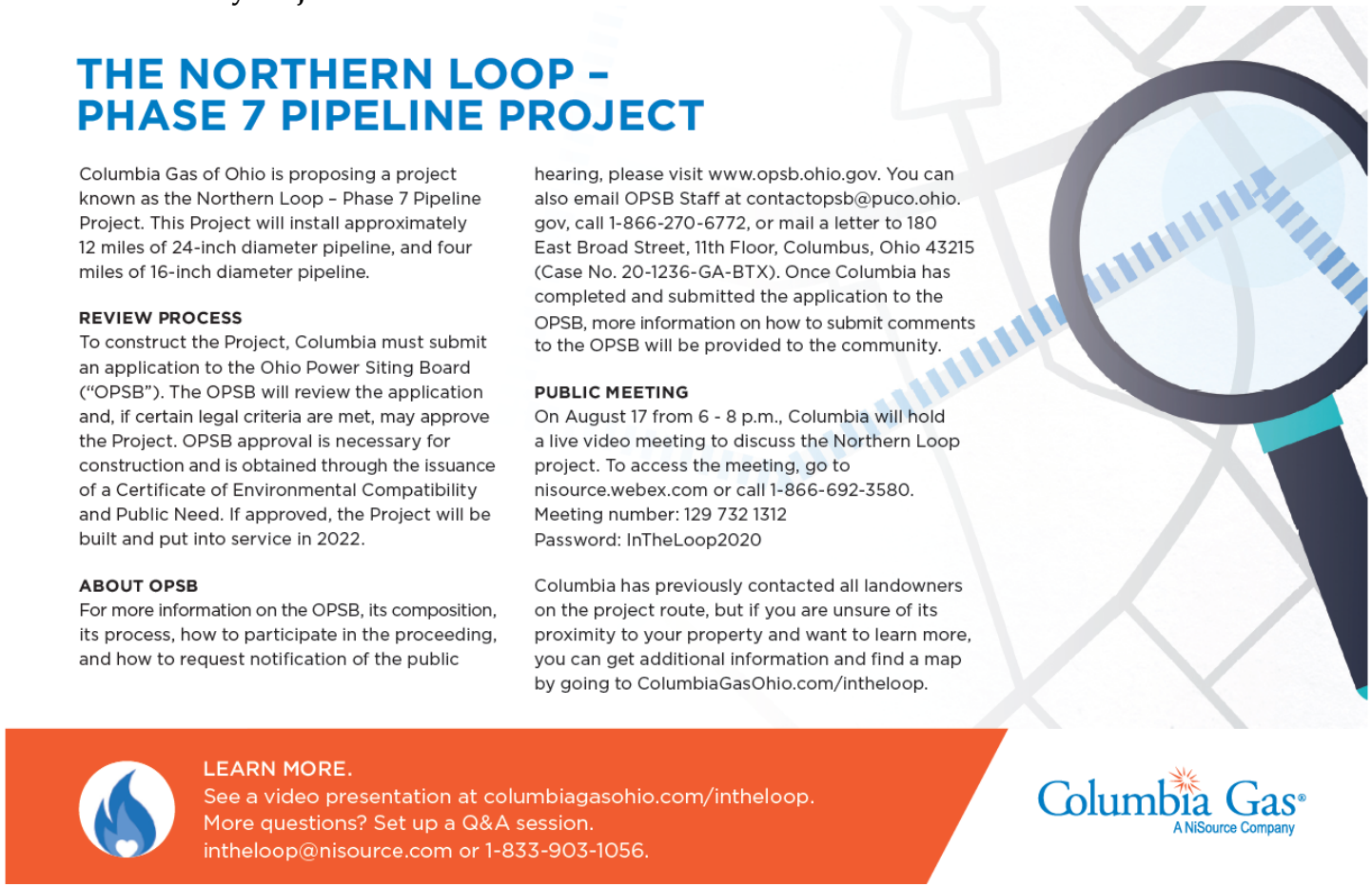
Public Official	Office Address	Office Telephone Number
Hon. JR Rausch	209 S. Main Street, Maryville OH 43040	(937) 645-7350
Terry Emery, Marysville City Manager	209 S. Main Street, Maryville OH 43040	(937) 645-7350
Commissioner Jeff Benton	101 N. Sandusky St, Delaware OH 43015	(740) 833-2103
Commissioner Barb Lewis	101 N. Sandusky St, Delaware OH 43015	(740) 833-2101
Commissioner Gary Merrell	101 N. Sandusky St, Delaware OH 43015	(740) 833-2102
Michael Frommer, Delaware County Administrator	101 N. Sandusky St, Delaware OH 43015	(740) 833-2117

(3) The applicant shall provide a description of the public interaction planned for during the siting, construction, and operation of the proposed facility. This description shall include detailed information regarding the applicant's public information and complaint resolution programs as well as how the applicant will notify affected property owners and tenants about these programs at least seven days prior to the start of construction.

Columbia has developed a multi-pronged public engagement plan to inform the affected landowners and adjacent properties (collectively, the "Project Stakeholders") of the Project. Columbia has taken several pre-application steps to communicate with the public about the Project. Initially, Columbia established a website: (https://www.columbiagasohio.com/services/work-in-your-neighborhood/northern-loop-project) to provide the public with information and frequently asked questions about the project. Columbia also established a phone line (833-903-1056) and email address (intheloop@nisource.com) to address specific customer questions and concerns about the Project. Columbia intends to maintain this website as a way to communicate to customers during the siting and construction of the Project.

Columbia has also notified the Project Stakeholders of the application by sending a large, oversized postcards to affected landowners on the Preferred and Alternate Routes, as well as those landowners adjacent to both routes. The large postcard utilizes branding and creative logos to bring attention to the Project. An example of this postcard is shown below in Figure 5.

FIGURE 5 . Postcards to Notify Project Stakeholders



THE NORTHERN LOOP – PHASE 7 PIPELINE PROJECT

Columbia Gas of Ohio is proposing a project known as the Northern Loop – Phase 7 Pipeline Project. This Project will install approximately 12 miles of 24-inch diameter pipeline, and four miles of 16-inch diameter pipeline.

REVIEW PROCESS

To construct the Project, Columbia must submit an application to the Ohio Power Siting Board ("OPSB"). The OPSB will review the application and, if certain legal criteria are met, may approve the Project. OPSB approval is necessary for construction and is obtained through the issuance of a Certificate of Environmental Compatibility and Public Need. If approved, the Project will be built and put into service in 2022.

ABOUT OPSB

For more information on the OPSB, its composition, its process, how to participate in the proceeding, and how to request notification of the public hearing, please visit www.opsb.ohio.gov. You can also email OPSB Staff at contactopsb@puco.ohio.gov, call 1-866-270-6772, or mail a letter to 180 East Broad Street, 11th Floor, Columbus, Ohio 43215 (Case No. 20-1236-GA-BTX). Once Columbia has completed and submitted the application to the OPSB, more information on how to submit comments to the OPSB will be provided to the community.

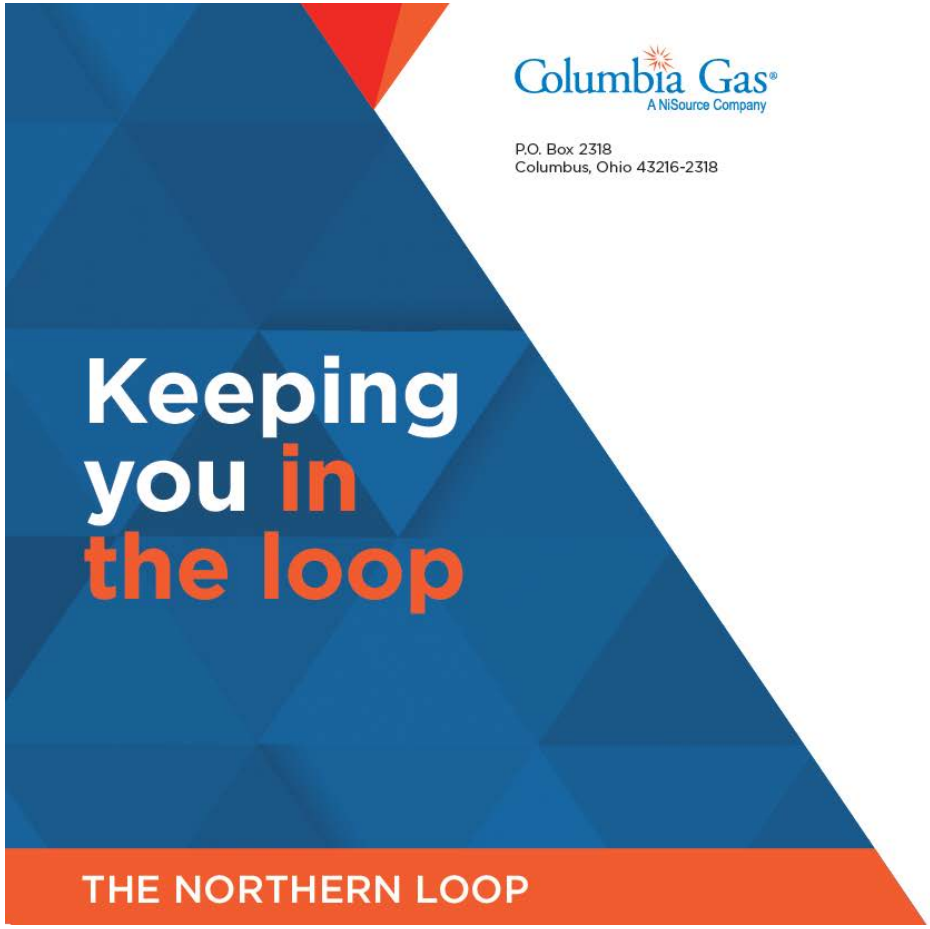
PUBLIC MEETING

On August 17 from 6 - 8 p.m., Columbia will hold a live video meeting to discuss the Northern Loop project. To access the meeting, go to nisource.webex.com or call 1-866-692-3580.
Meeting number: 129 732 1312
Password: InTheLoop2020

Columbia has previously contacted all landowners on the project route, but if you are unsure of its proximity to your property and want to learn more, you can get additional information and find a map by going to ColumbiaGasOhio.com/intheloop.

LEARN MORE.
See a video presentation at columbiagasohio.com/intheloop.
More questions? Set up a Q&A session.
intheloop@nisource.com or 1-833-903-1056.

Columbia Gas®
A NiSource Company


Columbia Gas
A NiSource Company
P.O. Box 2318
Columbus, Ohio 43216-2318
Keeping you in the loop
THE NORTHERN LOOP

Columbia hosted a live WebEx presentation on Monday, August 17, 2020 from 6:00 to 8:00 pm for Project Stakeholders to virtually watch and ask questions via the chat function. Columbia also posted a recorded presentation on the Project website that Project Stakeholders and other members of the public can access at any time. On Columbia's Project website, Columbia also posted a PDF of the Preferred and Alternate Routes to allow Project Stakeholders to zoom in and identify any potential impacts to their properties. Columbia also has provided both an email address and a phone number for the Project Stakeholders to reach out with any questions or concerns about the Project. In addition to these avenues, Columbia is also utilizing its social media channels to reach out to customers. Columbia utilizes Facebook, Twitter, and Nextdoor to connect to customers in a targeted, geospecific way.

Post construction, Columbia has a dedicated customer care and regulatory compliance team that addresses customer concerns submitted to Columbia. Columbia also has a dedicated social media that responds to customer concerns and comments on our Facebook and Twitter platforms.

(4) The applicant shall describe any insurance or other corporate programs for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.

Columbia is self-insured and maintains excess liability and property damage insurance as well. Columbia provides liability compensation for damages, if such should occur, as a result of Columbia's negligence in construction or operation of the proposed facility.

(5) The applicant shall provide an estimate of the increase in tax revenues as a result of facility placement.

Columbia estimates the property tax increase from the Project to total $2,024,999 per year.

4906-05-07

HEALTH AND SAFETY, LAND USE, AND REGIONAL DEVELOPMENT

4906-05-07 – Health and safety, land use, and regional development

(A) The applicant shall provide health and safety information for each site/route alternative.

(1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the national electric safety code, applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.

The construction and operation of the proposed Project will comply with Title 49, Part 191, "Transportation of Natural and Other Gas By Pipeline: 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," Ohio Adm.Code 4901:1-16, and will meet all applicable safety standards established by Occupational Safety and Health Administration ("OSHA").

(2) For electric power transmission facilities where the centerline of the facility is within one hundred feet of an occupied residence or institution, and for electric substations where the boundary of the footprint is within one hundred feet of an occupied residence or institution, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten percent of the total line length, or more than one mile of the total length being certificated. Where an alternative structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:

N/A

(a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:

i. Winter normal conductor rating.

ii. **Emergency line loading**
iii. **Normal maximum loading. Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.**
iv. **Where there is only one occupied residence or institution within one hundred feet of the centerline, only one set of field strength values are to be provided. Where there are two or more occupied residences or institutions with one hundred feet of the centerline, field strength values shall be provided for each configuration that includes these occupied residences and institutions, and constitutes more than ten percent of the total length, or more than one mile of the total line length being certified.**

(b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.

(c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location, and right-of-way width.

(d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.

(3) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio, television, and other communication system interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.

N/A

(4) The applicant shall provide an estimate of the effect of noise generation due to the construction, operation, and maintenance of the transmission line or pipeline and associated facilities. The applicant shall describe any equipment and procedures designed to mitigate noise emissions during site clearing, construction, operation, and maintenance of the facility to minimize noise impact, including limits on the time of day at which construction activities may occur. The applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:

(a) Blasting activities.

Columbia is not expecting blasting to be required for the installation of the Project.

(b) Operation of earth moving and excavation equipment.

Construction noise will include excavation; however, construction activities will be primarily limited to daytime hours and equipment will be outfitted with standard mufflers, with the exception of specific instances where night construction is required. Permit conditions and noise ordinances will be strictly adhered to for all nighttime work. Open cuts of hard surfaces will be made with the appropriate equipment, such as air hammers and saws. Care will be taken to limit construction activities near public gathering areas and other noise sensitive areas.

(c) Driving of piles, rock breaking or hammering, and horizontal directional drilling.

Columbia is proposing to open trench all roads, wetlands, and streams on the Preferred Route except for Wetland 2, the Scioto River, and State Route 257 (Riverside Drive) which Columbia is proposing to HDD and 8 smaller roads that Columbia is proposing to jack and bore on the Preferred Route.

Columbia is proposing to open trench roads, wetlands, and streams on the Project Alternate Route except U.S. Route 33, which Columbia is proposing

to utilize a HDD method, and the crossing of the O'Shaughnessy Reservoir, which Columbia is proposing to HDD. In addition, 8 smaller roads that Columbia is proposing to jack and bore on the Alternate Route.

Based upon geotechnical data collected for the Project Preferred Route, rock hammering and/or breaking is anticipated. This work will occur during normal day operations on an as-needed basis. Rock hammering and/or breaking is typically performed by utilizing a hydraulic hammer tip attached to an excavator. Anticipated decibel (dBA) ranges for this activity are between 80 – 110 dBA.

(d) Erection of structures.

N/A

(e) Truck traffic.

Construction noise may include truck traffic; however, construction activities will be limited to daytime hours and equipment will be outfitted with standard mufflers, unless permit requirements specifically state otherwise. Care will be taken to limit construction activities near public gathering areas and other noise sensitive areas.

(f) Installation of equipment.

Construction activities will be limited to daytime hours and equipment will be outfitted with standard mufflers, unless permit requirements specifically state otherwise. Care will be taken to limit construction activities near public gathering areas and other noise sensitive areas. Purging will be required to place the pipeline into service. Care will be taken to notify property owners within close proximity to purging activities. Hydrostatic testing of the 24-inch pipeline activity will be relatively quiet. Pneumatic testing of the 16-inch pipeline will also be relatively quiet. Temporary increased noise levels can be anticipated once the testing activity is complete, when the testing medium is released from the pipeline. This activity is anticipated to occur during normal daytime operations. If blowdown must occur outside of daytime operations, a silencer will be utilized to decrease the noise levels. Once the pipeline is placed

into service, the day-to-day operation of the pipeline is relatively quiet. Maintenance activities of the pipeline could cause additional noise, such as pigging of the pipeline or blowing down the pipeline in the event of an emergency.

(B) The applicant shall provide information on land use.

(1) The applicant shall provide, for each of the site/route alternatives, a map of at least 1:24,000 scale, including the area one thousand feet on each side of a transmission line or pipeline alignment, and the area within one thousand feet of a substation site, which map shall include the following features:

(a) Centerline and right-of-way for each transmission line or pipeline alternative being proposed.

See Figure 6.

(b) Proposed substation or compressor station locations.

N/A

(c) Land use, depicted as areas on the map. Land use, for the purposes of this rule, refers to the current economic use of each parcel. Categories should include residential, commercial, industrial, institutional, recreational, agricultural, and vacant, or as classified by the local land use authority.

Land use areas encountered in Figure 6 include the following:

Table 7. Land Use Type on the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Delaware and Union Counties, Ohio

Land Use	Preferred Route	Alternate Route
Agricultural	X	X
Church	-	X

Commercial	X	X
Municipal Improvement Tax Abatements	X	X
Residential	X	X
Restaurant	X	-
Retail	-	X
Tax Exempt	X	X

(d) Road names.
As discussed in Columbia's Ohio Adm.Code 4906-05-05(A)(1)(c) section above, U.S. Route 42 is a major roadway within both Project centerline options. The Alternate Route crosses an additional major highway, U.S. Route 33. Other roads crossed by the Project routes are smaller, county, and township roadways.

The following roads will be crossed by the Preferred route including the proposed installation method for each:

- Sawmill Parkway (jack and bore)
- Clark Shaw Road (open cut)
- Bean-Oller Road (open cut)
- South Section Line Road (jack and bore)
- Riverside Drive (State Route 257) (HDD)
- Dublin Road (State Route 745) (jack and bore)
- Concord Road (open cut)
- Moore Road (jack and bore)
- Jerome Road (jack and bore)
- Harriot Road (open cut)
- U.S. Route 42 (jack and bore)
- Bell Road (open cut)

- Watkins California Road (jack and bore)
- Brock Road (jack and bore)
- Hyland-Croy Road (open cut)
- McKitrick Road (open cut)

The following roads will be crossed by the Alternate route:

- Sawmill Parkway (jack and bore)
- South Section Line Road (jack and bore)
- Riverside Drive (State Route 257) (HDD)
- Dublin Road (State Route 745) (jack and bore)
- Moore Road (jack and bore)
- Concord Road (open cut)
- Jerome Road (jack and bore)
- Harriott Road (open cut)
- Bell Road (open cut)
- Watkins California Road (jack and bore)
- U.S. Route 42 (jack and bore)
- Brock Road (jack and bore)
- U.S. Route 33 (HDD)
- Mitchell–Dewitt Road (open cut)
- McKitrick Road (open cut)
- Hyland-Croy Road (open cut)

(e) Structures, depicted as points on the map. Identified structures should include residences, commercial centers or buildings, industrial buildings and installations, schools, hospitals, churches, civic buildings, and other occupied places.

See Figures 3 and 6.

(f) Incorporated areas and population centers.

See Table 5 (Ohio Adm.Code 4905-05-05(A)(1)(g)).

(2) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(1) of this rule. Include, for each land use type, the potential disturbance area during construction and the permanent impact area in

acres, in total and for each project component (e.g., transmission line or pipeline right-of-way, substation site), and the explanation of how such estimates was calculated.

Table 8 further breaks down each land use type described above into detailed categories of each and shows project components, including the gas pipeline, laydown areas, tie-in locations, and access roads within each detailed land use type. The temporary and permanent impacts to land use types were calculated using the construction footprint and the parcel data and calculating the acreage where they overlap in GIS.

Table 8. Temporary and Permanent Impacts Calculated for Each Land Use Type and Project Component on the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Delaware and Union Counties, Ohio

Project component	Land Use Type	Temporary Impacts (ac)	Permanent Impacts (ac)
Preferred Route			
Pipeline Installation	Pasture	1.00	0
	Urban/Developed	0.91	0
	New Field	10.69	0
	Agriculture	164.74	0
	Early Successional	0.79	0
	Upland Wooded Lot	0	16.87
	Old Field	22.18	0
	Forested Wetland	0	0.14
	Maintained Lawn	11.27	0
	Maintained ROW	0.29	0
	Open Water	0	0
	Non-Forested Wetland	0.30	0
	Specialty Agriculture	0.46	0
Laydown areas	Maintained Lawn	1.90	0
	Agriculture	21.54	0
	Maintained ROW	0.00002	0
	Old Field	2.68	0
	Pasture	3.27	0
	Agriculture	0.10	0

Project component	Land Use Type	Temporary Impacts (ac)	Permanent Impacts (ac)
Additional Temporary Workspace	Old Field	0.06	0
	Upland Wooded Lot	0	0.03
	Maintained ROW	0.20	0
	Maintained Lawn	0.14	0
Access Roads	Agriculture	1.08	0
	Old Field	0.02	0
	Urban/Developed	0.26	0
	Maintained ROW	0.06	0
	Maintained Lawn	0.07	0
	Pasture	0	0
	Upland Wooded Lot	0	0.02
Alternate Route			
Pipeline Installation	Urban/Developed	3.59	0
	Agriculture	148.59	0
	Upland Wooded Lot	0	32.51
	New Field	14.41	0
	Early Successional	0.05	0
	Forested Wetland	0	0.41
	Non-Forested Wetland	0.31	0
	Maintained Lawn	3.58	0
	Maintained ROW	0.29	0
	Old Field	9.01	0
	Open Water	0.08	0
	Pasture	3.38	0
Laydown areas	Old Field	0.25	0
	Agriculture	11.92	0
Additional Temporary Workspace	Agriculture	2.85	0
	Old Field	0.27	0
	Maintained ROW	0.01	0
	Upland Wooded Lot	0	0.005
Access Roads	Agriculture	1.23	0
	Urban/Developed	0.06	0
	Maintained ROW	0.01	0
	Old Field	0.22	0

	Upland Wooded Lot	0	0.08
	Pasture	0.003	0
	Maintained Lawn	0.03	0

*Includes residential areas currently under construction.

A significant majority of impacts for the Project are temporary, due to the underground nature of a natural gas pipeline. Most permanent impacts associated with pipeline installation in Table 8 refer to permanently maintained ROW and any areas with tree clearing for construction of the Project. Columbia will repair tile broken or damaged in agricultural fields during the installation process.

The Project centerline will also have permanent ROW markers intermittently distributed throughout the length of the centerline. Temporary impacts include temporary access roads, laydown areas, a tie-in site (to the NCL system and the North Columbia High Pressure system), and the open trench for pipeline installation.

(3) The applicant shall provide, for the types of structures identified in paragraph (B)(1) of this rule, the following:

(a) For all structures within two-hundred feet of the proposed facility right-of-way, the distance between the nearest edge of the structure and the proposed facility right-of-way.

There are 35 structures within 200 feet of the Preferred Route option and 55 structures within 200 feet of the Alternate Route option. Table 9 provides a list of the structure types and the distance of the structure from the proposed NCL centerline.

Table 9. Structures Located within 200 Feet of the Preferred and Alternate Route Options of the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Delaware and Union Counties, Ohio

Structures within 200 feet	Distance (feet)
Preferred Route	

Structures within 200 feet	Distance (feet)
Agriculture Structure	120
	175
	176
	197
Commercial/Industrial Structure	120
	133
Residence	89
	92
	106
	109
	130
	135
	137
	157
	158
	160
	164
	171
	193
Residential-related Structure (e.g. Garage, out building, etc.)	45
	77
	78
	117
	129
	137
	144
	152
	158
	174
	181
	188
	193
	197
	199
Other Structure Type (e.g. old silo, cell tower, etc.)	92
	111

Structures within 200 feet	Distance (feet)
	150
Alternate Route	
Agriculture Structure	94
	109
	161
	172
	174
	188
Commercial/Industrial Structure	75
Residence	77
	97
	102
	114
	115
	116
	117
	119
	132
	137
	146
	147
	148
	158
	161
	163
	165
	172
	173
	178
	179
	181
	183
	183
	183
	192
	196

Structures within 200 feet	Distance (feet)
	198
	199
Residential-related Structure (e.g. Garage, out building, etc.)	45
	51
	62
	65
	89
	98
	124
	130
	152
	162
	165
	165
	174
	175
	180
	184
	186
Other Structure Type (e.g. old silo, cell tower, etc.)	117
	196

(b) Any buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation.

