

## **Appendix C**

## **Wetland and Waterbodies Delineation Report**



**Marysville Connector Pipeline  
Project**

Wetland and Waterbody Delineation Report

December 10, 2019

Prepared for:

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## Sign-off Sheet

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**Angela Sjollema**

Approved by Matt Teitt  
(signature)

**Matt Teitt**

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## 1.0 INTRODUCTION

### 1.1 PURPOSE

Columbia Gas of Ohio (COH) plans to construct a new 4.78 mile 12-inch distribution class steel natural gas pipeline and one district regulator station (The Project). The length of the survey corridor is 4.78 miles with a 100- to 300-foot right-of-way (ROW). The Project is located southeast of the City of Marysville, Ohio. The proposed pipeline route begins south of the intersection of Scottslawn Road and Industrial Parkway and runs southeast towards the intersection of U.S. 33 and State Route 42 in Millcreek and Jerome Townships, Union County, Ohio (Appendix A, Figure 1).

Stantec Consulting Services Inc. (Stantec) was retained by COH to conduct a delineation of potential waters of the United States (WOUS), including wetlands, waterbodies, and potentially isolated wetlands within the Project area. The purpose of this delineation was to identify potential jurisdictional features present within the Project area.

Stantec completed the delineation of wetlands and waterbodies on November 20, 2019. The information contained in this report reflects the current site conditions that were observed during the field delineation. Datasheets and photographs of features delineated within the Project area are included in Appendices B and C, respectively.

### 1.2 LOCATION OF PROJECT

The Project is located in the Millcreek and Jerome Townships, Union County, Ohio (Appendix A, Figure 1). The Project area is depicted on the Marysville and Shawnee Hills, Ohio U.S. Geological Survey (USGS) 7.5-minute series topographic maps and the approximate end points of the Project in latitude and longitude coordinates are 40.200590°N, -83.304899°W and 40.76038°N, -83.237842°W, respectively. The Project area is located in the Lower Mill Creek watershed (HUC 12: 050600010604) that drains into the Scioto River and the Sugar Run watershed (HUC 12: 050600011904) that drains to Big Darby Creek.

## 2.0 METHODS

### 2.1 WETLAND DELINEATION

Prior to completing the survey, a desktop review of the Project area was conducted using the Marysville and Shawnee Hills, Ohio USGS 7.5 Minute Series topographic maps (Appendix A, Figure 1), U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Union County, Ohio (USDA, 1975; Appendix A, Figure 2), the National Wetlands Inventory map (USFWS 2019) (Appendix A, Figure 3), and aerial imagery mapping were reviewed to assess the likelihood of occurrence and probable location of wetlands and waterbodies within the Project area.

Following this desktop review, Stantec conducted field surveys within the Project area on November 20, 2019. Wetland boundaries were assessed using the "Routine On-site Determination Method" as described in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). As

Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (USACE 2010). As of August 17, 1991, the USACE was directed to utilize the USACE Wetland Delineation Manual (USACE Environmental Laboratory 1987) to identify and delineate wetlands potentially subject to regulation under Section 404 of the Clean Water Act (CWA). Wetlands were classified according to “Classification of Wetlands and Deepwater Habitats of the United States” (Cowardin et al. 1979). In this classification system, wetland habitats are divided into five major systems including: (1) Marine, (2) Estuarine, (3) Lacustrine, (4) Palustrine, and (5) Riverine. Each of these systems is further divided into subsystems, classes, and subclasses. Vegetative communities were inventoried to assess the dominant plant species in each of four vegetative layers: trees, saplings/shrubs, herbs, and woody vines. The wetland indicator status for each of the dominant species was obtained using the 2016 National Wetland Plant List (Lichvar et al. 2016). The wetland soil indicators were obtained using the Munsell soil-color chart (Munsell Color 2009) and the hydric soil field indicators (USDA, NRCS 2010). The uppermost wetland boundary and sampling points were identified and surveyed using a handheld Global Positioning System (GPS) unit and mapped with Geographical Information System (GIS) software. Stantec collected data and completed relevant assessment forms, which included: USACE Wetland Determination Forms (WDF), and Ohio Rapid Assessment Method v 5.0 forms (ORAM; Mack 2001). Datasheets are provided in Appendix B.

## 2.2 STREAM DELINEATION

Streams that demonstrated a continuously defined channel (bed and bank), ordinary high water mark (OHWM), and the disturbance of terrestrial vegetation were delineated within the Project area, per the protocols outlined in the USACE’s Guidance on Ordinary High Water Mark Identification (Regulatory Guidance Letter, No. 05-05; USACE 2005). Delineated streams were classified as ephemeral, intermittent, or perennial per definition in the Federal Register/Vol. 67, No. 10 (2002). Functional assessment of streams within the Project area was based on completion of the Ohio Environmental Protection Agency’s (OEPA) Headwater Habitat Evaluation Index (HHEI; OEPA 2012) and/or Qualitative Habitat Evaluation Index (QHEI; OEPA 2006). Datasheets are provided in Appendix B. The centerline of each waterway, or both banks for streams 15 feet or wider, were identified and surveyed using a sub-meter accurate handheld GPS unit and mapped with GIS software.

## 2.3 OPEN WATER DELINEATION

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

## 3.0 OVERVIEW OF PROJECT AREA

### 3.1 GEOLOGY AND TOPOGRAPHY

The Project is located in Union County, Ohio and lies within the Till Plains section of the Central Lowlands physiographic province. The Project lies within the Central Ohio Clayey Till Plain region, which is characterized by: (1) a surface of clayey till; (2) well-defined moraines with intervening flat-lying ground moraine and intermorainal lake basins; (3) no boulder belts; (4) silt-, clay-, and till-filled lake basins; and (5) few large streams and limited sand and gravel outwashes. The geology of the region consists of clayey, high-lime Wisconsinan-age till from a northeastern source and lacustrine materials over Lower Paleozoic-age carbonate rocks. The eastern side of the region is more shales. Elevation ranges from 700 – 1,150 feet with moderate relief (ODGS 1998).

### 3.2 CLIMATE

The average winter temperature in Union County is 29°F, and the average winter daily minimum temperature is 20°F. The average summer temperature is 71°F and the average daily maximum temperature is 83°F. Precipitation in Union County averages 36.58 inches per year but varies widely from year to year. Generally, precipitation is adequate and well distributed, but most frequently occurs from March to August (USDA 1975).

### 3.3 SOILS

The Soil Survey of Union County, Ohio (USDA 1975) and the Natural Resources Conservation Service (NRCS) Web Soil Survey were consulted to assess soil types within the Project area (USDA, NRCS 2010). A copy of the soil map is included in Appendix A, Figure 2. Soils within the Project area with respective acreages and percentages are included in Table 1. All four soils listed within the Project area were considered to be hydric as shown in Table 1.

**Table 1. Soil Types Known to Occur within the Marysville Connector Pipeline Project Area, Union County, Ohio**

Union County, Ohio				
Map Unit Symbol	Map Unit Name	Acre in the Project Area	Percent within Project Area	Hydric?
Blg1A1	Blount silt loam, ground moraine, 0 to 2 percent slopes	67.90	60.2	Yes
Blg1B1	Blount silt loam, ground moraine, 2 to 4 percent slopes	11.45	10.2	Yes
Pk	Pewamo silty clay loam, 0 to 1 percent slopes	31.15	27.6	Yes
We	Wetzel silty clay loam	2.21	2.0	Yes
<b>Totals for Project Area:</b>		<b>112.71 acres</b>	<b>100.0%</b>	

## 4.0 RESULTS

### 4.1 EXISTING CONDITIONS

Upland habitat within the Project area consists of maintained lawn, maintained right-of-way, developed/urban, old field habitat, early successional habitat, fencerow, cropland, and pasture. The maintained lawn, maintained right-of-way, and pasture habitats consist of Kentucky bluegrass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), great plantain (*Plantago major*), English plantain (*Plantago lanceolata*), Canada thistle (*Cirsium arvense*), wild strawberry (*Fragaria vesca*), Colorado blue spruce (*Picea pungens*), Norway spruce (*Picea abies*), and ground ivy (*Glechoma hederacea*). The old field habitat was dominated by Indian grass (*Sorghastrum nutans*), Canada goldenrod (*Solidago canadensis*), switchgrass (*Panicum virgatum*), Queen Anne's lace (*Daucus carota*), Fuller's teasel (*Dipsacus fullonum*), nodding foxtail (*Setaria faberi*), health aster (*Symphyotrichum ericoides*), and common milkweed (*Asclepias syriaca*). The early successional habitat is dominated by dogwood (*Cornus* sp.) in the shrub layer and Canada goldenrod, ironweed (*Vernonia* sp.), and Queen Anne's lace in the herbaceous layer. The fencerow habitat was dominated by shagbark hickory (*Carya ovata*), common hackberry (*Celtis occidentalis*), and white oak (*Quercus alba*). The cropland habitat was dominated by corn (*Zea mays*), soybeans (*Glycine max*), green foxtail, horse nettle (*Solanum carolinense*), and barnyard grass (*Echinochloa crus-galli*).

### 4.2 WETLAND HABITAT

Four wetlands were identified within the Project area, totaling approximately 0.96 acre (Appendix A, Figure 4). Appendix B contains the WDF and ORAM forms for the wetlands identified within the Project area. Representative photographs of the wetlands are provided in Appendix C. The wetlands are described below and summarized in Table 2.

#### Wetland 1

Wetland 1 is a palustrine emergent (PEM) wetland approximately 0.79 acres in size within the Project area. The functional assessment (ORAM) of Wetland 1 yielded a score of 32 and identifies this wetland as a Category 2 wetland, indicating it is a wetland of "moderate" quality. Wetland 1 is potentially jurisdictional due to its hydrological connection to Stream 1. Due to the large size of Wetland 1, two wetland sample plots were completed. The WDF for SP01 included a first soil horizon of 2 inches of silty clay loam with a chroma matrix of 10YR3/3. The next 4 inches were silty clay loam with a gley matrix (Gley 1 2.5/10Y) and redox concentrations in the pore linings (5YR4/6), meeting the Loamy Gleyed Matrix (F2). Primary hydrological indicators included surface water, high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including narrowleaf cattail (*Typha angustifolia*; OBL).

The WDF for SP03 included a first soil horizon of 3 inches of silty clay loam with low chroma matrix (10YR 3/2) and redox concentrations in pore linings (5YR 5/8) and the matrix (5YR 4/6). The next 7 inches were silty clay loam with a low chroma matrix (10YR 4/1) with redox concentrations in the matrix (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by

## MARYSVILLE CONNECTOR PIPELINE PROJECT WETLAND AND WATERBODY DELINEATION REPORT

hydrophytic vegetation including reed canary grass (*Phalaris arundinacea*; FACW) and narrowleaf cattail (OBL).