Columbia has agreements to purchase two properties that are in close proximity to the planned centerline of the Project Preferred Route. Columbia is planning on demolishing the structures. The Owners were compensated at fair market value plus an additional consideration for relocation.

(c) A description of the mitigation procedures to be used during the construction, operation, and maintenance of the proposed facility to minimize impact to structures near the facility.

Columbia is minimizing impacts to structures by routing through agricultural fields and using existing utility ROW whenever possible. If residences or

commercial properties are within close proximity of the construction work area, the following measures will be implemented by Columbia:

- Timely notification of required construction activities to ensure safe access and maneuverability;
- Minimize disturbance to existing maintained areas by ensuring proper soil pile placement;
- While a pipeline trench is open, the edge of the construction work area adjacent to the residence or business will be protected by safety fence for a distance of approximately 100 feet on either side of the residence to ensure safety within the construction work area; and
- All residential and commercial lawns will be restored to final restoration or temporary restoration in a timely manner after backfilling the trench, pending weather and soil conditions. The bike paths within the Glacier Ridge Metro Park will be restored after construction. During construction, Columbia will maintain one bike path/walking trail at all times to avoid shutting down the path system completely. A temporary path will be installed if needed to ensure the bike path/walking trail stays open during construction.

(C) The applicant shall provide information regarding agricultural districts and potential impacts to agricultural land.

(1) The applicant shall provide, for each of the site/route alternatives, a map of at least 1:24,000 scale, including the potential disturbance area for the transmission or pipeline alignment, and the substation site, which map shall include the following features:

(a) Agricultural land use. Where visible and distinguishable, distinguish between agricultural uses such as cultivated land, permanent pasture land, managed woodlots, orchards, nurseries, livestock and poultry confinement areas, and agricultural-related structures.

See Figure 7.

(b) Agricultural district land existing at least sixty days prior to submission of the application located within each transmission line or pipeline right-of-way or within each site boundary.

See Figure 7.

(2) The applicant shall provide, for all agricultural land, and separately for agricultural uses and agricultural districts identified under paragraph (C)(1) of this rule, the following:

(a) A quantification of the acreage impacted.

Table 10 shows the amount of agricultural land and agricultural district land affected by the Project. Most of the impacts are temporary and occur during the pipeline installation process. The permanent impacts indicated in Table 10 refer to the need to manage woody vegetation, especially trees, within the permanent Project ROW. Agriculture practices, such as row crops, can be continued in permanent Project ROW.

Table 10. Calculated Temporary and Permanent Impacts to Various Types of Agricultural Land on the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Delaware and Union Counties, Ohio

Agricultural land use	Temporary impacts (ac)	Permanent impacts (ac)
Preferred Route		
Agricultural district land	36.37	0
Row crop	187.44	0
Pasture	4.27	0
Vineyard	0.46	0
Alternate Route		
Agricultural district land	38.94	0
Row crop	164.59	0
Pasture	3.38	0
Vineyard	0	0

(b) An evaluation of the impact of the construction, operation, and maintenance of the proposed facility on the land and the following agricultural facilities and practices within the project area:

i. **Field operations such as plowing, planting, cultivating, spraying, harvesting.**

Columbia will work with farmers to limit the Project construction impacts. If construction does occur during field operations, such as after planting, Columbia will provide market compensation for lost crops. Columbia does not anticipate impacts during operation and maintenance of the Project.

ii. **Irrigation.**

Irrigation systems are not common in this part of Ohio. For this reason, Columbia does not anticipate the Project effecting irrigation systems.

iii. **Field drainage systems.**

Any broken or damaged tile or pipe will be replaced with the same size and the same or better quality pipe or tile. Reseeding will be utilized in non-agricultural areas as it is Columbia's standard practice.

iv. **Structures used for agricultural operations.**

Agricultural structures, such as pasture fences, may be impacted by construction of the Project. Columbia will replace all fences or other agricultural structures removed with the same or higher quality structures.

v. **The visibility as agricultural land of any land identified as an agricultural district.**

Agricultural district lands are present on both the Preferred and Alternate Routes. Agricultural land will be temporarily impacted by the construction of the pipeline. Columbia will restore agricultural land back to its original conditions prior to the construction and reimburse landowners for any applicable crop

damages, including the preservation of farming soil within the Project workspace. No permanent impacts are expected for any agricultural district property nor will there be permanent impacts to its visibility.

(c) A description of mitigation procedures to be utilized by the applicant during construction, operation, and maintenance to reduce impacts to agricultural land, structures, and practices. The description shall illustrate how avoidance and mitigation procedures will achieve the following:

i. Avoidance or minimization to the maximum extent practicable of any damage to field tile drainage systems and soils in agricultural areas.

In the route selection process, Columbia routed the Preferred and Alternate Routes along fencerows and around the edges of row crop fields to the extent possible to avoid damaging field tile drainage systems.

ii. Timely repair of damaged field tile systems to at least original conditions, at the applicant's expense.

Columbia plans to restore any impacted agricultural drainage tile systems to the original or better condition.

iii. Segregation of excavated topsoil, and decompaction and restoration or all topsoil to original conditions unless otherwise agreed to by the landowner.

Columbia plans to prevent the mixing of topsoil with subsoil by storing them separately. Topsoil and subsoil will be returned to the ROW during final grading. Excess rock will be removed from the top 12 inches of soil to the extent reasonably possible. Where required, Columbia will perform soil compaction testing. Columbia will plow severely compacted areas, if necessary.

(D) The applicant shall provide information regarding land use plans and regional development.

(1) The applicant shall provide a description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.

The Project will improve the availability of gas to the Greater Columbus Region. The Project will likewise improve the availability of gas capacity to Madison County by providing an additional supply feed into Columbia's North Columbus High Pressure System. With this additional feed, Columbia's North Columbus High Pressure System will pull less capacity from Columbia's interstate pipeline supply, allowing this supply to be used upstream at West Jefferson and London. Likewise, Columbia has coordinated with the ODOT to ensure the Project does not interfere with ODOT's U.S. Route 33 and U.S. Route 42 interchange project. Finally, the Project will support the projected regional growth identified by MORPC and referenced in Ohio Adm.Code 4906-05-03(A)(2) section above.

(2) The applicant shall provide an assessment of the compatibility of the proposed facility and the anticipated resultant regional development with current regional land use plans.

The Project will provide the natural gas supply to Columbia's Marysville Connector Project. The Union County Marysville Economic Development Partnership detailed the existing and future regional growth the 33 Smart Corridor, in which the Marysville Connector will bring additional supply.[9] The correspondence describes the growth along the 33 Smart Corridor, including the greater Marysville are, Jerome Township, and the area west of Marysville in the Honda-Transportation Research Center area. Please see Figure 8 to find the list of projects in the July 8, 2020 correspondence from the Union County Marysville Economic Development Partnership.

[9] *In the Matter of Columbia Gas of Ohio, Inc.'s Letter of Notification for the Marysville Connector Pipeline Project*, Case No. 19-2148-GA-BLN, Notice by Intervenors and Withdrawal of Comments (July 8, 2020) (see July 7, 2020 Letter from Union County Marysville Economic Development Partnership).

(E) The applicant shall provide information on cultural and archaeological resources.

(1) The applicant shall indicate on a map of at least 1:24,000 scale, within one-thousand feet of each of the site/route alternatives, any formally adopted recreational areas, recreational trails, scenic rivers, scenic routes or byways, and registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance. Landmarks to be considered for purposes of paragraph (E) of this rule, are those districts, sites, buildings, structures, and objects that are recognized by, registered with, or identified as eligible for registration by the natural registry of natural landmarks, the Ohio historical society, or the Ohio department of natural resources.

Locations of recreation areas, recreation trails, scenic rivers, scenic routes and byways, and cultural landmarks are included in Figure 9.

(2) The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historic preservation office shall be included.

Weller & Associates, Inc. ("Weller") performed a literature review of maps, files, and electronic databases from the following agencies:

- An Archeological Atlas of Ohio;
- Ohio Historic Preservation office ("OHPO");
- USGS 7.5' series topographic maps;
- Ohio Archaeological Inventory files;
- Ohio Historic Inventory files;
- National Register of Historic Places ("NRHP") files;
- Determinations of Eligibility files;
- OHPO CRM/contract archaeology files;
- County atlases, histories, historic USGS 15' series topographic map(s) and current USGS 7.5' series topographic map(s); and
- Online Genealogical and Cemetery Records.

The literature review with all identified cultural resources in the Study Area, as defined in the Ohio Adm.Code 4906-05-04(E)(1) section above. The cultural resources found in the literature included:

- 58 architectural resources;

- 381 archaeological sites; and
- no NRHP-listed significant sites or resources.

According to the literature review, specifically the *Archeological Atlas of Ohio* (Mills 1914), there are three sites that overlap with the Study Area. One is a burial in Darby Township, which was completely avoided by the Project alignment options. There were two sites that are recorded within the Study Area by Mills (1914), however, neither of these sites, 33DL2826 or 33UN0473 were reidentified during the Phase I Archaeological Investigation.

A Phase I Archaeological Investigation was conducted by Weller along the Preferred Route in May to July 2020. The investigations resulted in the identification of 21 previously unrecorded archaeological sites including 33UN0573-587 and 33DL3388-3393 during initial survey and six additional sites during subsequent additional/addendum surveys. No further archaeological investigations are considered to be necessary for this Project. A copy of the Phase I Archaeological Report will be provided to the OHPO for their review and concurrence. A response letter was received from OHPO on September 24, 2020. OHPO concurred with Weller that the archaeological sites are not considered eligible for listing on the NHHP. Therefore, as proposed, there will be no effect on significant archaeological resources. No further coordination in regards to archaeology are required for this Project unless the scope of work changes or new/additional archaeological remains are discovered during the course of the Project. This correspondence is located in Appendix F. The locations of cultural sites identified in the literature review are included in Figure 9.

A History/Architecture Investigations conducted by Weller along the Preferred Route in May to July 2020. The field survey identified nine resources to be 50 years of age or older adjacent to or partially located within the Preferred Route survey corridor, including DEL011101/Bunsold Resident, which is a site that is also recommended as eligible for the NRHP; the investigations further found that the project would not adversely affect the eligible property due to existing industrial buildings within the viewshed. No further history/architecture work is currently being recommended. A copy of the History/Architecture Investigations report will be provided to the OHPO. A response letter was received from OHPO on October 1, 2020. It is the opinion of the OHPO that the planned work, if completed as proposed, will

meet the Secretary of Interior's Standards thereby having No Adverse Effect on historic properties. No further coordination is necessary unless there is a change in the Project. This correspondence is located in Appendix F.

(3) The applicant shall provide an evaluation of the probable impact of the construction, operation, and maintenance of the proposed facility on the preservation and continued meaningfulness of cultural resources.

A Phase I Archaeological Investigations and History/Architecture Investigations were conducted on the Preferred Route in May to July 2020. Weller concluded that no further investigations were necessary in regard to the Phase I and that Preferred Route would have no adverse effects to the findings in the History/Architecture Investigations.

In September 2019, Weller also conducted a desktop review of a 48,821 acre study area which contained the entirety of the Preferred and Alternate Routes. According to the desktop review, there were relatively few architectural resources (n=58) and NRHP significant sites/resources (n=1; this site has since been delisted) within the Study Area. Impacts to these aboveground resources would likely be avoided.

There were also a low number of archaeological sites identified within the Study Area considering its size and location (n=381). The majority of the archaeological sites had been evaluated in professional surveys, and none were listed as significant. The review stated that archaeological sites, especially prehistoric period components, were likely to be identified regardless of the pipeline's location, with a potential for higher density or significance of sites in the areas surrounding stream valleys. If the Board approves the Alternate Route, field investigations will be performed on the Alternate Route.

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

(4) The applicant shall describe the plans to avoid or mitigate any adverse impacts to cultural resources. Mitigation procedures to be used during the operation and maintenance of the proposed facility shall be developed in

consultation with the Ohio historic society. The plans shall detail procedures for flagging and avoiding all landmarks in the project area. The plans shall also contain measures to be taken should previously unidentified landmarks be discovered during construction of the project.

A Phase I Cultural Resources survey was completed along the Preferred Route. No adverse impacts are expected to cultural resources. If necessary additional avoidance and mitigation measures will be determined by Columbia and OHPO.

(5) The applicant shall evaluate the aesthetic impact of the proposed facility, including the following:

(a) The visibility of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, waterways, and landmarks identified in paragraph (E)(1) of this rule.

Very few above ground facilities are planned for the Project. Permanent ROW markers will be located along the centerline and will minimally impact the aesthetics of the Project area. Besides the permanent markers, the permanent Project ROW will only be visible in previously forested areas where trees will be permanently cleared. Columbia anticipates minimal impacts to views within the Project area.

(b) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.

The Project will be minimally visible, with only a few above ground facilities as mentioned in Section (5)(a). Some areas of cleared forest will be maintained as cleared ROW, permanent ROW markers will be dispersed throughout the length, and the district regulator station will be visible. These impacts, however, are minimal.

(c) Measures that will be taken to minimize any visual impacts created by the proposed facility, including, but not limited to, facility location, lighting, structure design, visual screening, and facility coloration. In no event shall these measures conflict with relevant safety requirements.

Because of the minimal amount of visual disruption caused by the Project, no further minimization is necessary.

FIGURE 6

LAND USE

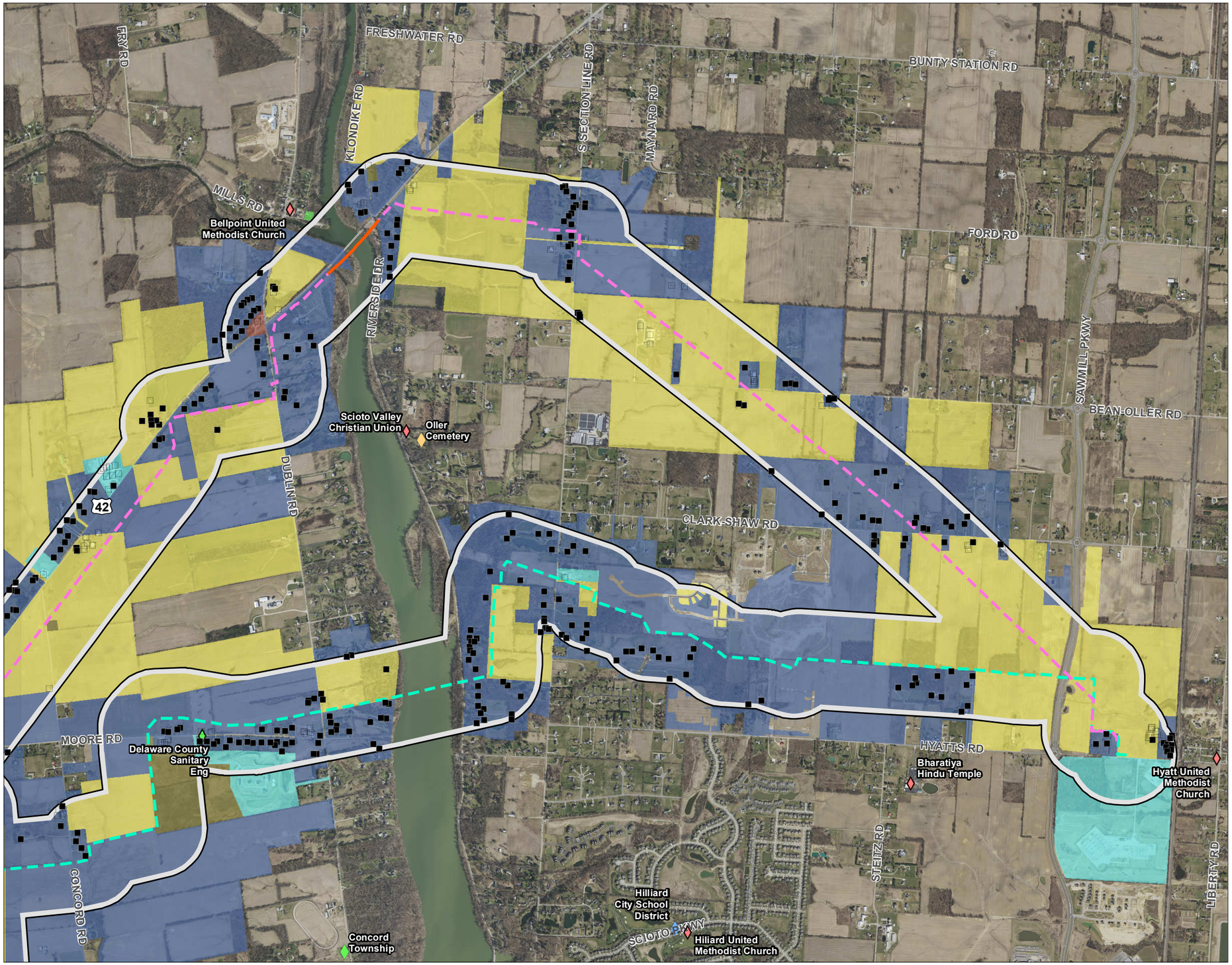


Figure No.
6

Title
Land Use

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055

Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

0 1,000 2,000 Feet
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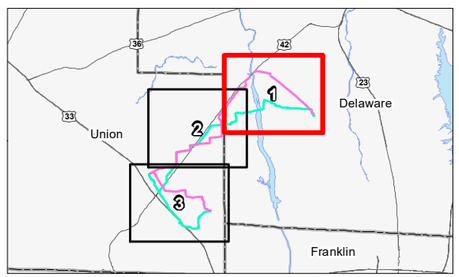
N

Legend

- 1,000 ft Study Corridor
- Preferred Route - HDD
- Preferred Route
- Alternate Route
- Cemetery
- Government Office
- Place of Worship
- School
- Commercial/Agricultural
- Residential

Land Use

- Agricultural
- Church
- Commercial
- Tax Exempt
- Municipal improvement tax abatements
- Residential
- Restaurant
- Retail



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, USGS, Union County, Delaware County
3. Orthophotography: 2018 OGRIP

Stantec

Figure No.
6

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- Preferred Route
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Land Use
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- Commercial
- Tax Exempt
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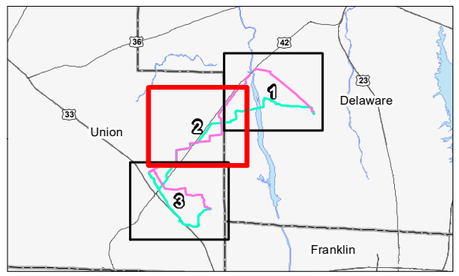

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Stantec

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Land Use
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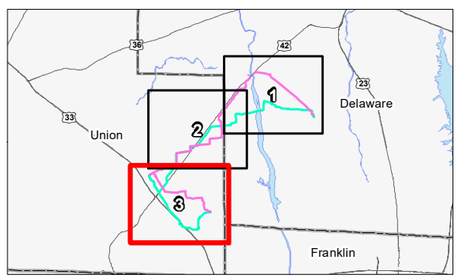

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3. Orthophotography: 2018 OGRIP

Stantec

FIGURE 7

HABITAT TYPES

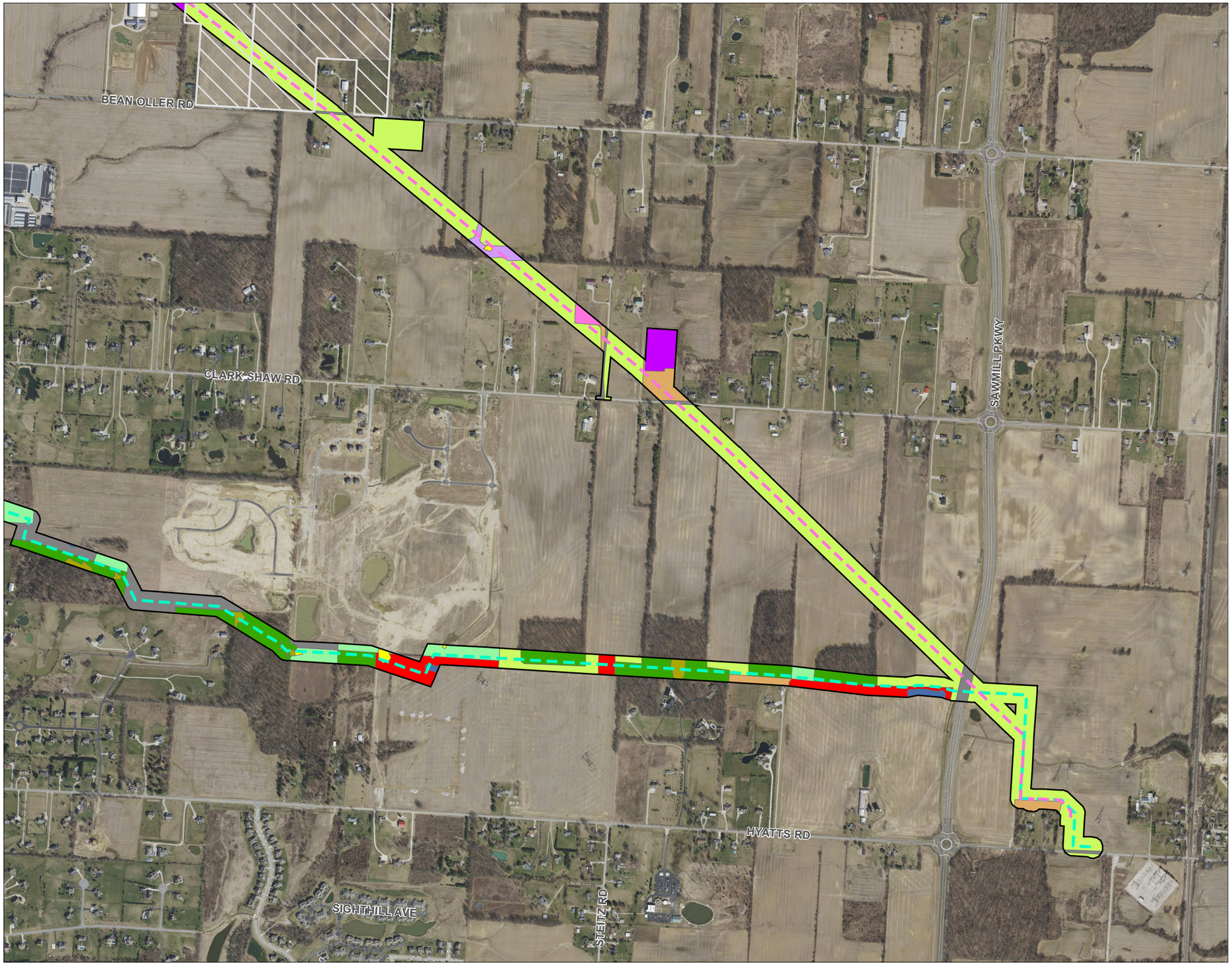

Figure No.
7

Title
Habitat Types

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055
Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

0 500 1,000 Feet
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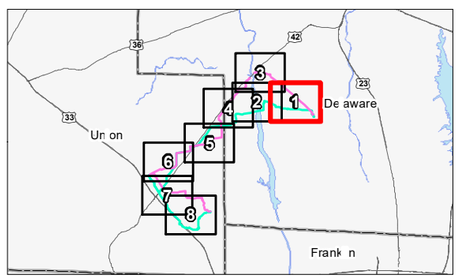
N