### **Wetland 2**

Wetland 2 is a PEM wetland approximately 0.10 acre in size. The functional assessment (ORAM) of Wetland 2 yielded a score of 25 and identifies this wetland as a Category 1 wetland, indicating it is a wetland of “poor” quality. Wetland 2 is potentially jurisdictional due to its hydrological connection to Streams 2 and 3. A WDF was completed, and the first soil horizon was 10 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including reed canary grass (FACW).

### **Wetland 3**

Wetland 3 is a PEM wetland approximately 0.02 acre in size. The functional assessment (ORAM) of Wetland 3 yielded a score of 15 and identifies this wetland as a Category 1 wetland, indicating it is a wetland of “poor” quality. Wetland 3 is potentially jurisdictional due to its hydrological connection to Stream 4 and Wetland 4 (via upland drainage features). A WDF was completed, and the first soil horizon was 7 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5 YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included surface water, high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including narrowleaf cattail (OBL) and reed canary grass (FACW).

### **Wetland 4**

Wetland 4 is a PEM wetland approximately 0.06 acre in size. The functional assessment (ORAM) of Wetland 4 yielded a score of 34 and identifies this wetland as a Category 2 wetland, indicating it is a wetland of “moderate” quality. Wetland 4 is potentially jurisdictional due to its hydrological connection to Stream 4. A WDF was completed, and the first soil horizon was 7 inches of clay loam with low chroma matrix (10YR 4/2) and redox concentrations in pore linings (5YR 4/6), meeting the Depleted Matrix (F3) hydric soil indicator. Primary hydrological indicators included high water table, saturation, and oxidized rhizospheres on living roots. Vegetation identified within the sample plot was dominated by hydrophytic vegetation including reed canary grass (FACW).

**Table 2. Potential Wetlands Identified in the Marysville Connector Pipeline Project Area, Union County, Ohio**

Wetland Name	Latitude	Longitude	Classification	ORAM Score	ORAM Regulatory Category	Total Acreage in Project Area
Wetland 1	40.183979	-83.254306	PEM	32	2	<b>0.79</b>
Wetland 2	40.196261	-83.29241	PEM	25	1	<b>0.10</b>
Wetland 3	40.199725	-83.3033	PEM	15	1	<b>0.02</b>
Wetland 4	40.200044	-83.304206	PEM	34	2	<b>0.06</b>
<b>Total Delineated Wetland</b>						<b>0.97 acres</b>

### 4.3 STREAM HABITAT

Four streams were identified within the Project area, totaling approximately 751 linear feet (Appendix A, Figure 4). Appendix B contains the QHEI and HHEI datasheets. Representative photographs of the streams are provided in Appendix C. The streams are described below and summarized in Table 3.

#### Stream 1

Stream 1 is a perennial stream with approximately 200 linear feet within the Project area. The functional assessment (QHEI) of Stream 1 yielded a score of 37, indicating it is a stream of “poor” quality. The stream had a bankfull width of 4 feet and a bankfull depth of 1.5 feet and was flowing at the time of site visit. Substrates observed were primarily hardpan and bedrock. Stream 1 drains into Sugar Run outside the Project area.

#### Stream 2

Stream 2 is an intermittent stream with approximately 321 linear feet within the Project area. The functional assessment (QHEI) of Stream 2 yielded a score of 41, indicating it is a stream of “poor” quality. The stream had a bankfull width of 3.2 feet and a bankfull depth of 3.5 feet and had isolated shallow pools at the time of site visit. Substrates observed were primarily hardpan and silt. Stream 2 drains into Mill Creek outside the Project area.

#### Stream 3

Stream 3 is an intermittent stream with approximately 144 linear feet within the Project area. The functional assessment (HHEI) of Stream 3 yielded a score of 31, indicating it is a Modified Class II PHWH stream. The stream had a bankfull width of 3 feet and a bankfull depth of 1.5 feet and had isolated shallow pools at the time of site visit. The substrate observed was primarily hardpan. Stream 3 drains into Wetland 2 outside Project area, which drains into Stream 2.

**Stream 4**

Stream 4 is an ephemeral stream with approximately 92 linear feet within the Project area. The functional assessment (HHEI) of Stream 4 yielded a score of 21, indicating it is Modified Class I-PHWH stream. The stream had a bankfull width of 3 feet and a bankfull depth of 0.5 feet and had isolated shallow pools at the time of site visit. The substrate observed was primarily hardpan. Stream 4 drains into Wetland 4 within the Project area.

**Table 3. Potential Streams Identified in the Marysville Connector Pipeline Project Area, Union County, Ohio**

Stream Name	Latitude	Longitude	OHHM Width (feet)	OHHM Depth (feet)	Classification	Evaluation Method	Score	Total Linear Feet in Project Area
Stream 1	40.179487	-83.249033	3	1.5	Perennial	QHEI	37	200
Stream 2	40.195947	-83.291216	2	0.5	Intermittent	QHEI	41	321
Stream 3	40.196278	-83.297254	2	0.5	Intermittent	HHEI	31	144
Stream 4	40.199952	-83.304342	2.5	0.3	Ephemeral	HHEI	21	92
<b>Total Linear Footage in Project Area</b>								<b>756</b>

## 5.0 CONCLUSION

Stantec conducted a delineation of potential WOUS within the Project area located in the Millcreek and Jerome townships, Union County, Ohio. The purpose and objective of the wetland and waterbody delineation was to identify the extent and spatial arrangement of potential jurisdictional wetlands and waterbodies within the Project area. Four potentially jurisdictional wetlands and four potentially jurisdictional streams were identified within the Project area. A total of approximately 0.85 acre of delineated Category 2 PEM wetlands and 0.12 acre of delineated Category 1 PEM wetlands were identified in the Project area. A total of 200 linear feet of perennial stream, 465 linear feet of intermittent stream, and 92 linear feet of ephemeral stream for a total length of 756 linear feet of potentially jurisdictional stream were identified within the Project area.

Stantec's opinion regarding the presence/absence of jurisdictional WOUS and isolated wetlands is preliminary. Only the USACE can provide an official determination of the presence and extent of jurisdictional WOUS. Wetlands that are considered WOUS are subject to regulation under Section 404 of the CWA and the jurisdictional regulatory authority lies with the USACE. Additionally, the OEPA has regulatory authority over isolated wetlands under Ohio Revised Code 61111.021. Stantec recommends that Columbia Gas of Ohio/NiSource contact the USACE for final jurisdictional review and concurrence with Stantec's opinion regarding the presence/absence of WOUS within the Project area prior to construction activities associated with this Project.



## 6.0 REFERENCES

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USDA, Natural Resource Conservation Service (USDA, NRCS). 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.