Legend
- Field Survey Corridor
- Preferred Route - HDD
- Preferred Route
- Alternate Route
- Agricultural District
- Cropland
- Developed/Urban
- Early Successional
- Forested Wetland
- Non Forested Wetland
- Maintained Lawn
- Maintained ROW
- Old Field
- Open Water
- Construction
- New Field
- Pasture
- Specialty Agriculture
- Upland Forest



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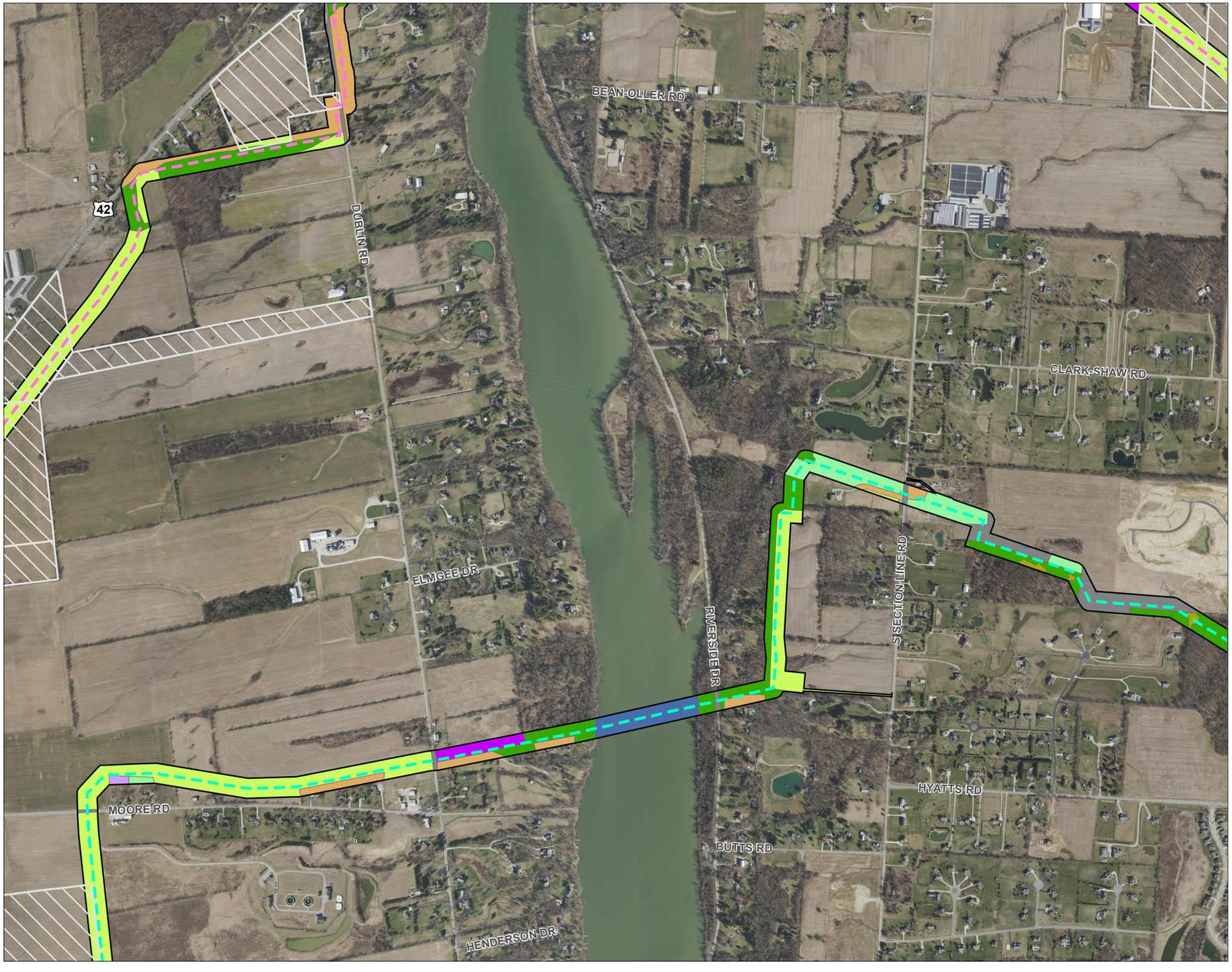

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Northern Columbus Loop Natural Gas
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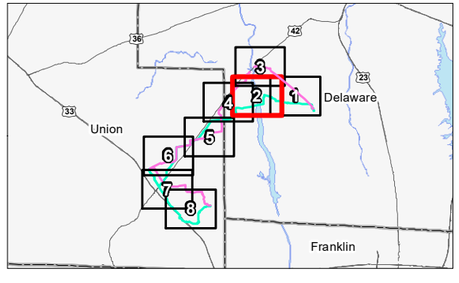

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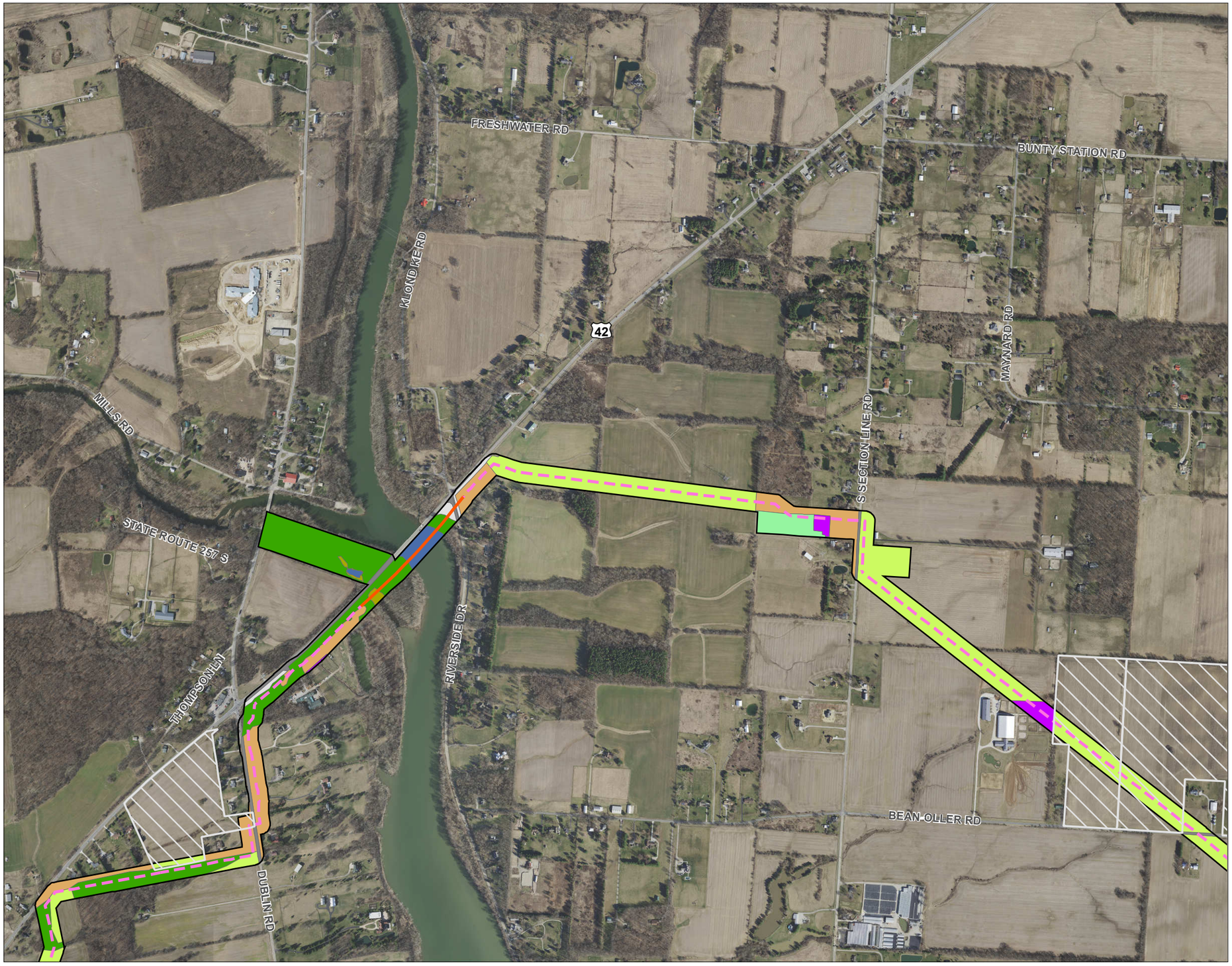

Figure No.
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Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

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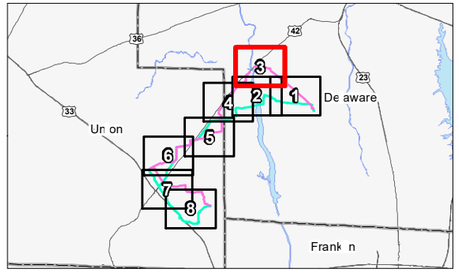

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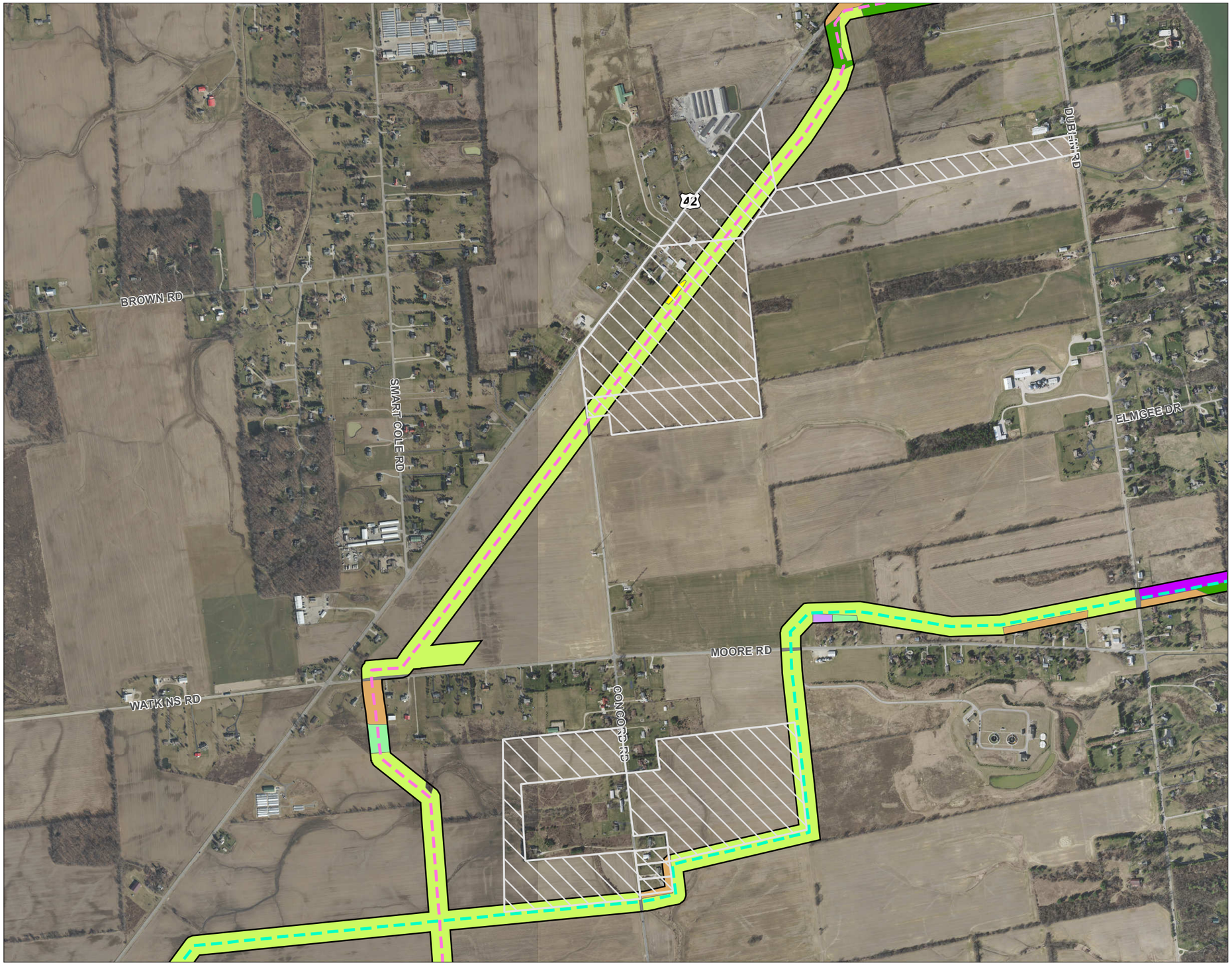

Figure No.
7

Title
Habitat Types

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055

Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

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N

Legend

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- Preferred Route
- Alternate Route
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- Cropland
- Developed/Urban
- Early Successional
- Forested Wetland
- Non Forested Wetland
- Maintained Lawn
- Maintained ROW
- Old Field
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- Construction
- New Field
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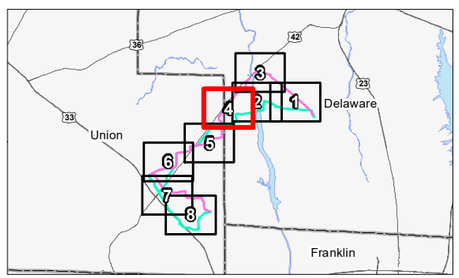

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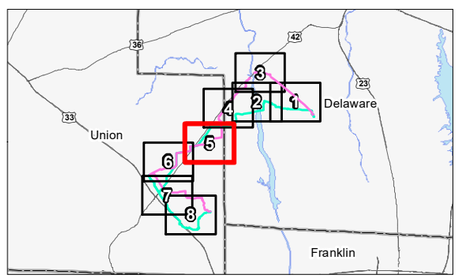

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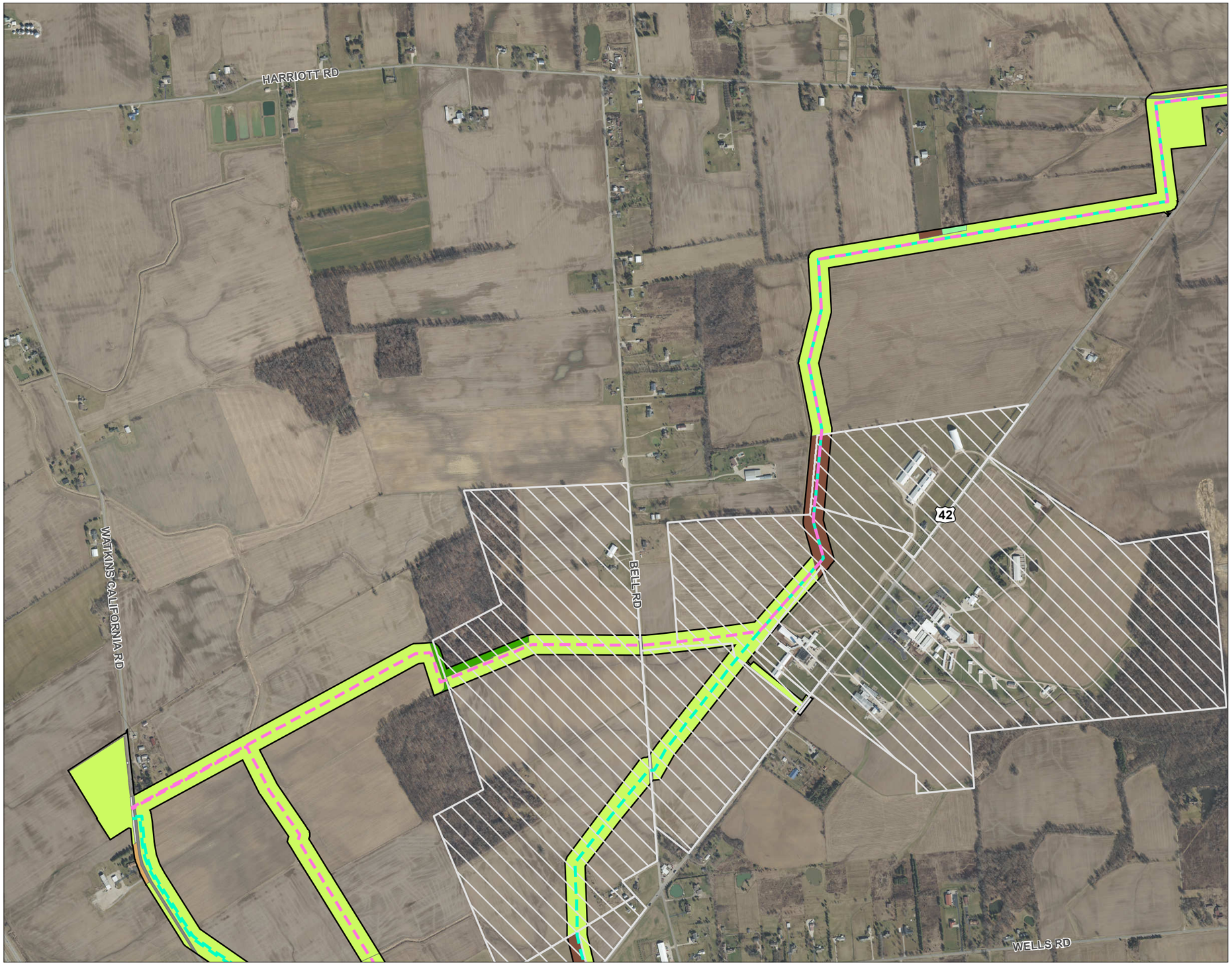

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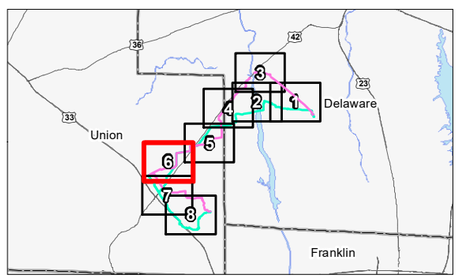

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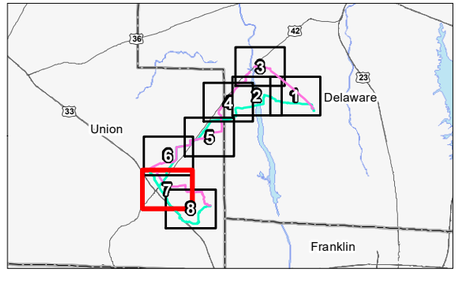

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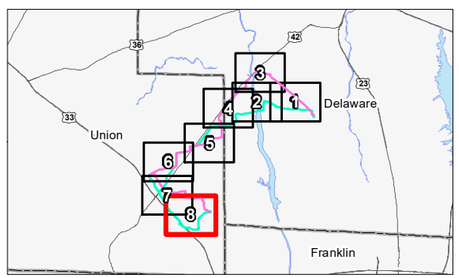

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Stantec

FIGURE 8

CORRESPONDENCE FROM THE UNION COUNTY MARYSVILLE ECONOMIC DEVELOPMENT PARTNERSHIP

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of Columbia Gas of Ohio, Inc.'s Letter of Notification for the Marysville Connector Pipeline Project.	))))	Case No. 19-2148-GA-BLN

NOTICE BY INTERVENORS AND WITHDRAWAL OF COMMMENTS

The Ohio Gas Access Partnership, Inc. ("OGAP"), Union County Board of County Commissioners ("Union County"), Logan County Board of County Commissioners ("Logan County"), Madison County Board of County Commissioners ("Madison County"), Millcreek Township Board of Township Trustees, and Jerome Township Board of Township Trustees (collectively, "Intervenors") hereby provide notice to the Ohio Power Siting Board that the Intervenors do not oppose the application by Columbia Gas of Ohio, Inc. ("Columbia") in this proceeding. Given the non-opposition position that has been adopted by OGAP, OGAP hereby withdraws its January 2, 2020 comments from the record in this proceeding. Moreover, in support of OGAP's non-opposition position, OGAP submits the attached letter from the Union County

Community Improvement Corporation for inclusion in the case record.

Respectfully submitted,

/s/ Thayne D. Gray, per authorization (ms) Thayne D. Gray Assistant Prosecuting Attorney, Union County 221 W. Fifth Street, 3rd Floor Marysville, OH 43040 tgray@co.union.oh.us *Counsel for Union County Board of County Commissioners, Millcreek Township Board of Township Trustees, and Jerome Township Board of Township Trustees*	/s/ Michael J. Settineri Michael J. Settineri (0073369), Counsel of Record MacDonald W. Taylor (0086959) Vorys, Sater, Seymour and Pease LLP 52 E. Gay Street Columbus, OH 43215 Telephone: (614) 464-5462 mjsettineri@vorys.com mwtaylor@vorys.com *Counsel for the Ohio Gas Access Partnership, Inc.*
/s/ Stephen Pronai per authorization (ms) Stephen Pronai Prosecuting Attorney, Madison County 59 North Main Street London, OH 43140 spronai@co.madison.oh.us *Counsel for Madison County Board of County Commissioners*	/s/ Eric C. Stewart per authorization (ms) Eric C. Stewart, Esq. Prosecuting Attorney, Logan County 117 E. Columbus Ave., Suite 200 Bellefontaine, OH 43311 eric@co.logan.oh.us *Counsel for Logan County Board of County Commissioners*

CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced on the service list of the docket card who have electronically subscribed to the case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served (via electronic mail) or otherwise via U.S. regular mail on this 8th day of July 2020 upon all persons/entities listed below:

Joseph M. Clark P.O. Box 117 290 W. Nationwide Blvd. Columbus, Ohio 43216 josephclark@nisource.com Robert J. Schmidt Mark S. Stemm Porter Wright Morris & Arthur 41 South High Street, Suite 3000 Columbus, Ohio 43215 rschmidt@porterwright.com mstemm@porterwright.com *Counsel for Columbia Gas of Ohio, Inc.*	Thayne D. Gray 221 W. Fifth Street, 3rd Floor Marysville, OH 43040 tgray@co.union.oh.us *Counsel for Union County Board of County Commissioners, Millcreek Township Board of Township Trustees, and Jerome Township Board of Township Trustees*
Stephen Pronai 59 North Main Street London, OH 43140 spronai@co.madison.oh.us *Counsel for Madison County Commissioners*	Eric C. Stewart, Esq. 117 E. Columbus Ave., Suite 200 Bellefontaine, OH 43311 eric@co.logan.oh.us *Counsel for Logan County Board of County Commissioners*
Thomas Lindgren thomas.lindgren@ohioattorneygeneral.gov *Counsel for the Ohio Power Siting Board Staff*	

/s/ Michael J. Settineri

UNION COUNTY
MARYSVILLE
ECONOMIC DEVELOPMENT

Union County-Marysville Economic Development Partnership
Union County Community Improvement Corporation

227 East Fifth Street
Marysville, Ohio 43040
Ph 937.642.6279
www.unioncounty.org

July 7, 2020

Sam Randazzo, Chairman
Ohio Power Siting Board
12th Floor
180 East Broad Street
Columbus, OH 43215

RE: Marysville Connector Pipeline Project (Case Number: 19-2148)

Dear Chairman Randazzo:

The Union County Community Improvement Corporation (CIC), the lead economic development organization for Union County, has been working to increase the natural gas capacity in Union County, Ohio for the past 14 years. Union County has the fastest growing housing market in the State of Ohio (11th in the nation) and is experiencing significant growth in commercial and industrial development along the US-33 corridor. Columbia Gas of Ohio (COH) has submitted the Marysville Connector Pipeline Project (Case Number: 19-2148) to bring additional supply to the U.S. 33 Corridor south of Marysville. On behalf of the Union County CIC, we respectfully request that the Ohio Power Siting Board move quickly to approve the Marysville Connector and continue to work toward long-term solutions to meet additional natural gas demand in areas lacking the necessary infrastructure.

During the last 14 years, the CIC has met multiple times with the PUCO, Ohio Development Services Agency, JobsOhio, One Columbus, COH, and numerous natural gas transmission and distribution companies. We have had numerous meetings with COH seeking a solution for much needed additional natural gas capacity to all corners of Union County. In 2014, the Union County CIC invested $35,000 in a natural gas analysis to better understand our natural gas constraints and to develop solutions to the lack of supply. Further, public and private sector members have invested more than $100,000 in the Ohio Gas Access Partnership, to develop a broad-based coalition and engage engineers, professional and legal experts to help the region address this issue. Finally, CIC staff has dedicated hundreds of hours to resolve this issue.

Between Dublin, Marysville, and Bellefontaine along US-33, there are 70 automotive suppliers and, in 2019 alone, there was more than $250 million in total construction investment made in Union County, including $153.5 million in commercial/industrial construction (see the attached "33 Smart Corridor Growth" for more detail). North of Marysville there are more than 20 sites ready for development, but

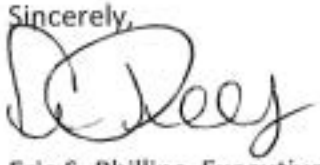
these sites require a supply of natural gas to attract businesses and grow jobs (see "OGAP – COH Growth Area Gas Needs" also attached). These documents show that there is an underlying demand for more natural gas, that it is constraining growth in the area, and if an additional supply is made available to address the long-term needs, Union County will continue to lead Ohio with residential, commercial, and industrial growth.

Please note that the area in and around the proposed Marysville Connector is severely constrained in regard to natural gas. This is not only inhibiting future commercial and residential growth but has resulted in lost business opportunities including two manufacturing facilities (accounting for over 800 new jobs) and JobsOhio disapproval of site certification for the Marysville 33 Innovation Park. This does not account for the projects that did not consider expansion in the area due to lack of natural gas supply. This area has been identified as future growth areas in both the Jerome and Millcreek townships latest comprehensive land use plans.

In conclusion, we would like to thank the PUCO and OPSB for facilitating and moving forward the natural gas supply discussion in the state of Ohio. Ohio has one of the largest deposits of natural gas in the world, and with the leadership from the PUCO and the OPSB, Ohio can become a leader in the distribution of the natural gas to its residents and companies.

Please let me know if you have any questions or comments. Thank you for your time and consideration.

Sincerely,



Eric S. Phillips, Executive Director
Union County Community Improvement Corporation

cc Case Docketing

Existing and Future Development Projects Located along the US 33 Corridor

June 2020

Growth and Development along 33 Smart Corridor (From Dublin to TRC)

- ~**$100 million has been invested** by state and local officials to construct the 33 Smart Mobility Corridor.
- 432 strands (a huge amount) of **redundant fiber optic cable** has been installed. The $9 million dollar project includes 250 pull boxes that allow for growth and expansion to serve new and growing companies from Jerome Township to TRC.
- Nearly 100 road side units (RSUs) and at least 600 on board units (OBUs) will be installed to support the V2X environment **creating one of the most advanced testing corridors** for autonomous and connected vehicles in North America. This is expected **to attract dozens of companies** in the next two years along the US-33 corridor that wish to conduct testing and R&D.
- Through the **Connected Marysville** project, each of the 27 traffic signals within the City of Marysville have been equipped with Wi-Fi and RSUs to allow for the testing of connected vehicle technologies. This project has already attracted a number of OEMs and testing is on-going. Marysville is the first city in the United States to have all traffic signals connected.
- There are more than **150 Japanese companies in Central Ohio**, with the majority of them supplying Honda. These automotive supplier companies could grow or contract based on Honda's future growth.
- There are **45 Japanese automotive suppliers** along the US-33 corridor between Dublin and Bellefontaine.
- There are **70 automotive suppliers** between Dublin and Bellefontaine.
- Construction projects continue in every direction:
    a. **405 new** residential permits and **65 new** commercial/industrial permits were filed in Union County in 2019.
    b. In 2019 alone, there was **more than $250 million** in total construction investment made in Union County, **including $153.5 million** in commercial/industrial construction.

Growth in Greater Marysville

- Spain-based Alcorta Forging Group announced plans to **invest $15 million in a 60,000 SF manufacturing facility** and North American headquarters, with plans to double in size in the next five years.
- Developer is considering the construction of nearly 200,000 SF of Class A industrial and research and development space in the 33 Innovation Park.
- The Scotts Mircle-Gro announced recently a **$45 million** investment in their manufacturing facility.
- Memorial Hospital will complete and **open a $50 million expansion project** (two new patient towers) in late-2020.
- The City of Marysville is working with an industrial multi-tenant developer to **construct a 168,000 sq. ft facility** in the 33 Innovation Park within the next 12-18 months.
- The City of Marysville will begin construction of a **new $65 million water plant** in August 2020, which is set to open in 2022 to help address growth in the region.
- NIT is discussing an expansion of its facility in Marysville.
- Discussions are on-going regarding a potential 90-acre agricultural research center.
- Origin Malts is planning a malting facility and 300-acre research farm.
- TCI of Ohio – plans to purchase 8-acres for future expansion at the Richwood Industrial Park.
- Newly Planned Commercial Projects:
    a. Fairfield Inn & Suites will open in the summer of 2020.

b. Home2Suites will open in the summer of 2020.
c. SpringHill Suites to break ground in late 2020.
d. Texas Roadhouse is expected to open in 2021.
e. Panera Bread will open in mid-2020.
f. Biggby Coffee recently opened a new café.
g. Thornton's is currently planning a new location.
h. Friendly's Express is currently planning a new location.

- The Building Industry Association of Central Ohio (BIA), Union County, the City of Marysville and several townships along the corridor have **created a Housing Task Force** to bring more affordable housing projects in and around Marysville.
- There are currently **1,018 single family units and 1,691 multi-family units** planned or approved for construction within the City of Marysville.

Growth in Jerome - Dublin Area (South of US-42)

- FedEx – will **open its 530,000 sq. ft.** facility in late 2020. This 100 acre site has plenty of room to expand in the future.
- Amazon – is looking to add **up to 2 million sq. ft.** facility along the corridor.
- The new **$20+ million Jerome Village Elementary School** will open in 2021. The building will have a projected opening enrollment of 635 students with a total capacity of 720 students.
- The new **$20+ million Jerome Village Middle School** is scheduled to open in 2021.
- OSU Wexner Medical Center acquired **34 acres for a new outpatient care center** along US-33.
- Mixt Solutions – recently began construction on a new **12,000 sq ft facility** in Jerome Township.
- KNB tools is planning new investment in its facility in Jerome Township.
- There are currently **1,390 single family units planned** or approved for construction within Jerome Township.
- Homewood Development is planning a **80-acre mixed use development project** at US-42 and Industrial Parkway. The project will include approximately 29 acres of commercial/office and up to 140 residential units.
- Jerome Village – **this 1,700 acre mixed used development** located in northeastern Jerome Township, bounded by US-42, City of Dublin, Delaware County, and Harriott Road, continues to be built out.
- Glacier Pointe is a **250 acre residential development (439 units)** located at the intersection of Mitchell-Dewitt and McKitrick Road in Jerome Township.
- Pioneer Crossing Housing Development is planning **188 new homes on 110 acres** along US-42 South of Route 33.
- Jerome Park is a recently approved 84 acre mixed use development located along US-42 in Jerome Township. A **40-unit housing development** is being planned for McKitrick Road.
- Glacier Park is **planning 121 units** within Jerome Village (Epcon Project) along Hyland Croy Road.
- **Multi-tenant space is being planned** at the corner of Rausch Blvd. and Estates Parkway.
- An apartment complex and single-family housing is being planned along OH-161 and Kile Road.
- Jerome Grand is a 50 acre mixed use development consisting of **300 apartment units** that will be completed in 2020. Under construction now is a 250 bed congregate care facility and **110,000 sq ft of office**/retail space.
- Newly Planned Commercial Projects:
    - 1487 Brewery – Jerome Township; opening in mid-2020.
    - Taco Bell – planned for Dublin Greene, Jerome Township.

Growth West of Marysville in Honda – Transportation Research Center Area:

- A $125 million Honda **wind tunnel on the Transportation Research Center (TRC) property is under construction** and will be opening in late 2020.
- Logan County funded $1 million in pre-engineering for a **new regional sanitary sewer treatment** facility across from TRC and Honda's East Liberty plant to address growth in the area.
- Owners of **70 acres near TRC** have expressed interest in developing the property for industrial development. The site has recently been submitted to a site selector for an anonymous project.
- OH-287 area businesses – In the last 9 months, development officials have met with Global Precision Parts, NEX Transport, Midwest Express, CEVA Logistics and Valeo; all have additional land and **all are planning for growth**.
- Village of North Lewisburg (3 miles from TRC) has expressed strong interest in having natural gas **service for 400+ users**.
- The TRC has plans to build the one of the **world's largest indoor winter weather testing** facilities in the next 3 years.
- TRC is now open to **more onsite facilities** leased by partners/customers.
- Other auto supplier in the immediate area of TRC (not listed above) looking to add an **additional 100,000 sq ft.** in next 12-18 months.
- JobsOhio and MORPC have applied to build the Virgin Hyperloop One Certification Center at the TRC Campus. The selected site **will begin construction in 2021** and will include: Welcome Center, 6 mile track, operations center, Pod Assembly Facility, Production Development Center, and Ops/Maintenance/Safety Training Center. Virgin estimates the facility attracting significant investment in facilities from other companies. JobsOhio is only submitting the TRC property for the project.

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

7/8/2020 2:45:06 PM

in

Case No(s). 19-2148-GA-BLN

Summary: Notice By Intervenors and Withdrawal of Comments electronically filed by Mr. Michael J. Settineri on behalf of Ohio Gas Access Partnership, Inc.

FIGURE 9

ARCHAEOLOGICAL AND CULTURAL RESOURCE DESKTOP INFORMATION

Figure No.
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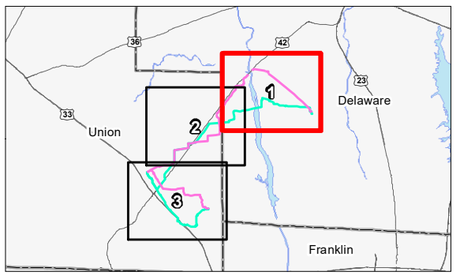

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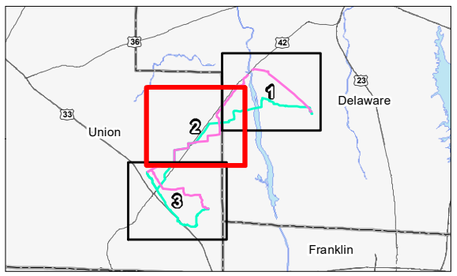

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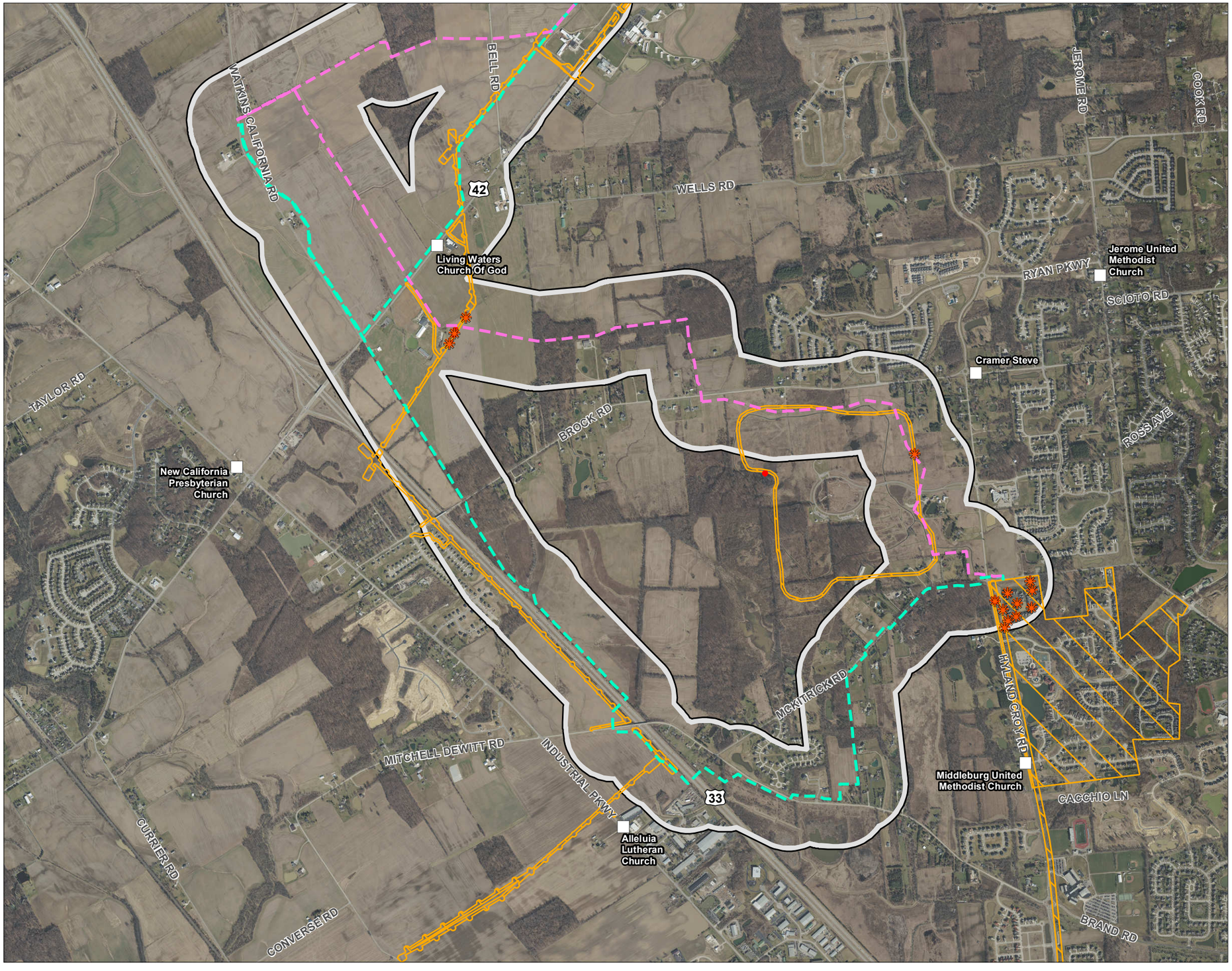

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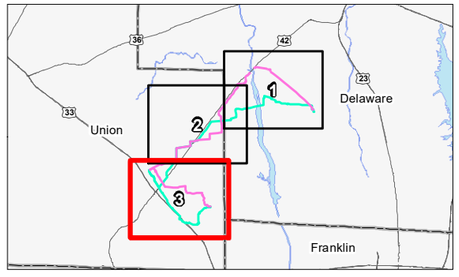
- SHPO OAI Site Boundary
- SHPO Phase 1



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, Ohio SHPO, USGS
3. Orthophotography: 2018 OGRIP

Stantec

4906-05-08

ECOLOGICAL INFORMATION AND COMPLIANCE WITH PERMITTING REQUIREMENTS

4906-05-08 – Ecological information and compliance with permitting requirements

(A) The applicant shall provide for each of the site/route alternatives a map of at least 1:24,000 scale, including the area one thousand feet on each side of the transmission line or pipeline alignment and the area within one thousand feet of a substation site or compressor station site. The map shall include the following:

(1) Proposed transmission line or pipeline alignment.

See Figure 10.

(2) Proposed substation or compressor station locations.

N/A

(3) All undeveloped or abandoned land, including:

(a) Streams and drainage channels.

See Figure 10, NHD and NWI.

(b) Lakes, ponds, and reservoirs.

See Figure 10, NHD and NWI.

(c) Wetlands, including the entire area of the wetland if it extends outside of the study corridor.

See Figure 10, NHD and NWI.

(d) Woody and herbaceous vegetation land.

See Figure 10, Land Use and Land Cover data.

(4) Highly erodible soils and slopes of 12 percent or greater.

See Figure 10, U.S. Department of Agriculture ("USDA") NRCS.

(5) Wildlife areas, nature preserves, and publicly identified conservation areas that are managed by a public body or a recognized nonprofit organization.

See Figure 10, PADUS and ODNR land datasets.

(B) The applicant shall provide for each of the site/route alternatives the results of a field survey of the vegetation and surface waters within 100 feet of the potential disturbance area of the facility. The field survey report shall include the following:

(1) The applicant shall provide a description of the vegetative communities present within the study area, and delineations of wetlands and streams.

A 200-foot survey corridor was field delineated by wetland professionals on both Project centerline options to identify potential jurisdictional waters of the United States ("WOUS"). Surface waters, such as wetlands and streams, were field located using equipment with sub-meter accuracy. The identification and delineation of surface water bodies was done as part of the route selection process and to support the development of routing options and mitigation approaches to minimize the ecological impacts from the Project to the maximum extent feasible taking into account the Project need, technical considerations and other pertinent facts.

Data on vegetative communities within the Project Area was also collected. Table 11 and Table 12 show the vegetative communities observed on each Project centerline option and includes a brief list of the dominant plants.

Table 11. Vegetation Communities Observed within the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII), Preferred Route Project Area, Delaware and Union Counties, Ohio

Vegetation Communities within the Project Area	Dominant Species within the Vegetation Communities	Approximate Acreage Within Preferred Route Project Area
Maintained Lawn/Maintained Right-of-Way	Dominant species include common dandelion (*Taraxacum officinale)*, ground ivy (*Glechoma hederacea)*, Canada thistle (*Cirsium arvense)*, wild strawberry (*Fragaria vesca)*, great plantain (*Plantago major*), English plantain (*Plantago lanceolata)*, and Kentucky bluegrass (*Poa pratensis*).	13.93

Vegetation Communities within the Project Area	Dominant Species within the Vegetation Communities	Approximate Acreage Within Preferred Route Project Area
Agricultural Field/Row Crop	Dominant plant species included by corn (*Zea mays*), soybeans (*Glycine max*), green foxtail, horse nettle (*Solanum carolinense*), and barnyard grass (*Echinochloa crus-galli*).	187.44
Old Field	Dominant species include Canada goldenrod (*Solidago canadensis*), tall goldenrod (*Solidago gigantea*), big bluestem (*Andropogon gerardii*), switchgrass (*Panicum virgatum*), Queen Anne's lace (*Daucus carota*), Fuller's teasel (*Dipsacus fullonum*), blackberry (*Rubus allegheniensis*), nodding foxtail (*Setaria faberi*), heath aster (*Symphyotrichum ericoides*), common milkweed (*Asclepias syriaca*), and reed canary grass (*Phalaris arundinacea*)	24.94
Early Successional	Dominant species include Canada goldenrod, tall goldenrod, big bluestem, switchgrass, Queen Anne's lace, Fuller's teasel, blackberry, nodding foxtail, heath aster, common milkweed, and reed canary grass.	0.79
Upland Wooded Lot	The overstory was dominated by common hackberry, sugar maple (*Acer saccharum*), silver maple, American elm (*Ulmus americana*), American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), white oak, and pin oak (*Quercus palustris*). The shrub layer was dominated by honeysuckle (*Loniceria maackii*), raspberry (*Rubus idaeus*), blackberry, poison ivy (*Toxicodendron radicans*), American elm, silver maple (*Acer saccharinum*), white oak (*Quercus alba*), northern red oak, and pin oak.	16.92
Pasture	Dominant species include common dandelion, ground ivy, Canada thistle, wild strawberry, great plantain, English plantain, and Kentucky bluegrass.	4.27

Vegetation Communities within the Project Area	Dominant Species within the Vegetation Communities	Approximate Acreage Within Preferred Route Project Area
New Field	Dominant species include common dandelion, ground ivy, Canada thistle, wild strawberry, great plantain, English plantain, and Kentucky bluegrass.	10.69
Specialty Agriculture (Vineyard)	Dominant species included various grape species (*Vitis* spp.).	0.46
Forested Wetland	Dominant species include pin oak, eastern cottonwood (*Populus deltoides)*, Ohio buckeye (*Aesculus glabra)*, green ash (*Fraxinus pennsylvanica)*, American elm (*Ulmus americana)*, shellbark hickory (*Carya laciniosa)*, reed canary grass, and shallow sedge (*Carex lurida).*	0.14
Non-Forested Wetland	Dominant species include rice cut grass (*Leersia oryzoides),* wool grass (*Scirpus cyperinus)*, calico aster (*Symphytrichum lateriflorum),* broad-leaf cattail (*Typha latifolia)*, narrowleaf cattail (*Typha angustifolia)*, reed canary grass (*Phalaris arundinacea)*, barnyard grass (*Echinochloa crus-galli)*, and path rush (*Juncus tenuis).*	0.30
Urban/Developed	Extreme Disturbance/ ruderal Community (dominated by opportunistic invaders, panted non-native species, and native highly tolerant taxa).	1.16
	Total	**261.05**

Table 12. Vegetation Communities Observed within the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Alternate Route Project Area, Delaware and Union Counties, Ohio

Vegetation Community Types	Dominant Species within the Vegetation Communities	Approximate Acreage Within Alternate Route Project Area
Maintained Lawn/Maintained Right-of-Way	Dominant species include common dandelion, ground ivy, Canada thistle, wild strawberry, great plantain, English plantain, and Kentucky bluegrass.	3.93

Vegetation Community Types	Dominant Species within the Vegetation Communities	Approximate Acreage Within Alternate Route Project Area
Agricultural Field	Dominant plant species included by corn, soybeans, green foxtail, horse nettle, and barnyard grass.	164.6
Old Field	Dominant species included Canada goldenrod, Queen Anne's lace, multiflora rose (*Rose multiflora*), Fuller's teasel, blackberry, nodding foxtail, and green ash (*Fraxinus pennsylvanica*) saplings.	9.75
New Field (fallow or hay field)	Dominant species include Kentucky bluegrass, common dandelion, great plantain, English plantain, and Canada thistle. Dominant species include Kentucky bluegrass, common dandelion, great plantain, English plantain, and Canada thistle.	14.41
Upland Wooded Lot	The overstory was dominated by common hackberry, sugar maple, silver maple, American elm, American beech, northern red oak, white oak, and pin oak. The shrub layer was dominated by shrub honeysuckle, raspberry, blackberry, poison ivy, American elm, silver maple, white oak, northern red oak, and pin oak.	32.59
Pasture	Dominant species include common dandelion, ground ivy, Canada thistle, wild strawberry, great plantain, English plantain, and Kentucky bluegrass.	3.38
Early Successional	Dominant species included Canada goldenrod, Queen Anne's lace, mutiflora rose, Fuller's teasel, blackberry, nodding foxtail, and green ash saplings.	0.051
Forested Wetland	Dominant species include pin oak, red maple (*Acer rubrum)*, slippery elm (*Ulmus rubra)*, shellbark hickory, spicebush (*Lindera benzoin)*, and Gray's sedge (*Carex grayi).*	0.41
Non- Forested Wetland	Dominant species include narrowleaf cattail, reed canary grass, barnyard grass, fox sedge (*Carex vulpinoidea)*, path rush, and dark green bulrush (*Scirpus atrovirens*).	0.31

Vegetation Community Types	Dominant Species within the Vegetation Communities	Approximate Acreage Within Alternate Route Project Area
Open Water	N/A	0.08
Urban/Developed	Extreme Disturbance/ ruderal Community (dominated by opportunistic invaders, panted non-native species, and native highly tolerant taxa).	3.65
	Total	**233.14**

More information is included in the Preferred and Alternate Route wetland and waterbody delineation reports included in Appendix D.