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# **APPENDICES**

## Appendix A FIGURES

### A.1 FIGURE 1 – PROJECT LOCATION AND TOPOGRAPHY MAP



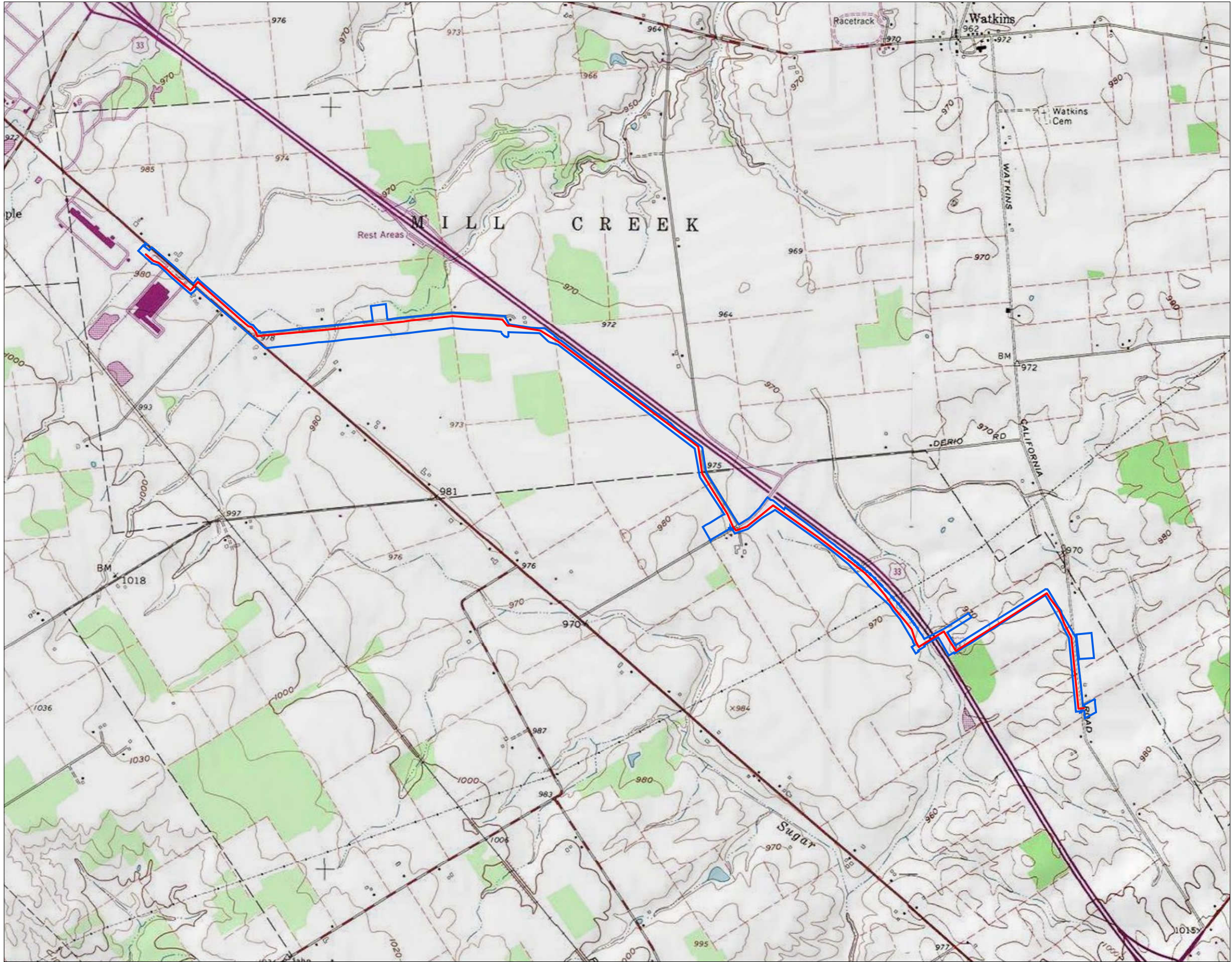


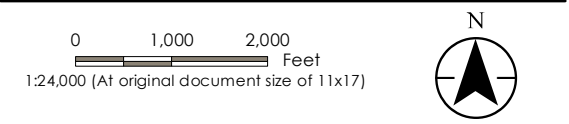
Figure No.  
**1**

Title  
**Project Location and Topography**

Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

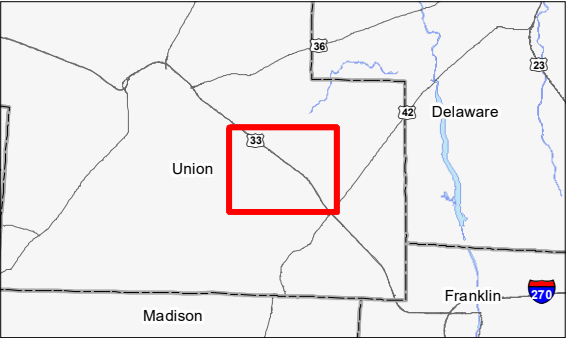
193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