(2) The applicant shall provide a map of at least 1:12,000 scale showing the facility, the right-of-way, and all delineated resources.

See Preferred and Alternate Route wetland and waterbody delineation reports included in Appendix D.

(3) The applicant shall provide a description of the probable impact of the construction of the proposed facility on vegetation and surface waters. The applicant shall include the impacts from route/site clearing and grading, and disposal of vegetation. Include the linear feet and acreage impacted, and the proposed crossing methodology of each stream and wetland that would be crossed by any part of the facility or construction equipment. Specify the extent of vegetation clearing and describe how such clearing work will be done so as to minimize removal of woody vegetation.

The Project construction impacts on most vegetation communities will be temporary. Project ROW in forested areas will need to be managed and will likely transition to old field or scrub shrub. The amount of forested habitat found on each Project centerline option in acres within the 125-foot Project area is:

Preferred Route = 16.92 acres
Alternate Route = 32.59 acres

Table 13 shows the proposed temporary and permanent impacts to surface waters observed on the Preferred Route option.

Table 13. Surface Waters Proposed to be Impacted by the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Preferred Route.

WOUS	Classification	Delineated Within Project Area		Temporary Impacts		Permanent Impacts	
		Length (ft)	Acreage	Length (ft)	Acreage	Length (ft)	Acreage
Wetland 1	PEM	-	0.08		0.025		0
Wetland 2	PFO	-	0.60		0		0
Wetland 3	PEM	-	0.30		0		0
Wetland 3d	PEM		0.02		0		0
Wetland 4	PEM/PFO	-	0.41		0.056		0.02
Wetland 4a	PEM		0.03		0		0
Wetland 6	PEM	-	0.06		0.015		0
Wetland 7	PFO	-	0.54		0		0.12
Wetland 8a	PEM		0.15		0		0
Wetland 8b	PEM		0.21		0.068		0
Wetland 8c	PEM		0.26		0		0
Wetland 13	PEM	-	0.40		0.137		0
Stream 1	Intermittent	275	-	99		0	
Stream 2	Perennial	88	-	0		0	
Stream 3 (Scioto River)	Perennial	210	-	0		0	
Stream 4	Intermittent	126	-	51		0	
Stream 5	Intermittent	200	-	53		0	
Stream 6	Ephemeral	146	-	51		0	
Stream 7	Ephemeral	778	-	238		0	
Stream 8	Intermittent	1,366	-	67		0	
Stream 9	Intermittent	24	-	0		0	

WOUS	Classification	Delineated Within Project Area		Temporary Impacts		Permanent Impacts	
		Length (ft)	Acreage	Length (ft)	Acreage	Length (ft)	Acreage
Stream 10	Intermittent	901	-	59		0	
Stream 11	Intermittent	2,615	-	170		0	
Stream 12	Intermittent	47	-	0		0	
Stream 13	Intermittent	1,531	-	124		0	
Total		**8,307**	**3.06**	**912**	**0.30**	**0**	**0.14**
Total Temporary Impacts				**912**	**0.30**	**0**	**0**
Total Permanent Impacts				**0**	**0**	**0**	**0.14**

Table 14 shows the field delineated surface waters observed on the Alternate Route option.

Table 14. Surface Waters Proposed to be Impacted by the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Alternate Route.

WOUS	Classification	Delineated Within Project Area		Temporary Impacts		Permanent Impacts	
		Length (ft)	Acreage	Length (ft)	Acreage	Length (ft)	Acreage
Wetland 1	PFO	--	0.60		0		0.16
Wetland 2	PEM	-	0.03		0		0
Wetland 3	PEM	-	0.29		0.090		0
Wetland 4	PFO/PEM	-	0.20		0.045		0.09
Wetland 5	PFO	-	0.27		0		0.12
Wetland 6	PEM	-	0.09		0.006		0
Wetland 7	PFO	-	0.32		0		0.00004
Wetland 8	PEM	-	0.07		0.021		0
Wetland 9	PEM	-	0.06		0.015		0
Wetland 10	PEM	-	0.03		0.011		0
Wetland 11	PEM	-	0.03		0.019		0
Wetland 12	PEM	-	0.07		0.027		0
Wetland 13	PEM	-	0.004		0		0
Wetland 14	PFO	-	0.10		0		0.04
Wetland 15	PEM	-	0.03		0		0

WOUS	Classification	Delineated Within Project Area		Temporary Impacts		Permanent Impacts	
		Length (ft)	Acreage	Length (ft)	Acreage	Length (ft)	Acreage
Wetland 16	PEM	-	0.11		0		0
Wetland 17	PEM	-	0.07		0		0
Wetland 18	PEM	-	0.05		0.01		0
Wetland 19	PEM	-	0.06		0.003		0
Wetland 20	PEM	-	0.08		0.018		0
Wetland 21	PEM	-	0.11		0.044		0
Wetland 22	PEM	-	0.01		0		0
Wetland 23	PEM	-	0.03		0.004		0
Stream 1	Intermittent	319	-	99		0	
Stream 2	Ephemeral	347	-	109		0	
Stream 3	Ephemeral	9	-	0		0	
Stream 4 (Scioto River)	Perennial	205	-	0		0	
Stream 5	Ephemeral	126	-	14		0	
Stream 6	Ephemeral	162	-	3		0	
Stream 7	Intermittent	101	-	12		0	
Stream 8	Intermittent	36	-	0		0	
Stream 9	Intermittent	901	-	59		0	
Stream 10	Intermittent	127	-	50		0	
Stream 11	Intermittent	197	-	59		0	
Stream 12	Intermittent	160	-	17		0	
Stream 13	Intermittent	204	-	51		0	
Stream 14	Perennial	259	-	65		0	
Stream 15	Ephemeral	20	-	0		0	
Stream 16	Intermittent	192	-	120		0	
Stream 17	Intermittent	674	-	67		0	
Total		**4,039**	**2.71**	**725**	**0.31**	**0**	**0.41**
Total Temporary Impacts				**725**	**0.31**	**0**	**0**
Total Permanent Impacts				**0**	**0**	**0**	**0.41**

(4) The applicant shall provide a description of the probable impact of the operation and maintenance of the proposed facility on vegetation and surface waters. This shall include the permanent impacts from route clearing.

There will be permanent impacts associated with clearing of Upland Wooded Lots along the Project centerline. Yearly maintenance will be required to prevent this area from becoming wooded in the future. Minimal to no impact on surface waters is expected to occur during operation and maintenance.

(5) The applicant shall provide a description of the mitigation procedures to be used during construction, operation, and maintenance of the proposed facility to minimize the impact on vegetation and surface waters. Include the following:

(a) Plans for post-construction site restoration and stabilization of disturbed soils, especially in riparian areas and near wetlands. Restoration plans should include details on the removal and disposal of materials used for temporary access roads and construction staging areas, including gravel.

Once final grading is complete after pipeline installation, the disturbed areas will be restored back to pre-construction conditions in accordance with the *NiSource Environmental Construction Standards*, attached hereto as Appendix E. All disturbed areas not yet stabilized should be stabilized with vegetation, including graded areas and areas where earth moving activities will occur within 12 months. As areas approach final grade, preparations should begin for seeding and mulching. Topsoil will be applied prior to seeding. All seeded areas will be mulched or blanketed to minimize the potential for failure to establish an adequate vegetative cover. Columbia maintains lists of seed mixtures, application standards, fertilizers, etc. as defined in the *NiSource Environmental Construction Standards*.

(b) A detailed frac out contingency plan for stream and wetland crossings that are expected to be completed via horizontal directional drilling.

All stream and wetland crossings will be open trenched except for Wetland 2 and Stream 3 (Scioto River) which Columbia is proposing to HDD. On the Alternate Route, Columbia is proposing to HDD the O'Shaughnessy

Reservoir and U.S. Route 33. Columbia's Inadvertent Release Plan is attached hereto as Appendix B.

(c) Methods to demarcate surface waters and wetlands to protect them from entry of construction equipment and material storage or disposal.

Columbia's environmental standards, the *NiSource Environmental Construction Standards*, discuss methods to minimize impacts on vegetation, and stream and wetland ecosystems. Columbia will also obtain coverage under the OEPA General Permit Authorization for Storm Water Discharges Associated with Construction Activities under the National Pollution Discharge Elimination System, Permit No. OHC000005, and develop a storm water pollution prevention plan ("SWPPP") for the Project.

During the route selection process, Columbia avoided surface waters to the maximum extent practicable. The first step in avoidance was to use the NWI (USFWS 2020) database during the desktop analysis phase of routing. After field surveys, wetlands and waterbodies were incorporated into engineering drawings along with methods to reduce impacts to these features.

The Project SWPPP will include best management practices ("BMPs") outlined in an erosion and sediment control plan, in accordance with OEPA standards to avoid impacts to wetlands and waterbodies outside the construction area. Trench plugs and trench breakers will be used to protect stream, waterbody, and wetlands at centerline crossings, regardless of slope. BMPs used to protect surface waters include timber mats, silt fence, and filter socks.

Columbia plans to use open cut installation methods during construction when crossing streams and wetlands except for Wetland 2 and Stream 3 (Scioto River) which Columbia is proposing to HDD. To minimize impacts, Columbia will approach streams as close to a right angle as possible. Waterbody banks will be graded only where and as much as necessary to allow safe and efficient operation of construction equipment. Stream crossings on perennial and intermittent streams will also be performed during agency recommended timeframes, if available, or during low flow periods, generally from July through September. Flow is typically conveyed

past the work area using several methods including bypass channels, pipe, pump, or cofferdam. The bypass method will be completely in place and connected prior to diverting the stream flow. Sediment filter devices for trench spoil will be in place prior to beginning the trench installation. All water should be pumped through a water filter bag or sediment trap to a vegetated upland area. Adequate downstream flow rates will be maintained at all times to protect aquatic life and prevent the interruption of existing downstream uses.

Minor waterbodies, such as swales, ditches, channels, etc. less than 10 feet wide, will be flumed or pumped past the open trench at the time of crossing. If there is existing flow, the flume will be completed prior to trench excavation. If no flow exists during pipeline installation and the construction will be complete within one day, no flume will be installed. The waterway contours will be reestablished as part of final stabilization. For intermediate waterbodies and streams, defined as 10 – 100 feet in width, pump bypass methodology is the most likely method of diversion that will be used. The crossing, backfilling, and stabilization in general will be completed within 48 hours. Major waterbody crossings, those larger than 100 feet, require a "site specific crossing plan", which will be developed by the Columbia Natural Resources Permitting Group. This plan will follow all federal, state, and local regulations. For large crossings, all in-stream activities will be completed within 72 hours. All channel banks will be restored and stabilized to pre-construction configurations to the maximum extent practicable.

Columbia will take the following precautions when streams and/or wetlands are near the construction limits, but will not be crossed:

- If possible, a 50-foot natural buffer will be maintained;
- If 50 feet cannot be maintained due to slope, attempts will be made to maintain 10 feet of undisturbed vegetation between top of bank of the waterbody and the Project ROW, except at crossing locations;
- Sediment barriers will be installed along the edge of the construction work area to contain spoil and sediment;
- Sediment barriers will be placed along the perimeter of the construction work area prior to clearing and grading activities; and

- Sediment barriers will be installed as necessary to isolate potential areas of erosion and minimize sediment transport.
- All streams and wetlands will be identified with signage and other indicators in the field

(d) Procedures for inspection and repair of erosion control measures, especially after rainfall events.

Visual inspections of all cleared and graded areas of the construction site will be performed daily in areas of active construction or equipment operation. Visual inspections will be done once every seven calendar days in areas with no active construction, and by the end of the next calendar day (excluding weekends and holidays unless work is scheduled) following a rainfall event with precipitation greater than 0.5 inch in 24 hours. The inspection will be conducted by the SWPPP coordinator or designated qualified stormwater team members. The inspection will verify the structural BMPs described in the SWPPP are in good condition and are minimizing erosion. If following an inspection repairs are required for temporary erosion control measures, the repairs will be made within 24 hours of identification.

The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

- Build-up of sediment will be removed from silt fencing when it has reached one-third the height of the silt fence or filter sock;
- Silt fences or filter sock will be inspected for depth of sediment, tears, to ensure the fabric is securely attached to the fence posts and flush with the surface, and to verify that the fence posts are firmly in the ground;
- Temporary and permanent seeding will be inspected for bare spots, washouts, and healthy growth;
- The stabilized construction entrances will be inspected for sediment tracked on the road and clean gravel; and
- Inlet filter bags shall be maintained and cleaned out or replaced when the bag or structure is half full or when flow capacity has been reduced.

An inspection report will be made after each inspection. A copy of the report form to be completed by the SWPPP coordinator is provided in the appendices of the SWPPP. Completed forms will be maintained on-site during the entire Project construction. Following construction and submission of the Notice of Termination, the completed forms will be retained by Columbia in the work management system documents for a minimum of three years. If construction activities or design modifications are made to the site plan which could impact stormwater, the SWPPP will be amended appropriately. The amended SWPPP will have a description of the new activities that contribute to the increased pollutant loading and the planned source control activities.

(e) Measures to divert storm water runoff away from fill slopes and other exposed surfaces.

Sheet flow runoff from disturbed areas will be intercepted by silt fence or other appropriate sediment and erosion controls to protect adjacent surface waters from sediment transported via sheet flow. Silt fence will be placed on a level contour. The relationship between the maximum drainage area to silt fence for a particular slope range is shown in Table 15 below.

Table 15. Columbia Standard Silt Fence Specifications

Maximum drainage area (in acres) to 100 linear feet of silt fence	Range of slope for a particular drainage area (in percent)
0.5	<2%
0.25	> or = 2%, but < 20%
0.125	> or = 20%, but <50%

Sediment control practices (inlet protection) will be utilized to minimize sediment laden water from entering the active storm drain systems.

(f) Methods to protect vegetation in proximity to any project facilities from damage, particularly mature trees, wetland vegetation, and woody vegetation in riparian areas.

During ROW clearing, Columbia will remove trees or brush within the construction work area, and, to the extent possible, avoid impacts to any

trees or structures outside the work area. Large or otherwise valuable trees will be avoided whenever reasonably possible. Temporary erosion and sediment controls will be installed and functioning properly prior to clearing activities.

(g) Options for disposing of downed trees, brush, and other vegetation during initial clearing for the project, and clearing methods that minimize the movement of heavy equipment and other vehicles within the project area that would otherwise be required for removing all trees and other woody debris off site.

Ordinarily, the use of wood products will be left to the landowner; however, woody materials will not be stockpiled in floodplains, streams, or wetlands. Woody brush may be piled at the edge of the construction work area in piles approximately 12 feet wide and compacted to four feet high, with breaks every 200 feet to permit wildlife travel. Brush may be burned or chipped, where permitted.

(h) A description of any expected use of herbicides for maintenance.

No herbicides will be used on the Project.

(C) The applicant shall provide for each of the site/route alternatives the results of a literature survey of the plant and animal life that may be affect by the facility. The literature survey shall include aquatic and terrestrial plant and animal species of commercial or recreational value, or species designated as endangered or threatened. The applicant shall provide the results of field surveys of the plant and animal species identified in the literature survey. The survey report shall include the following:

Table 16 below lists the state-listed and federally-listed threatened and endangered species in the Project counties found on the USFWS (USFWS 2018a) and ODNR websites (ODNR 2020a).

Table 16. Lists of Federal and State Listed Endangered and Threatened Species that May Occur in Delaware and Union Counties, Ohio.

Common Name	Scientific Name	Listing Status*
Delaware County, Ohio		

Common Name	Scientific Name	Listing Status*
Indiana Bat	*Myotis sodalis*	FE, SE
Northern Long-eared Bat	*Myotis septentrionalis*	FT, SE
Tri-colored Bat	*Perimyotis subflavus*	SE
Little Brown Bat	*Myotis lucifugus*	SE
Rayed Bean	*Villosa fabalis*	FE, SE
Snuffbox	*Epioblasma triquetra*	FE, SE
Rabbitsfoot	*Quadrula cylindrica (Theliderma cylindrica)*	FT, SE
Clubshell	*Pleurobema clava*	FE, SE
Ohio Pigtoe	*Pleurobema cordatum*	SE
Black Sandshell	*Ligumia recta*	ST
Pondhorn	*Uniomerus tetralasmus*	ST
Marsh Bluet	*Enallagma ebrium*	ST
Lark Sparrow	*Chondestes grammacus*	SE
American Bittern	*Botaurus lentiginosus*	SE
Black-crowned Night-Heron	*Nycticorax nycticorax*	ST
Running Buffalo Clover	*Trifolium stoloniferum*	FE
Union County		
Indiana Bat	*Myotis sodalis*	FE, SE
Northern Long-eared Bat	*Myotis septentrionalis*	FT, SE
Tri-colored Bat	*Perimyotis subflavus*	SE
Little Brown Bat	*Myotis lucifugus*	SE
Scioto Madtom	*Noturus trautmani*	FE
Clubshell	*Pleurobema clava*	FE, SE
Northern Riffleshell	*Epioblasma torulosa rangiana*	FE, SE
Rayed Bean	*Villosa fabalis*	FE, SE
Snuffbox	*Epioblasma triquetra*	FE, SE
Rabbitsfoot	*Quadrula cylindrica (Theliderma cylindrica)*	FT, SE
Pondhorn	*Uniomerus tetralasmus*	ST
Lark Sparrow	*Chondestes grammacus*	SE
American Bittern	*Botaurus lentiginosus*	SE
Northern Harrier	*Circus hudsonius*	SE
Loggerhead Shrike	*Lanius ludovicianus*	SE
King Rail	*Rallus elegans*	SE
Barn Owl	*Tyto alba*	ST

Common Name	Scientific Name	Listing Status*
Least Bittern	*Ixobrychus exilis*	ST
Sources: USFWS 2018a; ODNR 2020a *ST = state threatened; SE = state endangered; FT = federally threatened; FE = federally endangered		

Requests for environmental reviews of the Study Area were sent to the USFWS and ODNR Office of Real Estate on January 31, 2020. Further details were requested regarding federal and state listed species and their habitats within the Study Area. Correspondence from USFWS was received on March 26, 2020 and is included in Appendix F. The response stated that the proposed Study Area is within the range of the Indiana bat and the northern long-eared bat. Therefore, the USFWS recommends that trees greater than 3 inches diameter breast height ("dbh") be saved whenever possible. If tree removal is necessary, the USFWS recommends tree removal occur from October 1 through March 31. Due to the Project type, size, and location, USFWS does not anticipate adverse effects upon any other federally endangered, threatened, proposed, or candidate species.

A response from ODNR Office of Real Estate was received on April 3, 2020. The ODNR response states the Study Area is within the vicinity of existing records for the Indiana bat, a state and federally endangered species. Presence of the Indiana bat has been established in this area, and therefore additional summer surveys would not constitute presence/absence in the area. If suitable habitat occurs within the Project area, trees will be conserved to the extent possible. If suitable habitat must be cut, tree removal will occur during recommend seasonal cutting dates.

The proposed Project contains forested habitat in the form of second growth forest in multiple areas, fence rows, and single trees between agricultural fields. Tree species observed within the Project area include common hackberry (*Celtis occidentalis)*, sugar maple (*Acer saccharum)*, silver maple (*Acer saccharinum)*, American elm (*Ulmus americana*), northern red oak (*Quercus rubra)*, pin oak (*Quercus palustris)*, American beech (*Fagus grandifolia)*, and white oak (*Quercus alba)* with a dbh ranging from 3 to 30 inches. Impacts to forested habitats will be avoided and minimized to the maximum extent practicable during construction. Please see the construction plans in Appendix G and Figure 10 for impacted locations of forested habitat for the proposed pipeline. In addition, Columbia will adhere to seasonal tree clearing timeframes recommended by both agencies to minimize and avoid impacts bat species. The Project will result in a small amount of tree clearing relative to the available habitat in the immediate area; therefore,

habitat removal is unlikely to result in significant impacts to bat species. Based on this information and the minimization and avoidance measures that Columbia will take, it is not likely that impacts to the Indiana bat or northern long-eared bat will occur.

The ODNR Division of Wildlife ("DOW") response stated that the Project is within the range of seven state endangered or state threatened freshwater mussel species and the Project must not have an impact on freshwater native mussels at the Project site. This applies to both listed and non-listed mussel species. Per the Ohio Mussel Survey Protocol (ODNR and USFWS 2020), all Group 2, 3, and 4 streams require a mussel survey. Group 1 streams and unlisted streams with a watershed of 10 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels to determine if mussels are present. However, if the water is greater than 1 meter (36 inches), timed searches will be required. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the ODNR DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the ODNR DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the Project area, as a last resort, the ODNR DOW recommends a professional malacologist collect and relocate the mussels to a suitable and similar habitat upstream of the project site prior to construction.

The ODNR response stated that the Project is within the range of the Scioto madtom (*Noturus trautmani*) a state endangered fish species and the Tippecanoe darter (*Etheostoma tippecanoe*) a state threatened fish species. The ODNR recommends no in-water work in perennial streams from April 15 through June 30 to reduce impacts to aquatic species and their habitat. No in-water work is proposed during April 15th through June 30th, therefore, the Project is not likely to impact these species.

There are 9 streams (1 ephemeral, 8 intermittent) proposed to be temporarily impacted by the Preferred Route centerline and 13 streams (3 ephemeral, 9 intermittent, and 1 perennial) proposed to be temporarily impacted by the Alternate Route centerline. All streams are proposed to be impacted by open trench pipeline installation methods with the exception of the Scioto River, which Columbia plans to cross utilizing an HDD method. However, intermittent and ephemeral streams on each centerline have watersheds of less than 10 square miles

and have an ephemeral or intermittent flow regime that does not provide sufficient habitat for fish and mussel species. Columbia plans to HDD the Scioto River with the Preferred and Alternate Routes to avoid and minimize impacts to aquatic species. No in-water work is proposed within the Scioto River for the both the Preferred Route and Alternate Route.

Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received.
For the Alternate Route, Columbia's crossing of the O'Shaughnessy Reservoir will be done via HDD. Columbia's Inadvertent Release Plan is attached as Appendix B.

The ODNR response states that the Project is within the range of the American bittern (*Botaurus lentiginosus)*, a state endangered bird. Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. ODNR recommends construction be avoided in this habitat during nesting period, May 1 to July 31. Wetland vegetation found within the project area is minimal and does not contain dense vegetation needed for the American bittern species. Therefore, impacts to the state endangered species is not anticipated for the proposed Project.

The ODNR response stated that the Project is within the range of the least bittern (*Ixobrychus exilis)*, a state threatened bird. This species prefers dense emergent wetlands with thick stands of cattails, sedges, sawgrass or other semiaquatic vegetation interspersed with woody vegetation and open water. The ODNR recommends construction be avoided in this habitat during nesting period, May 1 to July 31. The specific wetland vegetation needed for this species is very minimal and does not contain quality surrounding habitat for the least bittern species. Therefore, impacts to the state threatened species is not anticipated for the proposed Project.

The ODNR response states the Project is within the range of the king rail (*Rallus elegans*), a state endangered bird. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. ODNR recommends construction be avoided in this habitat during the nesting period, May 1 to August 1. Marsh vegetation found within the project area is very minimal

and does not contain quality surrounding habitat for the king rail species. Therefore, impacts to the state endangered species is not anticipated for the proposed Project.

The Project is also within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This bird is a common migrant and winter species and occasionally breed in large marshes and grasslands and often hunt over grasslands. ODNR recommends if this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period, May 15 to August 1. Large marshes or grasslands do not occur within the Project area. Therefore, impacts to the northern harrier are not anticipated for the proposed Project.

The Project is also with the range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird. ODNR states if thickets or other types of dense shrubbery habitat will be impacted, construction should be avoided in this habitat during the species' nesting period, April 1 to August 1. The Project is unlikely to impact this species if this habitat is not impacted. The shrubbery habitat occurring within the project area is limited to narrow fence rows. Due to no dense thickets or shrubbery occurring within the Project area, impacts to the state endangered species is not anticipated for the proposed Project.