Legend

Approximate Proposed Pipeline

Survey Corridor



- Notes
1. Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet

2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS

3. Background: USGS 7.5 Topographic Quadrangles





**A.2      FIGURE 2 – NRCS SOIL SURVEY DATA AND HYDRIC RATINGS MAP**



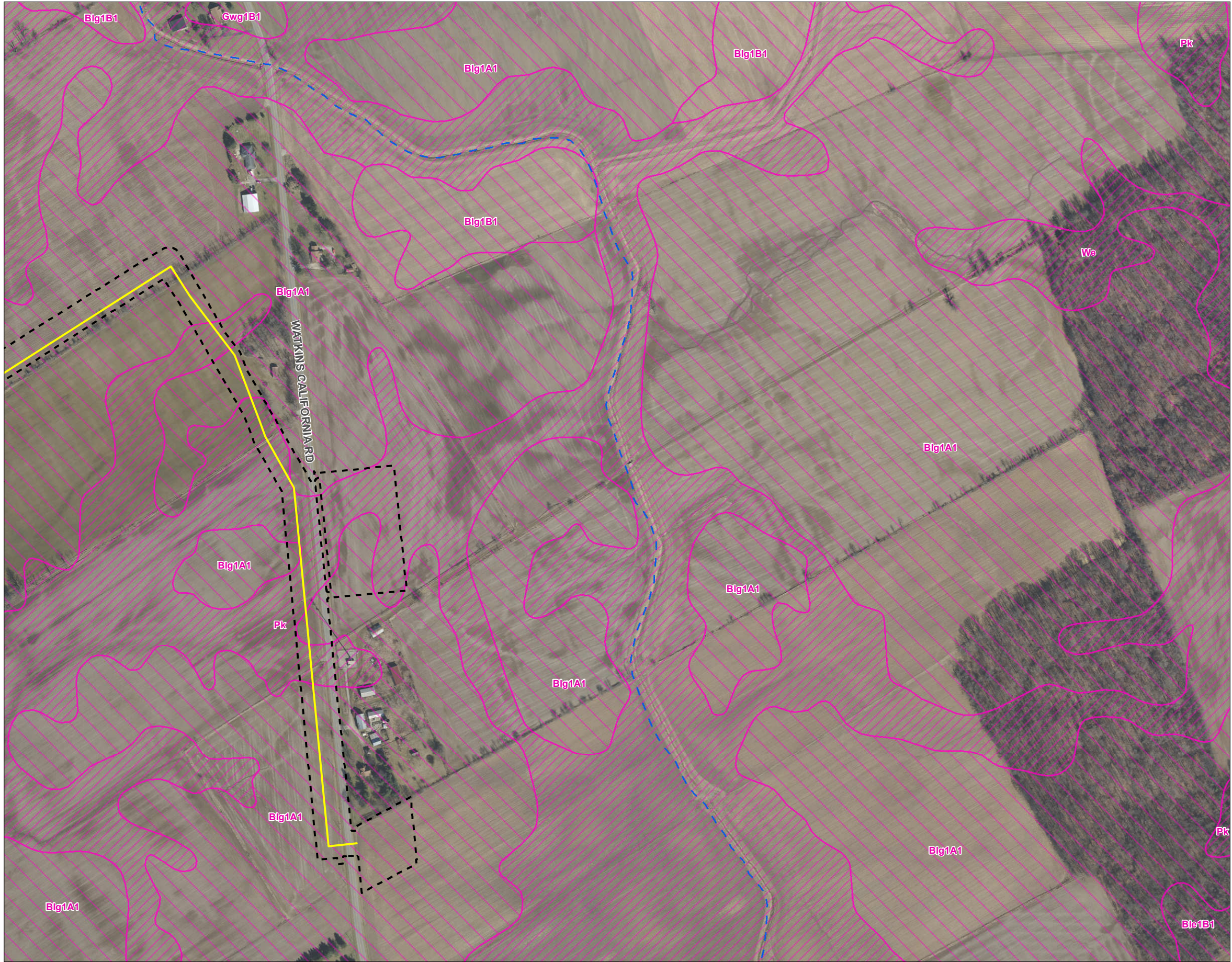


Figure No.  
**2**

Title  
**NRCS Soil Survey Data and Hydric Ratings**

Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

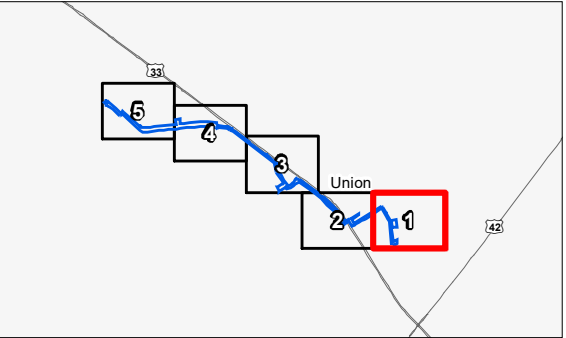
193707055

Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05

0 200 400 Feet  
1:4,800 (At original document size of 11x17)

N

- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - NRCS Soil Survey Data
  - Hydric Ratings
    - Predominantly Hydric Soil
    - Partially Hydric Soil
    - Non-Hydric Soil
  - National Hydrography Dataset
    - Perennial Stream
    - Intermittent Stream
    - Waterbody



- Notes**
- Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
  - Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
  - Orthophotography: 2018 OGRIP







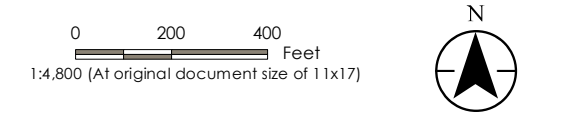
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Hydric Ratings**

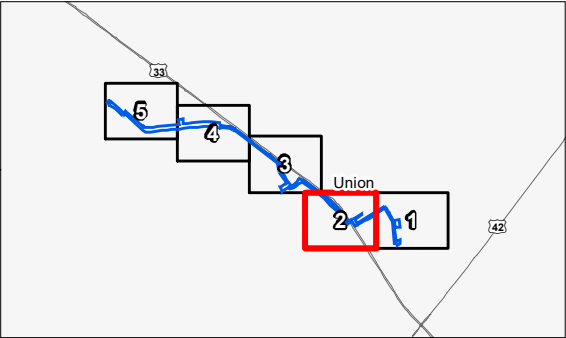
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - NRCS Soil Survey Data
  - Hydric Ratings
    - Predominantly Hydric Soil
    - Partially Hydric Soil
    - Non-Hydric Soil
  - 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, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP





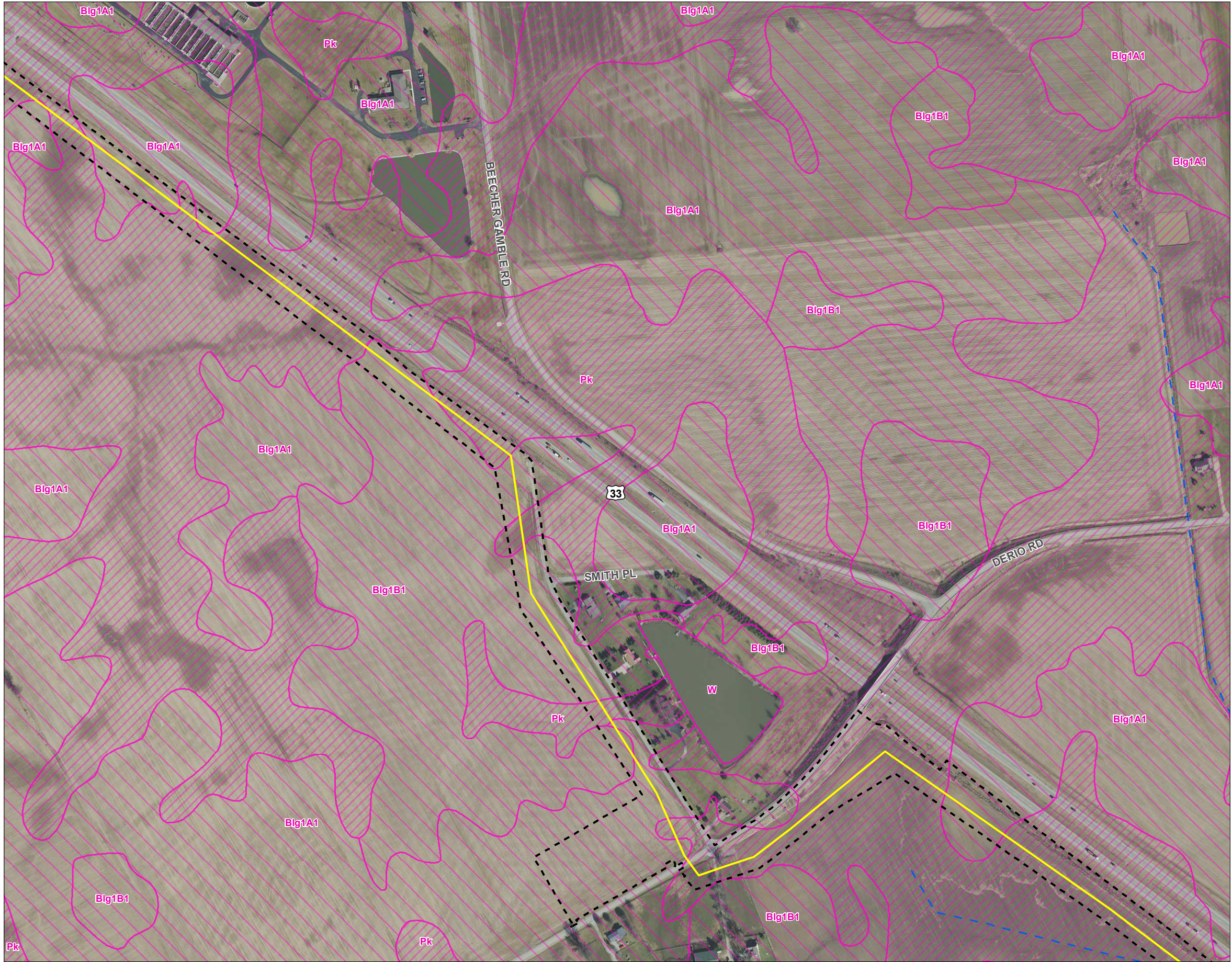


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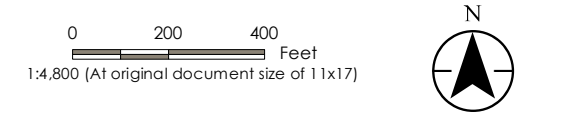
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Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

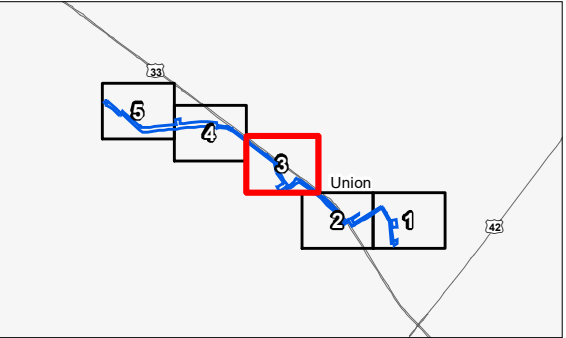
Project Location  
Union County, Ohio

193707055

Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - NRCs Soil Survey Data
  - Hydric Ratings
    - Predominantly Hydric Soil
    - Partially Hydric Soil
    - Non-Hydric Soil
  - National Hydrography Dataset
    - Perennial Stream
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Figure No.  
**2**

Title  
**NRCS Soil Survey Data and Hydric Ratings**

Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

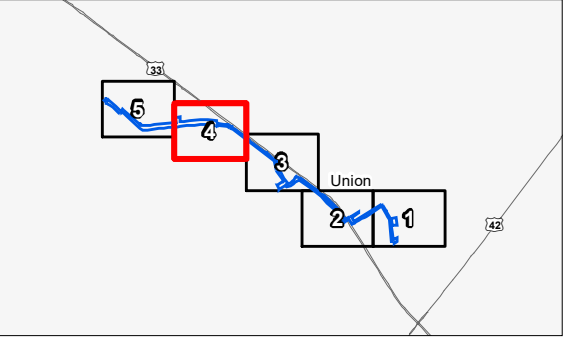
Project Location  
Union County, Ohio

193707055

Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
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  - NRCS Soil Survey Data
  - Hydric Ratings
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  - National Hydrography Dataset
    - Perennial Stream
    - Intermittent Stream
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2. Data Sources Include: Stantec, Columbia Gas, USGS, NRCS, NADS
3. Orthophotography: 2018 OGRIP





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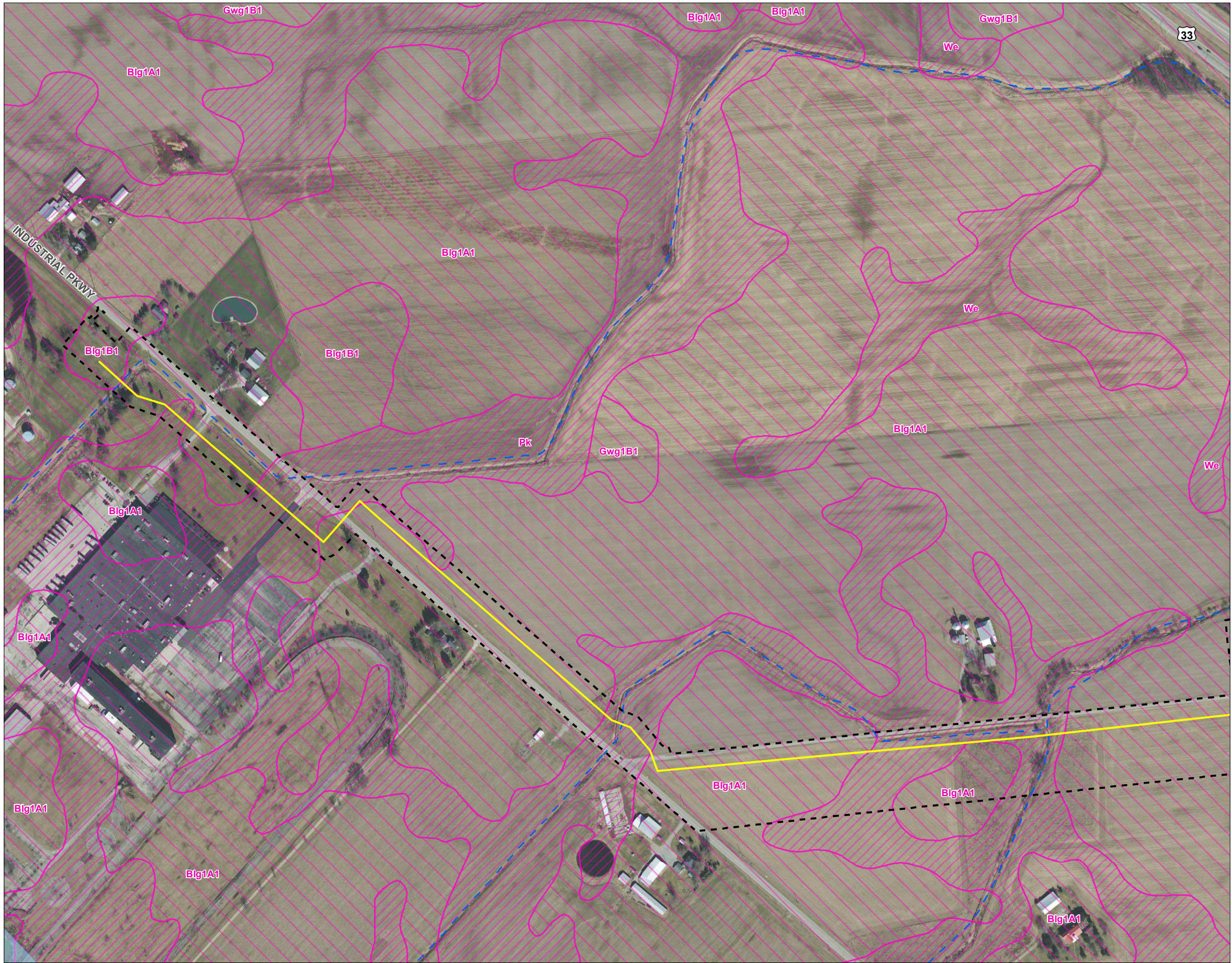