The ODNR response indicates a record of the following species and natural features occurs within a one-mile radius of the Project:

- Arbor vitae (*Thuja occidentalis)*, potentially threatened
- Purple wartyback (*Cyclonaias tuberculata)*, species of concern
- Kidneyshell (*Ptychobranchus exilis)*, species of concern
- Pondhorn (*Uniomerus tetralasmus)*, threatened
- Least bittern (*Ixobrychus exilis)*, threatened
- Sora rail (*Porzana carolina)*, species of concern
- King rail (*Rallus elegans)*, endangered
- Virginia rail (*Rallus limicola)*, species of concern
- Cave or cavern
- Sinkhole

The ODNR provided Columbia with the locations of these species occurrences. The kidneyshell mussel occurs within the Preferred Route in Stream 3 (Scioto

River). Columbia plans to HDD the Scioto River to ensure that there are no impacts to mussel species. The least bittern has been recorded in Glacier Ridge Metro Park and the area noted in occurrence record is avoided by the Project.

In addition, Glacier Ridge Metro Park and O'Shaughnessy Reservoir Park are within a one-mile radius of the Project. The parks are within both Project centerlines; however, due to minimization and avoidance, impacts to the parks will be minimal from the Project.

A copy of the correspondence from the USFWS and ODNR Office of Real Estate confirming the agencies' review are included in Appendix F. Any future correspondence with ODNR regarding potential species impact assessments will be forwarded to OPSB once received.

Tables 17 and 18 summarize the federally and state listed species, whether their habitat was observed within the Project centerline options, and brief descriptions of what the agencies recommended.

Table 17. Summary of Potential Federally and State Listed Species within the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Preferred Route, Union and Delaware Counties, Ohio.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Mammals									
Indiana Bat	*Myotis sodalis*	FE, SE	Yes	Yes	Yes	The Indiana bat is likely distributed over the entire state of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2019a). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer roosting and foraging habitat was observed in the Project area. Columbia intends follow seasonal tree clearing guidance (October 1 to March 31).	**USFWS:** If the proposed project contains trees ≥ 3 inches dbh, USFWS recommends avoiding tree removal if possible. If no winter habitat is present and trees ≥ 3 inches dbh cannot be avoided, USFWS recommends removal of any trees ≥3 inches dbh occur between October 1 and March 31 to avoid adverse effects to Indiana bats. **ODNR:** The presence of Indiana bats has been established in the area and summer surveys would not constitute presence/absence in the area. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31.
Northern Long-eared Bat	*Myotis septentrionalis*	FT, SE	Yes	Yes	No	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2015). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer roosting and foraging habitat was observed in the Project area. Columbia intends follow seasonal tree clearing guidance (October 1 to March 31).	**USFWS:** If the proposed project contains trees ≥ 3 inches dbh, USFWS recommends avoiding tree removal if possible. If no winter habitat is present and trees ≥ 3 inches dbh cannot be avoided, USFWS recommends removal of any trees ≥3 inches dbh occur between October 1 and March 31 to avoid adverse effects to northern long-eared bats. **ODNR:** No comments.
Tri-colored Bat	*Perimyotis subflavus*	SE	Yes	Yes	No	This species is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, Columbia intends to follow Indiana bat seasonal tree clearing guidance (October 1 to	**USFWS:** This species is not federally listed. **ODNR:** This species was state-listed after coordination with ODNR.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
								March 31, which should also benefit tri-colored bats.	
Little Brown Bat	*Myotis lucifugus*	SE	Yes	Yes	No	This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2020).	Yes	Potentially suitable foraging habitat is present in the Project area. However, since this bat typically summer roosts in man-made structures, impacts to this species are not likely.	**USFWS:** This species is not federally listed. **ODNR:** This species was state-listed after coordination with ODNR.
Freshwater Mussels									
Rayed Bean	*Villosa fabalis*	FE, SE	Yes	Yes	No	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (Butler 2002, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Snuffbox	*Epioblasma triquetra*	FE, SE	Yes	Yes	No	Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates, however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998, Watters et al. 2009).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Clubshell	*Pleurobema clava*	FE, SE	Yes	Yes	No	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
						clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.		in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Northern Riffleshell	*Epioblasma torulosa rangiana*	FE, SE	Yes	No	No	This mussel is found in a wide variety of streams from small to large (USFWS 2020). Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2020).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Rabbitsfoot	*Quadrula cylindrica (Theliderma cylindrica)*	FT, SE	Yes	Yes	No	The typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Found in medium to large rivers in sand and gravel shoals (NatureServe 2020).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Black Sandshell	*Ligumia recta*	ST	No	Yes	No	Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more. Found in sand, gravel, or silt (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Ohio Pigtoe	*Pleurobema cordatum*	SE	No	Yes	No	This species primarily inhabits large rivers but may be found in medium-sized rivers. It is also tolerant of some reservoir environments. In lotic situations it is found in or immediately above riffles in heterogeneous assemblages of gravel, cobble, and boulder. It also occurs in some habitats with greater depth and substrates of mud/sand/gravel but seem to require flowing water. In reservoirs, it tends to occur in the sublotic areas of dam tailwaters and may be in some overbank beds (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Elephant-Ear	*Elliptio crassidens crassidens*	SE	No	No	No	This species inhabits muddy sand, sand and rocky substrates in moderate current. It is also an inhabitant of channels (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, this species is not known to occur within 1 mile of the project area and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Pondhorn	*Uniomerus tetralasmus*	ST	Yes	Yes	Yes	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, no in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Purple Wartyback	*Cyclonaias tuberculata*	SC	Yes	Yes	Yes	This species typically inhabits a gravel/mud bottom, usually in areas of current at depth of less than two to up to 20 feet. Different forms inhabits medium-sized to small streams or in main channel of large rivers (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, no in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Kidneyshell	*Ptychobranchus fasciolaris*	SC	Yes	Yes	Yes	This species is most commonly found in small to medium-sized rivers, and is rarely found in large rivers. It favors riffle areas with substrates of firmly-packed coarse gravel and sand and moderate to swift flows, and has an aversion to ponded or backwater conditions. This species is tolerant of a variety of habitat conditions, although rivers with moderately strong current and a substrate of coarse gravel and sand provide the most suitable (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, no in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Fishes									
Scioto Madtom	*Noturus trautmani*	FE, SE	Yes	No	No	Only 18 individuals of the Scioto madtom have ever been found. Of those, 14 were found in the fall of 1957 and none have been seen since. No other fish has been searched for more persistently by researchers in Ohio than this species. This fish has never been found outside of Ohio and all 18 individuals were found in a small area of Big Darby Creek. They were found in the tail end of riffles over a sand and gravel substrate. Since all of the individuals were found in the fall it has been speculated that they may spend the remainder of the year further upstream. They likely eat various aquatic invertebrates like most other madtom species (ODNR Division of Wildlife 2020b).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this species has only been observed in Big Darby Creek, and no records of this species occurrence have been documented since 1957. No in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Tippecanoe Darter	*Etheostoma tippecanoe*	ST	No	No	No	This species is found in medium to large streams and rivers in the Ohio River drainage in Ohio. They are found in riffles of moderate current with a substrate of gravel and small cobble sized rocks. They spend most of their time in crevices between rocks, and because of their small size they are often difficult to find (ODNR Division of Wildlife 2020b).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this species is not known to occur within 1 mile of the project area and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.
Birds									
Lark Sparrow	*Chondestes grammacus*	SE	Yes	Yes	No	This species nests in grassland type of habitats with moderately distributed shrubs or disturbed areas with areas of bare soil. In Ohio, they are known to nest in open grass and shrubby fields along sandy beach areas (ODNR Division of Wildlife 2020b)	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Loggerhead Shrike	*Lanius ludovicianus*	SE	Yes	No	No	The loggerhead shrike nests in hedgerows, thickets, and fencerows. They hunt over hayfields, pastures, and other grasslands (ODNR 2020b). Large areas of open country, such as grasslands, orchards, and open grassy woodlands, with scattered trees and shrubs are required to be suitable as loggerhead shrike nesting habitat. The average territory sizes in studies conducted in Missouri and New York was approximately 11 acres and 18.5 acres, respectively (Bull and Farrand 1977; NatureServe 2020; Yosef 1996).	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If thickets or dense shrubbery will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1.
King Rail	*Rallus elegans*	SE	Yes	No	Yes	Habitat includes freshwater marshes, upland-wetland marsh edges, ricefields, or similar flooded farmlands, and shrub swamps (NatureServe 2020). Nests for this species are deep bowls constructed out of grass and usually very well hidden in marsh vegetation (ODNR 2020b). Large areas of palustrine emergent wetland and/or palustrine scrub-shrub wetland habitats ($\geq$ 20 acres) that include areas of open water are required to be suitable as king rail nesting habitat (Bull and Farrand 1977; McCormac and Kennedy 2004; NatureServe 2020; Pickens and Meanley 2015).	Yes	Potentially suitable habitat was identified within the Project area and the species is known to occur within a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If marsh vegetation will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1.
American Bittern	*Botaurus lentiginosus*	SE	Yes	Yes	No	Nesting bitterns are very secretive and prefer large undisturbed wetlands that have scattered small pools amongst the dense vegetation. They occasionally occupy bogs, large wet meadows, and dense, shrubby swamps (ODNR Division of Wildlife 2020b)	No	No suitable habitat occurs in the Project area. Therefore, this species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. If this type of habitat will be

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
									impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31.
Northern Harrier	*Circus cyaneus (Circus hudsonius)*	SE	Yes	No	No	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species; nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR Division of Wildlife 2020b).	No	No suitable habitat occurs in the Project area. Therefore, this species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** If marshes or grasslands will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1.
Least Bittern	*Ixobrychus exilis*	ST	Yes	No	Yes	This species prefers to nest in marshes or swamps with dense emergent vegetation, especially cattails (ODNR Division of Wildlife 2020b).	Yes	Suitable habitat was identified within the Project area and the species is known to occur within a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If dense emergent wetlands will be impacted, construction should be avoided in this habitat during the species nesting period of May 1 to July 31.
Barn Owl	*Tyto alba*	ST	Yes	No	No	This species depends on open grassland over which to hunt. However, because of the way much of Ohio is farmed today, there is little of this kind of habitat around (ODNR Division of Wildlife 2020b).	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Black-crowned Night-Heron	*Nycticorax nycticorax*	ST	No	Yes	No	These largely nocturnal herons are likely more common than suspected but tend to hide in thick vegetation during the day. They are often found roosting in thick vegetation along streams, lakes, and wetlands (ODNR Division of Wildlife 2020b).	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Virginia Rail	*Rallus limicola*	SC	Yes	Yes	Yes	This species prefers freshwater and occasionally brackish marshes, mostly in cattails, reeds, and deep grasses, also in or close to other emergent vegetation. It inhibits shallow, freshwater emergent wetlands of every size and type. Interspersion of open water and vegetation is an important habitat component (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Preferred Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Sora Rail	*Porzana carolina*	SC	Yes	Yes	Yes	Primarily shallow freshwater emergent wetlands (e.g., marshes of cattail, sedge, blue-joint, or bulrush), less frequently in bogs, fens, wet meadows, and flooded fields, sometimes foraging on open mudflats adjacent to marshy habitat. Also occurs locally in swamps, along slough borders, and in mangroves. Can use very small marshes (e.g., 4 nests have been found in a half-acre marsh) (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Insects									
Marsh Bluet	*Enallagma ebrium*	ST	No	Yes	No	This species prefers marshes, vegetated ponds, lakeshores, and quiet streams. They are not likely to be found in acidic conditions (Wisconsin Odonata Survey 2020).	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Plants									
Running Buffalo Clover	*Trifolium stoloniferum*	FE	No	Yes	No	Mesic habitats with partial to filtered sunlight or partial shade and sunlight. This species also prefers periodic disturbance, potentially by mowing or browsing mammals (USFWS 2019b).	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** No comments
Arbor Vitae	*Thuja occidentalis*	SC	Yes	Yes	Yes	Occurs in both uplands and lowlands. The uplands are primarily seepage areas, old fields, and limestone cliffs and boulder fields, in calcareous soils including calcareous clays and shallow loam overlying broken limestone. The lowland sites include swamps, streambanks, and lakeshores, generally featuring a strong flow of moderately mineral-rich soil water of near neutral pH (minerotrophic and weakly minerotrophic swamps) and where the organic peat is moderately to well decomposed (Carey 1993).	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

[1]FE=federally endangered; FT=federally threatened; SE=state endangered; ST=state threatened
[2]Source: ODNR 2020a
[3]Source: USFWS 2018a
[4]Ohio Natural Heritage Program (Appendix F)
[5]Group 2 streams are small to mid-sized streams where federally listed species are expected (ODNR and USFWS 2020).
[6]Group 1 streams are small to mid-sized streams where federally listed species are not expected (ODNR and USFWS 2020).

Table 18. Summary of Potential Federally and State Listed Species within the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Alternate Route, Union and Delaware Counties, Ohio.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Mammals									
Indiana Bat	*Myotis sodalis*	FE, SE	Yes	Yes	Yes	The Indiana bat is likely distributed over the entire state of Ohio, though not uniformly. This species generally forages in openings and edge habitats within upland and floodplain forest, but they also forage over old fields and pastures (Brack et al. 2010). Natural roost structures include trees (live or dead) with exfoliating bark, and exposure to solar radiation. Other important factors for roost trees include relative location to other trees, a permanent water source and foraging areas. Dead trees are preferred as maternity roosts; however, live trees are often used as secondary roosts depending on microclimate conditions (USFWS 2007; USFWS 2019a). Roosts have also occasionally been found to consist of cracks and hollows in trees, utility poles, buildings, and bat boxes. Primarily use caves for hibernacula, although are also known to hibernate in abandoned underground mines (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer roosting and foraging habitat was observed in the Project area. Columbia intends follow seasonal tree clearing guidance (October 1 to March 31).	**USFWS:** If the proposed project contains trees ≥ 3 inches dbh, USFWS recommends avoiding tree removal if possible. If no winter habitat is present and trees ≥ 3 inches dbh cannot be avoided, USFWS recommends removal of any trees ≥3 inches dbh occur between October 1 and March 31 to avoid adverse effects to Indiana bats. **ODNR:** The presence of Indiana bats has been established in the area and summer surveys would not constitute presence/absence in the area. If suitable habitat occurs within the project area and trees must be cut, the DOW recommends cutting occur between October 1 and March 31.
Northern Long-eared Bat	*Myotis septentrionalis*	FT, SE	Yes	Yes	No	The northern long-eared bat is found throughout Ohio. This species generally forages in forested habitat and openings in forested habitat and utilizes cracks, cavities, and loose bark within live and dead trees, as well as buildings as roosting habitat (Brack et al. 2010; USFWS 2015). The species utilizes caves and abandoned mines as winter hibernacula. Various sized caves are used providing they have a constant temperature, high humidity, and little to no air current (Brack et al. 2010).	Yes	No suitable winter hibernacula were observed in the Project area. However, suitable summer roosting and foraging habitat was observed in the Project area. Columbia intends follow seasonal tree clearing guidance (October 1 to March 31).	**USFWS:** If the proposed project contains trees ≥ 3 inches dbh, USFWS recommends avoiding tree removal if possible. If no winter habitat is present and trees ≥ 3 inches dbh cannot be avoided, USFWS recommends removal of any trees ≥3 inches dbh occur between October 1 and March 31 to avoid adverse effects to northern long-eared bats. **ODNR:** No comments.
Tri-colored Bat	*Perimyotis subflavus*	SE	Yes	Yes	No	This species is associated with forested landscapes, foraging near trees and along waterways. Maternity and summer roosts usually occur in dead or live tree foliage, or in the south, in clumps of Spanish moss. Maternity colonies may also use tree cavities or man-made structures, such as buildings or bridges. Caves, mines, and rock crevices may be used as night roosts between foraging (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, Columbia intends to follow Indiana bat seasonal tree clearing guidance (October 1 to March 31, which should also benefit tri-colored bats.	**USFWS:** This species is not federally listed. **ODNR:** This species was state-listed after coordination with ODNR.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Little Brown Bat	*Myotis lucifugus*	SE	Yes	Yes	No	This bat uses a wide range of habitats and man-made structures for roosting, including buildings and attics. Less frequently, they use hollows of trees. Winter hibernation sites typically consist of caves, tunnels, abandoned mines. Foraging habitat for this species generally occurs over water, along the edges of lakes and stream or in woodlands near waterbodies (NatureServe 2020).	Yes	Potentially suitable foraging habitat is present in the Project. However, since this bat typically summer roosts in man-made structures, impacts to this species are not likely.	**USFWS:** This species is not federally listed. **ODNR:** This species was state-listed after coordination with ODNR.
Freshwater Mussels									
Rayed Bean	*Villosa fabalis*	FE, SE	Yes	Yes	No	Habitat includes gravel or sandy substrate, especially in areas of thick roots of aquatic plants, increase substrate stability (Butler 2002, Parmalee and Bogan 1998). Rayed bean can be associated with shoal or riffle areas, and in shallow, wave-washed areas of glacial lakes. It is generally found in smaller, headwater creeks, but sometimes in larger rivers and open-water bodies. It can occur in shallow riffles or in lakes with water depths up to four feet. It has been found in riffles, generally in vegetation, and deeply buried in sand and gravel bound together by roots (Parmalee and Bogan 1998).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Snuffbox	*Epioblasma triquetra*	FE, SE	Yes	Yes	No	Snuffbox is commonly found buried in the substrate. It is found in a wide range of particle sized substrates, however, swift shallow riffles with sand and gravel are where it is typically found (Parmalee and Bogan 1998, Watters et al. 2009).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Clubshell	*Pleurobema clava*	FE, SE	Yes	Yes	No	Clubshell is found in small to medium rivers, but occasionally found in large rivers, especially those having large shoal areas. It is generally found in clean, coarse sand and gravel in runs, often just downstream of a riffle and cannot tolerate mud or slackwater conditions (USFWS 1994). Badra (2001) found the clubshell in gravel/sand substrate, runs having laminar flow (0.06-0.25 m/sec) within small to medium sized streams.	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Northern Riffleshell	*Epioblasma torulosa rangiana*	FE, SE	Yes	No	No	This mussel is found in a wide variety of streams from small to large (USFWS 2020). Habitat for this species includes riffles and firmly packed substrates of fine to coarse gravel. This mussel needs highly oxygenated water (NatureServe 2020).	No	No suitable habitat was observed within the Project area. Therefore, no impacts to this species are anticipated.	USFWS stated that due to the project type, size, and location, they do not anticipate adverse effects to this species ODNR stated that if in-water work is planned for any stream that meets the criteria outlined in the Ohio Mussel Survey Protocol, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the project area.
Rabbitsfoot	*Quadrula cylindrica (Theliderma cylindrica)*	FT, SE	Yes	Yes	No	The typical habitat for this species is small to medium rivers with moderate to swift currents, and in smaller streams it inhabits bars or gravel and cobble close to the fast current. Found in medium to large rivers in sand and gravel shoals (NatureServe 2020).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this stream segment is not a Group 2 stream[5] and no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Black Sandshell	*Ligumia recta*	ST	No	Yes	No	Typically found in medium-sized to large rivers in locations with strong current and substrates of coarse sand and gravel with cobbles in water depths from several inches to six feet or more. Found in sand, gravel, or silt (NatureServe 2020).	Yes	Potentially suitable habitat, a table stream[6] (Scioto River), was observed within the Project area. However, no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Ohio Pigtoe	*Pleurobema clava*	SE	No	Yes	No	This species primarily inhabits large rivers but may be found in medium-sized rivers. It is also tolerant of some reservoir environments. In lotic situations it is found in or immediately above riffles in heterogeneous assemblages of gravel, cobble, and boulder. It also occurs in some habitats with greater depth and substrates of mud/sand/gravel but seem to require flowing water. In reservoirs, it tends to occur in the sublotic areas of dam tailwaters and may be in some overbank beds (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
Elephant-Ear	*Elliptio crassidens crassidens*	SE	No	No	No	This species inhabits muddy sand, sand and rocky substrates in moderate current. It is also an inhabitant of channels (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, no in water will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Pondhorn	*Uniomerus tetralasmus*	ST	Yes	Yes	Yes	This species typically inhabits the quiet or slow-moving, shallow waters of sloughs, borrow pits, ponds, ditches, and meandering streams. It is tolerant of poor water conditions and can be found well buried in a substrate of fine silt and/or mud. It has been known to survive for extended periods of time when a pond or slough has temporarily dried up by burying itself deep into the substrate (NatureServe 2020).	Yes	Potentially suitable habitat, a Group 1 stream[6] (Scioto River), was observed within the Project area. However, no in water work will occur within the Scioto River. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If in-water work is planned for streams that meet the Ohio Mussel Survey Protocol criteria, the applicant should provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a malacologist conduct a mussel survey in the Project area.
Purple Wartyback	*Cyclonaias tuberculata*	SC	Yes	Yes	Yes	This species typically inhabits a gravel/mud bottom, usually in areas of current at depth of less than two to up to 20 feet. Different forms inhabits medium-sized to small streams or in main channel of large rivers (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, no in water work in perennial stream channels will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Kidneyshell	*Ptychobranchus fasciolaris*	SC	Yes	Yes	Yes	This species is most commonly found in small to medium-sized rivers, and is rarely found in large rivers. It favors riffle areas with substrates of firmly-packed coarse gravel and sand and moderate to swift flows, and has an aversion to ponded or backwater conditions. This species is tolerant of a variety of habitat conditions, although rivers with moderately strong current and a substrate of coarse gravel and sand provide the most suitable (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. However, no in water work in perennial stream channels will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Fishes									
Scioto Madtom	*Noturus trautmani*	FE	Yes	No	No	Only 18 individuals of the Scioto madtom have ever been found. Of those, 14 were found in the fall of 1957 and none have been seen since. No other fish has been searched for more persistently by researchers in Ohio than this species. This fish has never been found outside	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. However, this species has only been	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
						of Ohio and all 18 individuals were found in a small area of Big Darby Creek. They were found in the tail end of riffles over a sand and gravel substrate. Since all of the individuals were found in the fall it has been speculated that they may spend the remainder of the year further upstream. They likely eat various aquatic invertebrates like most other madtom species (ODNR Division of Wildlife 2020b).		observed in Big Darby Creek since 1957. No in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**ODNR:** The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.
Tippecanoe Darter	*Etheostoma tippecanoe*	ST	No	No	No	This species is found in medium to large streams and rivers in the Ohio River drainage in Ohio. They are found in riffles of moderate current with a substrate of gravel and small cobble sized rocks. They spend most of their time in crevices between rocks, and because of their small size they are often difficult to find (ODNR Division of Wildlife 2020b).	Yes	Potentially suitable habitat, the Scioto River, was observed within the Project area. No in water work in perennial streams will occur. Therefore, impacts to this species is not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** The DOW recommends no in-water work in perennial streams from April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat.
Birds									
Lark Sparrow	*Chondestes grammacus*	SE	Yes	Yes	No	This species nests in grassland type of habitats with moderately distributed shrubs or disturbed areas with areas of bare soil. In Ohio, they are known to nest in open grass and shrubby fields along sandy beach areas (ODNR Division of Wildlife 2020b)	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Loggerhead Shrike	*Lanius ludovicianus*	SE	Yes	No	No	The loggerhead shrike nests in hedgerows, thickets, and fencerows. They hunt over hayfields, pastures, and other grasslands (ODNR 2020b). Large areas of open country, such as grasslands, orchards, and open grassy woodlands, with scattered trees and shrubs are required to be suitable as loggerhead shrike nesting habitat. The average territory sizes in studies conducted in Missouri and New York was approximately 11 acres and 18.5 acres, respectively (Bull and Farrand 1977; NatureServe 2020; Yosef 1996).	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** If thickets or dense shrubbery will be impacted, construction should be avoided in this habitat during the species' nesting period of April 1 to August 1.
King Rail	*Rallus elegans*	SE	Yes	No	Yes	Habitat includes freshwater marshes, upland-wetland marsh edges, ricefields, or similar flooded farmlands, and shrub swamps (NatureServe 2020). Nests for this species are deep bowls constructed out of grass and usually very well hidden in marsh vegetation (ODNR 2020b). Large areas of palustrine emergent wetland and/or palustrine scrub-shrub wetland habitats (≥ 20 acres) that include areas of open water are required to be suitable as king rail nesting habitat (Bull and Farrand 1977; McCormac and Kennedy 2004; NatureServe 2020; Pickens and Meanley 2015).	Yes	Suitable habitat was identified within the Project area and the species is known to occur within a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated	**USFWS:** This species is not federally listed. **ODNR:** If marsh vegetation will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to August 1.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
American Bittern	*Botaurus lentiginosus*	SE	Yes	Yes	No	Nesting bitterns are very secretive and prefer large undisturbed wetlands that have scattered small pools amongst the dense vegetation. They occasionally occupy bogs, large wet meadows, and dense, shrubby swamps (ODNR Division of Wildlife 2020b)	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** Nesting bitterns prefer large undisturbed wetlands that have scattered small pools amongst dense vegetation. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of May 1 to July 31.
Northern Harrier	*Circus cyaneus (Circus hudsonius)*	SE	Yes	No	No	Harriers hunt low over grasslands, with wings held in a distinctive dihedral (V-shape). This is a common migrant and winter species; nesters are much rarer, although they occasionally breed in large marshes and grasslands (ODNR Division of Wildlife 2020b).	No	No suitable habitat occurs in the Project area. Therefore, this species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** If marshes or grasslands will be impacted, construction should be avoided in this habitat during the species' nesting period of May 15 to August 1.
Least Bittern	*Ixobrychus exilis*	ST	Yes	No	Yes	This species prefers to nest in marshes or swamps with dense emergent vegetation, especially cattails (ODNR Division of Wildlife 2020b).	Yes	Suitable habitat was identified within the Project area and the species is known to occur within a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated	**USFWS:** This species is not federally listed. **ODNR:** If dense emergent wetlands will be impacted, construction should be avoided in this habitat during the species nesting period of May 1 to July 31.
Barn Owl	*Tyto alba*	ST	Yes	No	No	This species depends on open grassland over which to hunt. However, because of the way much of Ohio is farmed today, there is little of this kind of habitat around (ODNR Division of Wildlife 2020b).	No	No suitable habitat occurs in the Project area. Therefore, this species is unlikely to be impacted by this Project.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Black-crowned Night-Heron	*Nycticorax nycticorax*	ST	No	Yes	No	These largely nocturnal herons are likely more common than suspected but tend to hide in thick vegetation during the day. They are often found roosting in thick vegetation along streams, lakes, and wetlands (ODNR Division of Wildlife 2020b)	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Virginia Rail	*Rallus limicola*	SC	Yes	Yes	Yes	This species prefers freshwater and occasionally brackish marshes, mostly in cattails, reeds, and deep grasses, also in or close to other emergent vegetation. It inhibits shallow, freshwater emergent wetlands of every size and	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

Common Name	Scientific Name	State/Federal Listing[1]	Known to Occur in Union County?[2,3]	Known to Occur in Delaware County?[2,3]	Known Within One Mile of Project Area?[4]	Habitat Preference	Potential Habitat Observed in Alternate Route Project Area?	Impact Assessment	Agency Comments/Recommendations
						type. Interspersion of open water and vegetation is an important habitat component (NatureServe 2020).			
Sora Rail	*Porzana carolina*	SC	Yes	Yes	Yes	Primarily shallow freshwater emergent wetlands (e.g., marshes of cattail, sedge, blue-joint, or bulrush), less frequently in bogs, fens, wet meadows, and flooded fields, sometimes foraging on open mudflats adjacent to marshy habitat. Also occurs locally in swamps, along slough borders, and in mangroves. Can use very small marshes (e.g., 4 nests have been found in a half-acre marsh) (NatureServe 2020).	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Insects									
Marsh Bluet	*Enallagma ebrium*	ST	No	Yes	No	This species prefers marshes, vegetated ponds, lakeshores, and quiet streams. They are not likely to be found in acidic conditions (Wisconsin Odonata Survey 2020).	Yes	Suitable habitat was identified within the Project area. However, this species is not known to occur within Project area or a one-mile radius of it. Therefore, impacts to this species may occur but are not anticipated.	**USFWS:** This species is not federally listed. **ODNR:** No comments.
Plants									
Running Buffalo Clover	*Trifolium stoloniferum*	FE	No	No	No	Mesic habitats with partial to filtered sunlight or partial shade and sunlight. This species also prefers periodic disturbance, potentially by mowing or browsing mammals (USFWS 2019b).	No	No suitable habitat occurs in the Project area. This species is unlikely to be impacted by this Project.	**USFWS:** Due to the project type, size, and location, they do not anticipate adverse effects to this species. **ODNR:** No comments
Arbor Vitae	*Thuja occidentalis*	SC	Yes	Yes	Yes	Occurs in both uplands and lowlands. The uplands are primarily seepage areas, old fields, and limestone cliffs and boulder fields, in calcareous soils including calcareous clays and shallow loam overlying broken limestone. The lowland sites include swamps, streambanks, and lakeshores, generally featuring a strong flow of moderately mineral-rich soil water of near neutral pH (minerotrophic and weakly minerotrophic swamps) and where the organic peat is moderately to well decomposed (Carey 1993).	Yes	Potentially suitable habitat was observed within the Project area. Therefore, impacts to this species may occur.	**USFWS:** This species is not federally listed. **ODNR:** No comments.

[1]FE=federally endangered; FT=federally threatened; SE=state endangered; ST=state threatened
[2]Source: ODNR 2020a
[3]Source: USFWS 2018a
[4]Ohio Natural Heritage Program (Appendix F)
[5]Group 2 streams are small to mid-sized streams where federally listed species are expected (ODNR and USFWS 2020).
[6]Group 1 streams are small to mid-sized streams where federally listed species are not expected (ODNR and USFWS 2020).

(1) The applicant shall provide a list of the species identified in the surveys, including their federal and state protection status.

Tables 17 and 18 include all the state threatened and endangered species known to potentially occur within the Project area. Environmental assessment of available habitat for these species within the Project area was conducted simultaneously with the wetland and waterbody delineations. Tables 17 and 18 indicate whether habitat was observed for each species. Recommendations were provided by the ODNR and USFWS regarding the species listed in Tables 17 and 18 and these recommendations are included as part of the mitigation and avoidance proposals for the Project.

Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received.

(2) The applicant shall provide a description of the probable impact of the construction of the proposed facility on the identified species and their habitat. This would include the impacts from route clearing and any impact to natural nesting areas.

Mussel Species: No impacts to state-listed mussel species during construction are expected due to the HDD method of pipeline installation across the Scioto River. No in-water work will occur in the Scioto River. Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes. The response letter from ODNR will be provided to the Board when it is received. Federally listed mussel species are not expected to be impacted by the construction of this Project due to the avoidance of Mill Creek, which is the only known location of federally listed mussel species near the Project area.

Bat Species: Potential impacts to state and federally listed bat species include elimination of roosting and foraging habitat and fatality. Columbia has minimized the amount of tree clearing on both Project centerline options to reduce impacts to state and federally listed bat species. Columbia will also

avoid impacts to bat species by implementing seasonal tree clearing (October 1 through March 31). The Project will reduce the amount of potential foraging and roosting habitat, however, if the Preferred Route is chosen, the amount of tree clearing is low compared to the amount of available habitat in the surrounding area.

Fish species: No impacts to state and federally listed fish species during construction are expected due to the HDD method of pipeline installation across the Scioto River. No in-water work will occur in the Scioto River.

Bird species: Potential impacts to state listed bird species include modification or removal of nesting habitat and fatality to eggs or young birds. The potential habitat for the loggerhead shrike was observed within the Project, however, this species is rare in Ohio and no records near the Project were provided by ODNR. Impacts to this species are not likely, however, ODNR recommends Columbia avoid clearing dense shrubbery and thickets near open field from April 1 through August 1 to avoid impacts. Columbia will comply with this recommendation. The other bird species are wetland nesting species. Columbia has avoided or minimized impacts to many wetlands on both Project centerlines, some of which may provide nesting habitat for species such as king rail, least bittern, and black-crowned night-heron. These wetlands also provide potential habitat for the marsh bluet. However, none of these species are known to occur within a one-mile radius of the Project area; therefore, impacts are not likely to occur. Columbia will return the wetlands to pre-existing conditions, with the exception of palustrine forested wetlands within the Project ROW, which will be maintained as palustrine emergent wetlands. Therefore, permanent nesting habitat impacts to these species are not expected.

(3) The applicant shall provide a description of the probable impact of the operation and maintenance of the proposed facility on the species described in this rule. This would include the permanent impact from route clearing and any impact to natural nesting areas.

Operations of the Project are not likely to adversely affect state and federally listed species.

Maintenance of the Project ROW will include periodically clearing woody species out of the permanent ROW. The 50-foot permanent ROW will remain

without trees which will ensure that the maintenance activities will not impact any of the identified species.

(4) The applicant shall provide a description of the mitigation procedures to be used during construction, and maintenance of the proposed facility to minimize the impact on species described above.

Bat habitat: Both Project centerline include tree clearing from the ROW. Due to the established presence of Indiana bats near the Project, Columbia will only clear trees during the agency recommended seasonal tree clearing dates (currently October 1 – March 31).

Mussel habitat: Pipeline installation using HDD methods will be performed during seasonal low flow periods. This will avoid impacts to mussel species. Coordination with ODNR is ongoing to determine if a mussel survey is required to cross the Scioto River due to it being crossed via HDD for both the Preferred and Alternate Routes.

Fish: Pipeline installation using HDD methods will be performed during seasonal low flow periods. This will avoid impacts to spawning fish species such as Scioto madtom and Tippecanoe darter.

Bird species: Habitat for the Loggerhead shrike will only be temporarily impacted. ODNR recommends Columbia avoid clearing dense shrubbery and thickets near open field from April 1 through August 1 to avoid impacts. Columbia has avoided or minimized impacts to many wetlands on both Project centerlines, some of which may provide nesting habitat for species such as king rail, least bittern, and black-crowned night-heron. These wetlands also provide potential habitat for the marsh bluet. However, none of these species are known to occur near either Project centerline. The known occurrences of king rail and least bittern are outside the Project ROWs. Columbia will return the wetlands to pre-existing conditions, with the exception of palustrine forested wetlands within the Project ROW. Therefore, nesting habitat impacts to these species will be temporary.

(D) The applicant shall provide for each of the site/route alternatives a description of the site geology, suitability of the soils for foundation construction, and areas with slopes that exceed twelve percent and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that may

be affected by the proposed facility. The applicant shall describe the probable impact to these areas. The applicant shall include any plans for test borings, including a timeline for providing the test boring logs and the following information to the board:

(1) Subsurface soil properties.
(2) Static water level.
(3) Rock quality description.
(4) Percent recovery.
(5) Depth and description of bedrock contact.

The Project is located in central Ohio, northeast of Columbus, in Union and Delaware Counties. These counties are located within the Till Plains physiographic section and the Central Ohio Clayey Till Plain physiographic region. This region is described as having moderate relief (100 feet), clayey till surfaces, a surface of clayey till; moraines; silt, clay, and till-filled lake basins; few large streams; no boulder belts; and limited sand and gravel outwash. The ground surface elevation in this region varies from 700 to 1150 feet. The soil geology in the Project area indicates Wisconsinan-age till from the northeastern Erie glacial lobe and lacustrine materials, with loess thin to absent. The region includes lower Paleozoic-age carbonate rocks and shales (ODGS 1998).

The Soil Survey of Delaware and Union Counties, Ohio (USDA 1969, USDA 1975) and the NRCS Web Soil Survey were consulted to assess soil types within the Project area (USDA, NRCS 2014). The dominant soils in the Project area primarily include Blount silt loam (Blg1A1), described as ground moraine with 0 to 2 percent slopes and end moraine with 2 to 4 percent slopes, Glynwood silt loam (Gwg1B1), described as ground moraine with 2 to 6 percent slopes, Pewamo silty clay loam (Pk), with 0 to 1 percent slopes and Udorthents clayey-Urban land complex (UdB) described as undulating (ODGS,1998).

During the route selection process, USGS topographic maps were used to avoid steep slopes for each of the route options. A desktop analysis was performed using GIS and USDA NRCS county soil data to locate areas within the Project that contained soil types known to occur on slopes that exceed twelve percent or soils that may be highly erodible. This analysis found 7.8 acres of highly erodible soils on the Preferred Route and 13.0 acres of highly erodible soils on the Alternate Route. Figure 10 includes these areas. Geotechnical investigations occurred on the

Preferred Route in June 1– August 3, 2020 and the Geotechnical Exploration and Findings Report which includes the testing boring logs is attached as Appendix H.

(E) The applicant shall provide information regarding compliance with environmental and aviation regulations.

(1) The applicant shall provide a list and brief discussion of all licenses, permits, and authorizations that will be required for construction of the facility.

Table 19 lists the agencies Columbia may need authorizations or permits from, or that Columbia may consult with, for the construction of the Project.

Table 19. Agencies, Type of Permit or Approval Necessary, and Miscellaneous Details Related to the Northern Columbus Loop Natural Gas Pipeline Project (Phase VII) Union and Delaware Counties, Ohio

Agency	Permit/Approval Necessary
U.S. Army Corps of Engineers ("USACE") – Section 404 (Nationwide Permit 12)	The Project will open cut stream channels and wetland areas; therefore, a Nationwide Permit ("NWP") 12 is required for this Project. The USACE will require a 45-60 day review period of the Pre-Construction Notification ("PCN") for coverage under NWP 12 permit. The permit will be secured by Columbia and/or any of their authorized agents.
Section 10 – Rivers and Harbors Act Permit	The Project will cross the Scioto River in a location that is designated a Section 10 Navigable Water; therefore, a Section 10 Permit will be required. The USACE will require a 45-60 day review period, however, a Section 10 Permit can be submitted to the USACE concurrently with the PCN for a NWP. The permit will be secured by Columbia and/or any of their authorized agents.
USFWS	The Project has been reviewed by the USFWS to determine if the Project will have adverse effects on federally listed threatened and endangered species. In a letter dated March 26, 2020, USFWS provided recommendations to complete consultation under Section 7 of the Endangered Species Act. Columbia has agreed to the recommendations and Section 7 consultation will be completed during the USACE's review of the Project.
OEPA – Clean Water Act Section 401 Director's Authorization	The Project will temporarily impact a stream channel located within a possibly eligible area according to the OEPA 401 Water Quality Certification for Nationwide Permit Eligibility map. The OEPA may

Agency	Permit/Approval Necessary
	require a 90-day review period and the authorization will be secured by Columbia and/or any of their authorized agents, if necessary.
OEPA – General Permit Authorization for Storm Water Discharge Associated with Construction Activity	Coverage under the General Permit for Storm Water Discharges Associated with Construction Activities under the National Pollutant Discharge Elimination System (OHC000005) will be required for this Project. The review time by OEPA for this permit is 21 days and will be secured by Columbia and/or any of their authorized agents.
OEPA – Division of Drinking and Ground Water Review/Approval	The OEPA Division of Drinking and Groundwater would review the Project to determine whether the appropriate storm water management practices are in place prior to work completed on the Scioto River within the Surface Water Protection Zone established by OEPA. Any required reviews or approvals will be secured by Columbia Gas and/or any of their authorized agents and will be provided to the contractor for use and enforcement prior to construction.
OEPA – General Permit Authorization for Hydrostatic Test Water Discharge Associated with Construction Activity	A National Pollutant Discharge Elimination System ("NPDES") general permit for hydrostatic test water discharge (OH000003) may be required for this Project. The approved Notice of Intent ("NOI") will be secured by Columbia Gas of Ohio and/or any of their authorized agents and will be provided to the contractor for use and enforcements prior to construction.
ODOT – Roadway/Access Drive Permit	A roadway permit to cross under and work within ODOT ROW for all state routes within the Project may be required for this Project. ODOT has 90 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents.
ODNR	The Project has been reviewed by the ODNR Office of Real Estate to determine if the Project will have impacts on state listed threatened and endangered species. In a letter dated April 3, 2020, ODNR provided comments on the Project and Columbia Gas of Ohio is working to addressing their concerns on state listed species. Any additional coordination efforts with ODNR will be provided to OPSB for review.
City of Dublin Right of way/Access Drive Permit	An access drive permit to construct access drives off all roads in the City of Dublin within the project is required for this project. A right-of-way permit to cross under and work within the City of Dublin road right-of-way is required for this project. The City of Dublin has 30 days to review the permit application and the permit will be secured by Columbia Gas of Ohio and/or their authorized agents and will be provided to the contractor for use and enforcements prior to construction.
Delaware County – Roadway/Access Drive Permit	A roadway permit to cross under and work within Delaware County road right-of-way for all County roads within the Project may be required for construction. Delaware County has 90 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents.

Agency	Permit/Approval Necessary
Delaware County – Stormwater Permit	A Delaware County stormwater water permit for stormwater discharge may be required for this Project. Delaware County has 30 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents.
Delaware County – Floodplain Permit	This Project crosses the Scioto River; therefore, a Delaware County floodplain permit may be required. Delaware County has 30 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents and will be provided to the contractor for use and enforcements prior to construction. The permit application has not yet been submitted to Delaware County.
Union County – Roadway/Access Drive Permit	A roadway permit to cross under and work within Union County road right-of-way for all County roads within the Project may be required for this Project. Union County has 90 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents.
Union County – Stormwater Permit	A Union County stormwater water permit for stormwater discharge may be required for this Project. Union County has 30 days to review the permit application and the permit will be secured by Columbia and/or any of their authorized agents.

(2) The applicant shall provide a description, quantification and characterization of debris that will result from construction of the facility, and the plans for disposal of the debris.

While construction work is ongoing, the construction work area will be kept clean of all rubbish and debris resulting from the work. All trash and construction debris will be stored in covered containers. Non-hazardous materials and waste shall be disposed of in an approved landfill and/or recycled at an appropriate facility.

(3) The applicant shall provide a discussion of the process that will be used to control storm water and minimize erosion during construction and restoration of soils, wetlands, and streams disturbed as a result of construction of the facility.

The SWPPP will be developed following the OEPA General Permit Authorization for Storm Water Discharge Associated with Construction Activity (OHC000005).

(4) The applicant shall provide a discussion of plans for disposition of contaminated soil and hazardous materials generated from clearing of land,

excavation or any other action that would adversely affect the natural environment of the project site during construction. Responsibility for removal of contaminated soil shall be limited solely to soil and material from clearing of land, excavation or any other action that would adversely affect the natural environment of the project site for the project, and shall not include additional remediation of measures beyond the scope of the project.

Contaminated Soil: Waste materials, including contaminated soil, will be properly stored and disposed of in accordance with local regulations.

Hazardous Materials: Hazardous materials will be managed and disposed of in accordance with Columbia policies and federal, state, and local regulations.

(5) The applicant shall provide the height of tallest anticipated above ground structures. For construction activities within five miles of public use airports or landing strips, the applicant shall provide the maximum possible height of construction equipment, as well as all installed above ground structures, and include a list of air transportation facilities, existing or proposed, and copies of any coordination with the federal aviation administration and the Ohio office of aviation.

Columbia will be installing permanent pipeline markers that are no more than 4 feet high.

(B) The applicant shall provide a description of the plans for construction during excessively dusty or excessively muddy soil conditions.

Dusty Soil: Dust Control methods recommended by *ODNR Rainwater and Land Development* (ODNR Division of Soil and Water Conservation 2006) include maintaining vegetative cover and timely temporary and permanent seeding, mulching areas (not areas of construction traffic), leaving soil in a rough state, watering roads, and chemical stabilizers or wetting agents.

Muddy Soils: Rock construction entrances (as described in the *NiSource Environmental Construction Standards*) are needed to maintain safe vehicle operation and prevent tracking soil and mud onto public roads. These installations are designed to remove mud from vehicle tires and tracks before accessing the road. Access to the site should be limited to the stabilized construction entrance(s).

FIGURE 10

ECOLOGICAL FEATURES

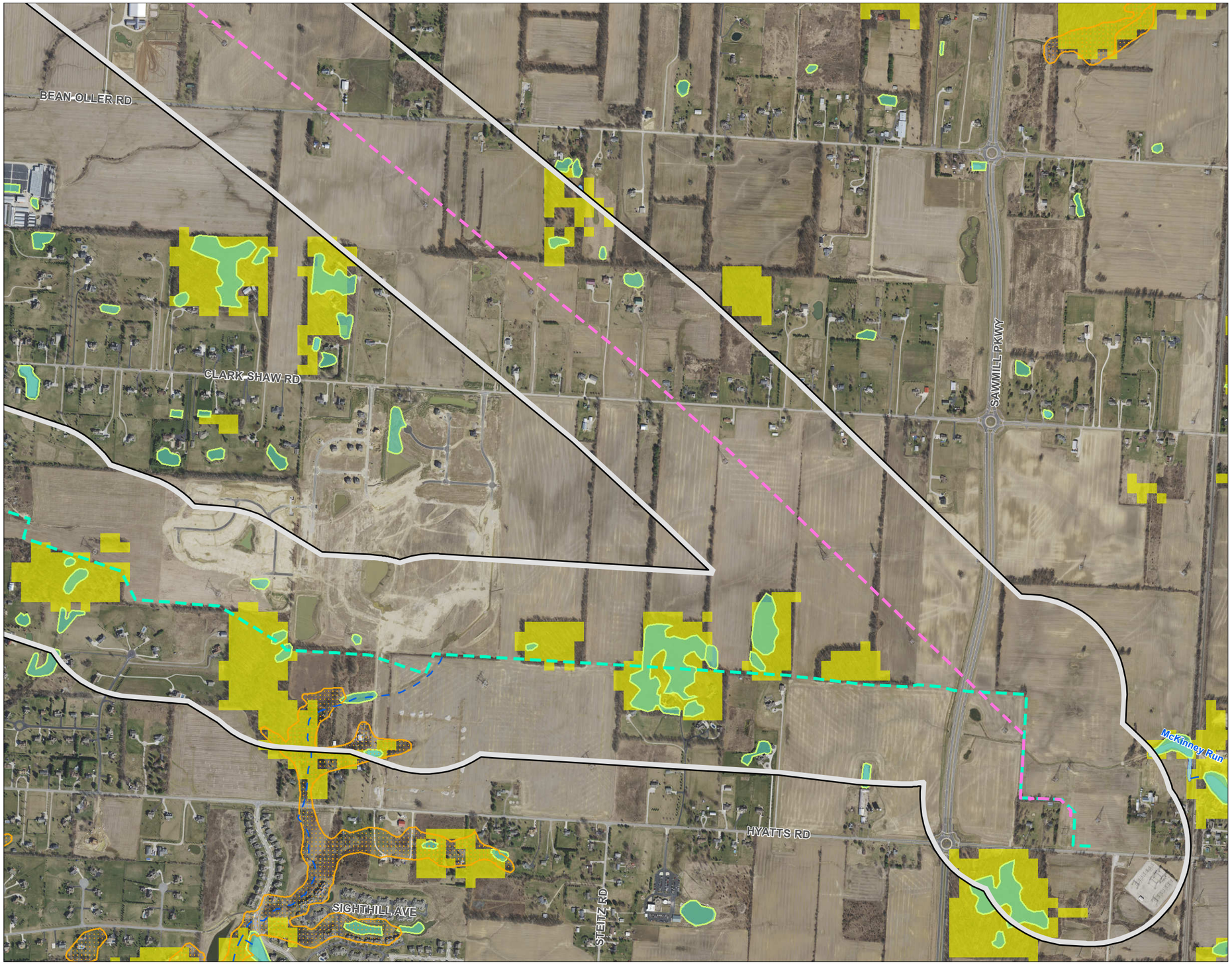


Figure No.
10

Title
Ecological Features

Client/Project
Columbia Gas of Ohio
Northern Columbus Loop Natural Gas
Pipeline Project (Phase VII)

Project Location
Union and Delaware Counties
Ohio

193707055

Prepared by JD on 2020-06-07
Technical Review by MT on 2020-08-06
Independent Review by KC on 2020-08-07

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N

Legend
- Preferred Route - HDD
- Preferred Route
- Alternate Route
- 1,000 ft Study Corridor
- Protected Areas Database
- Slope Greater than 12%
- NLCD Woody and Herbaceous Land
- Erodable Soils
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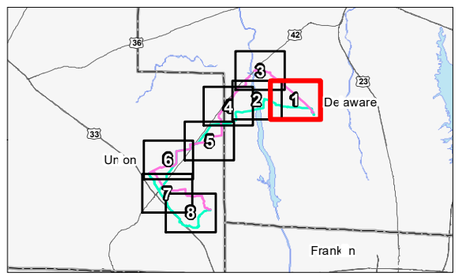

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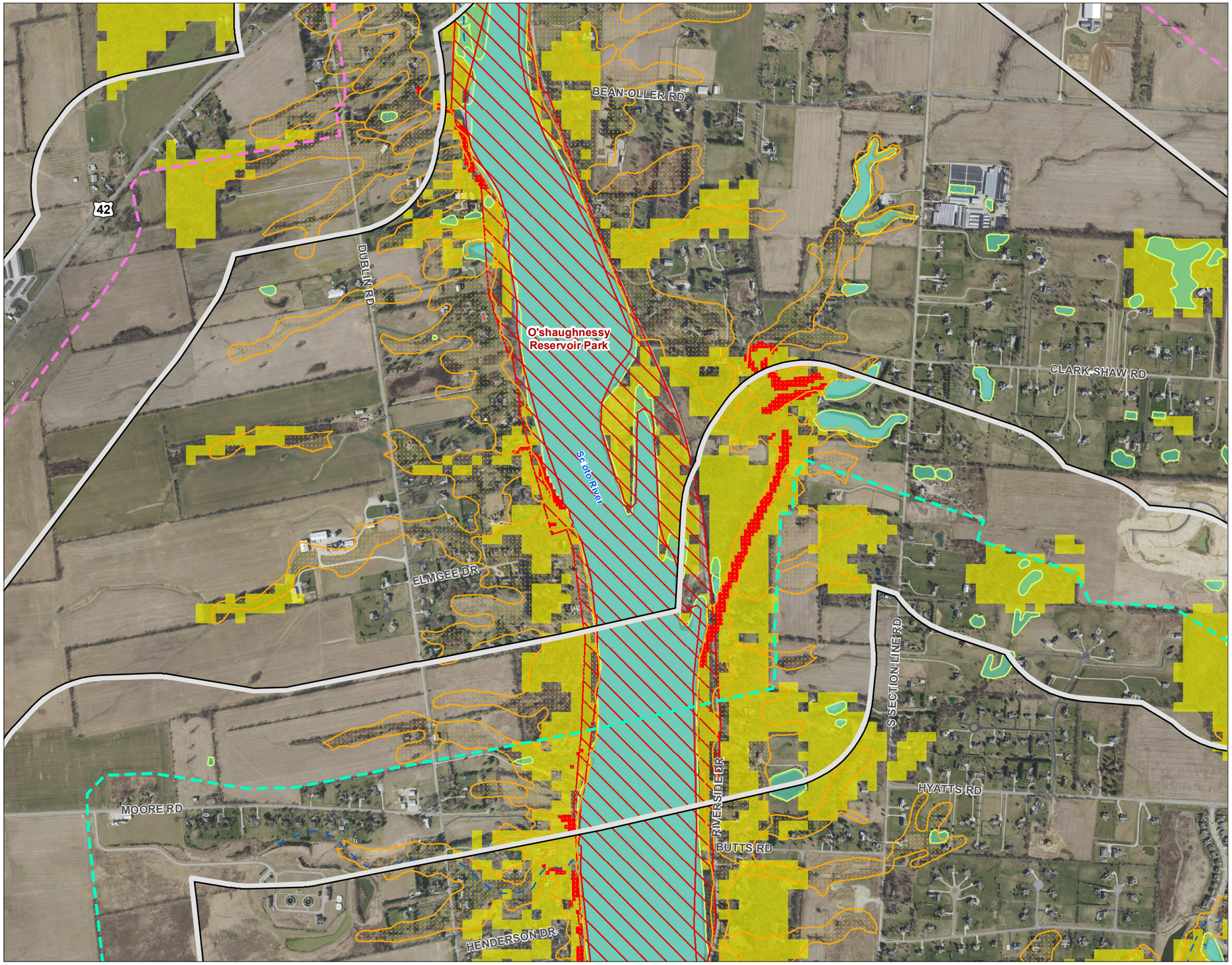

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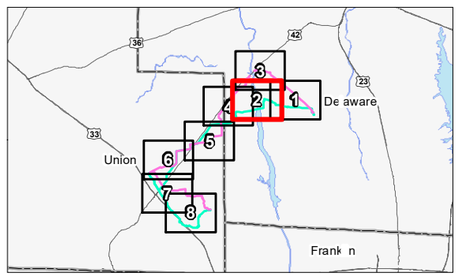

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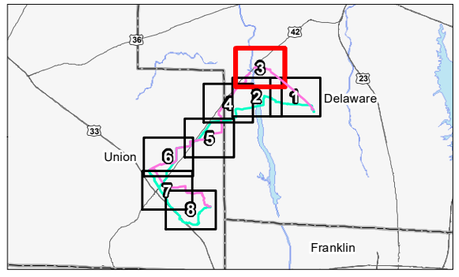

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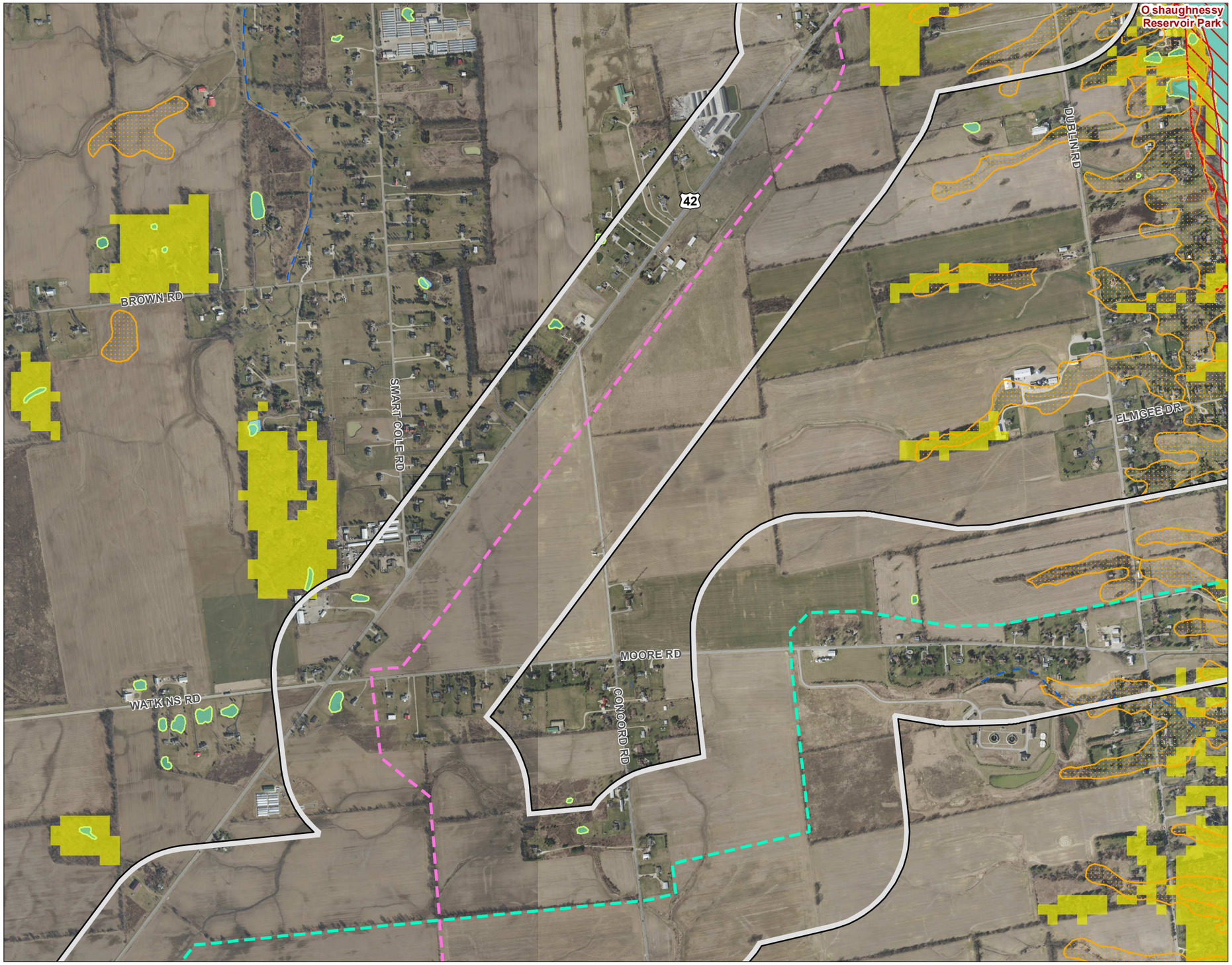

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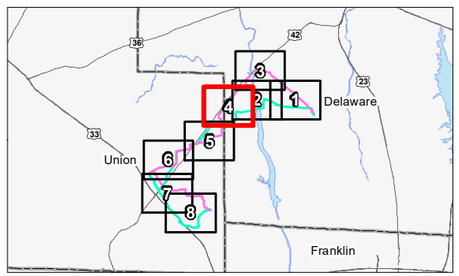

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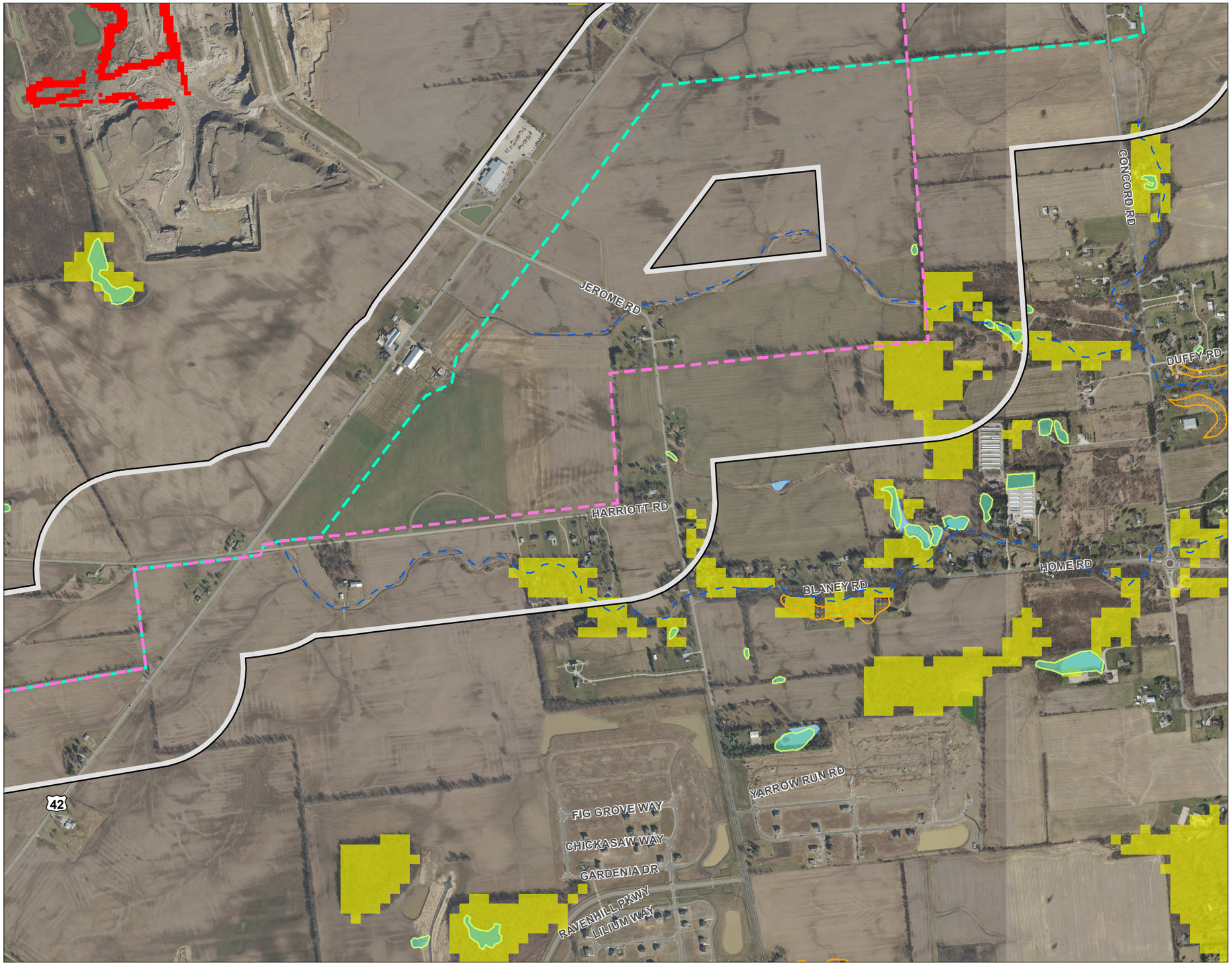

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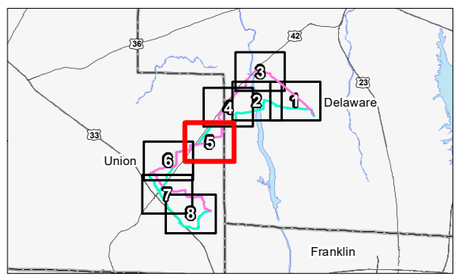

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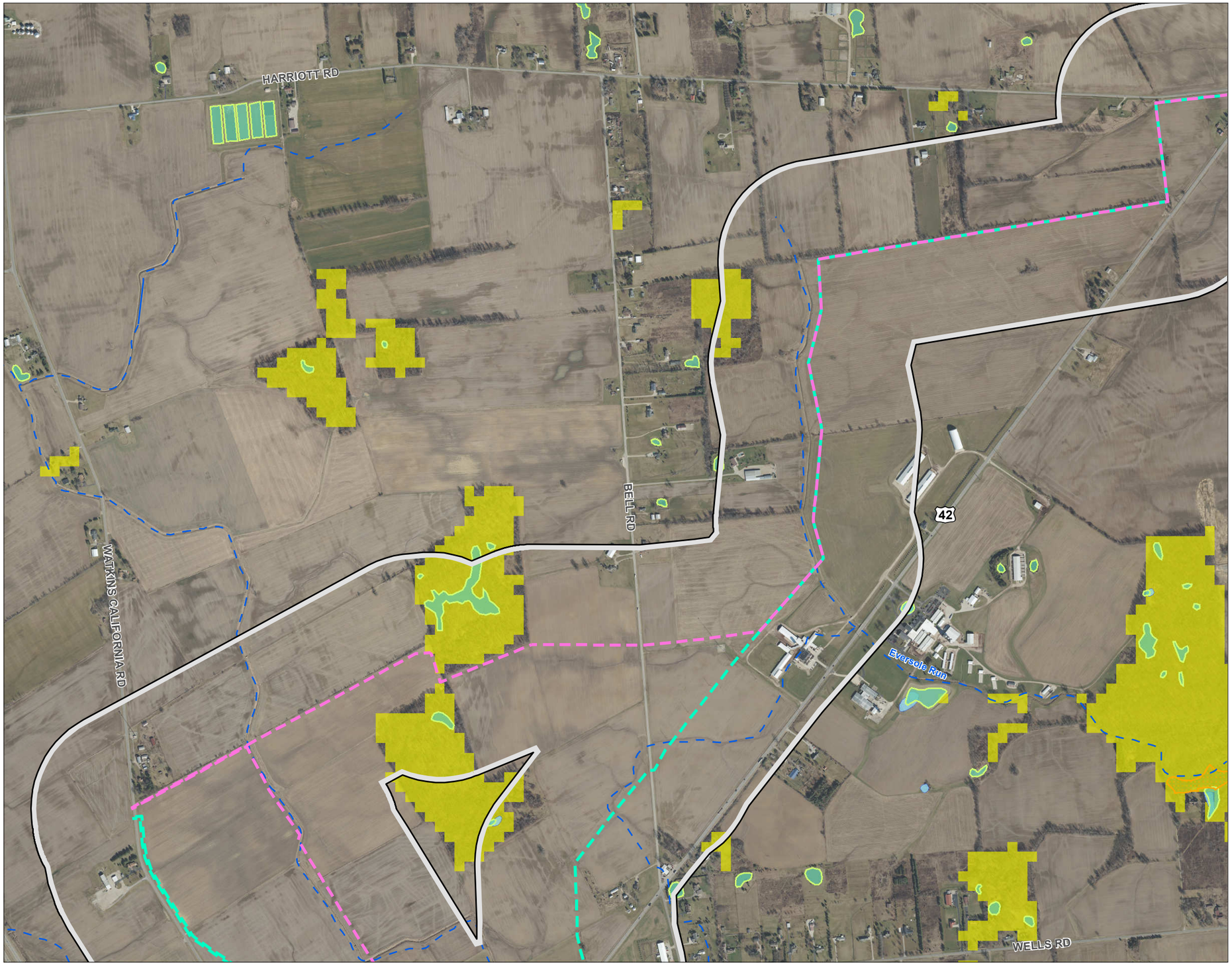

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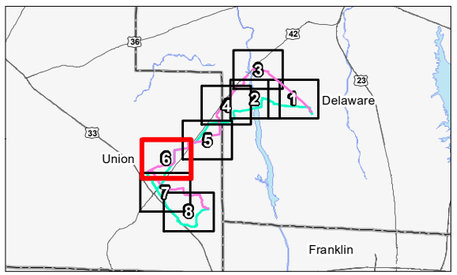

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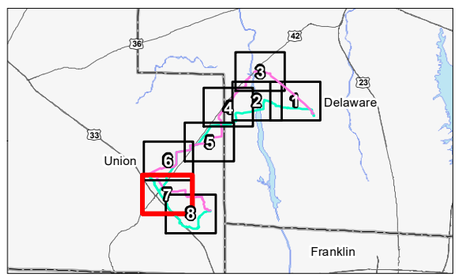

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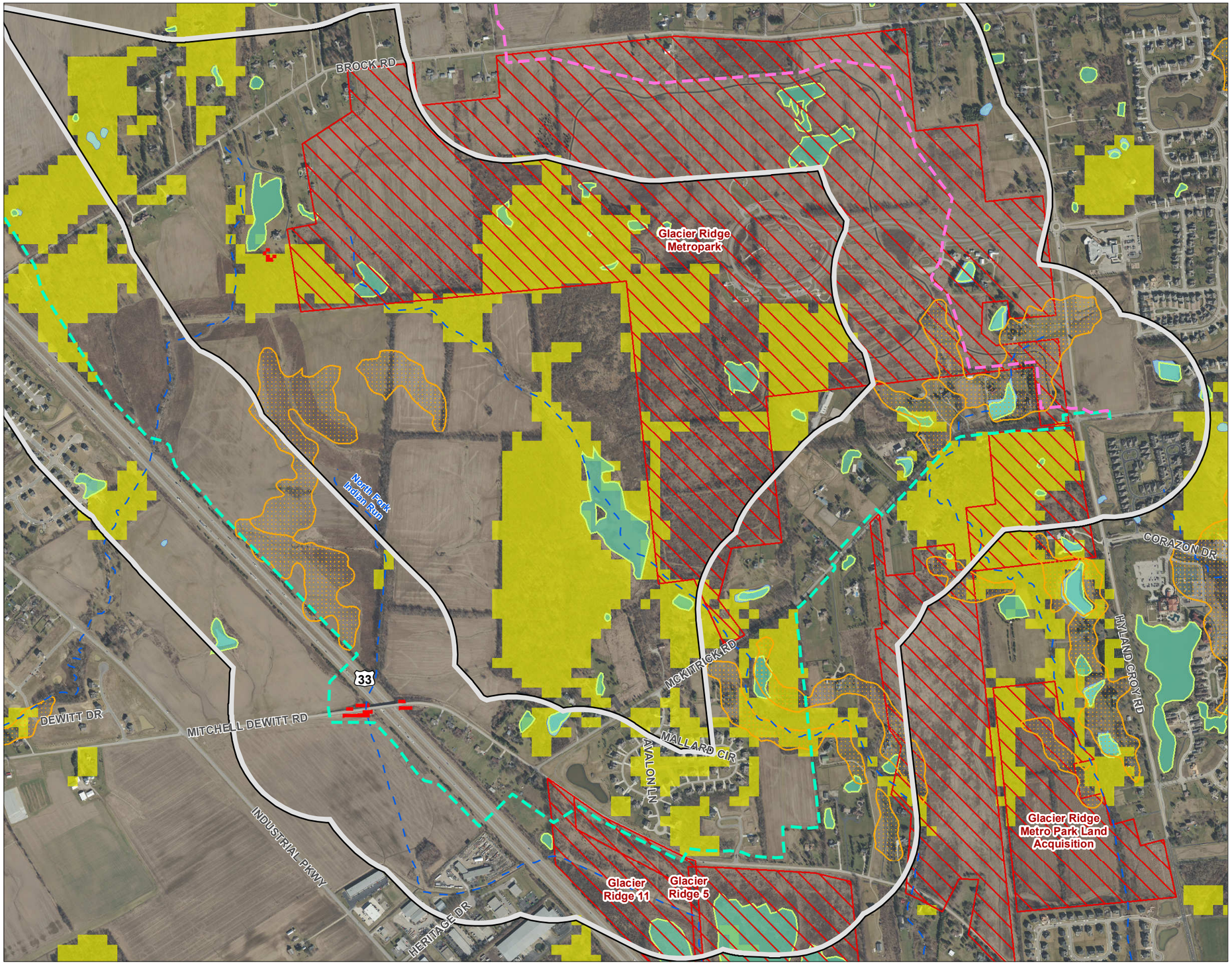

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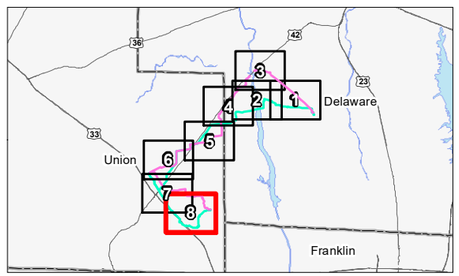
- Protected Areas Database
- Slope Greater than 12%
- NLCD Woody and Herbaceous Land
- Erodable Soils
- National Wetlands Inventory Feature

National Hydrography Dataset
- Perennial Stream
- Intermittent Stream
- Waterbody



Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
2. Data Sources Include: Stantec, Columbia Gas, Esri, OGRIP LBRS, USGS, USFWS, NLCD, NRCS, Delaware County, Union County
3. Orthophotography: 2018 OGRIP

Stantec

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CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced on the service list of the docket card who have electronically subscribed to the case. In addition, the undersigned hereby certifies that a copy of the foregoing document is also being served *via* United Parcel Service on the 12th day of November, 2020, upon the parties listed below.

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