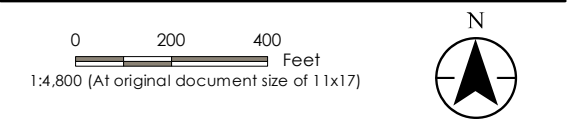
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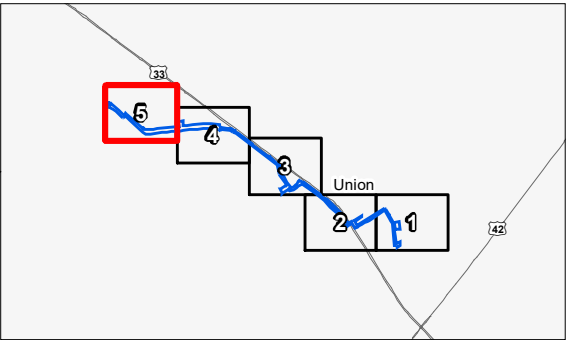
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
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- Orthophotography: 2018 OGRIP





**A.3     FIGURE 3 – NATIONAL WETLANDS INVENTORY MAP**



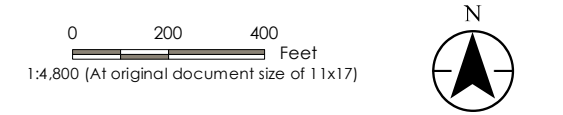


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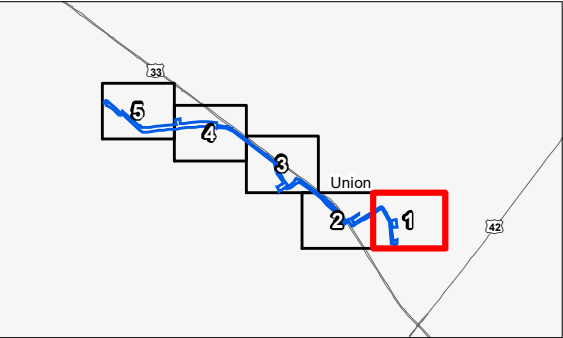
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - National Wetlands Inventory Feature
  - National Hydrography Dataset
  - Perennial Stream
  - Intermittent Stream
  - Waterbody



**Notes**

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- Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
- Orthophotography: 2018 OGRIP





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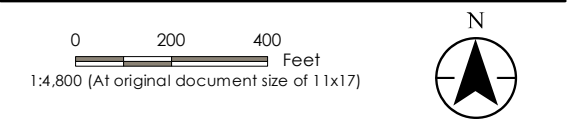
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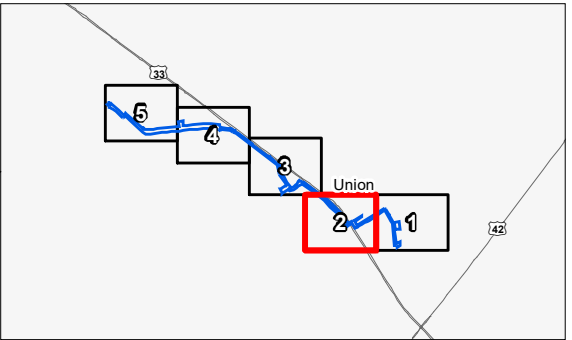
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
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- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - National Wetlands Inventory Feature
  - National Hydrography Dataset
  - Perennial Stream
  - Intermittent Stream
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**Notes**

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2. Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
3. Orthophotography: 2018 OGRIP







Figure No.  
**3**

Title  
**National Wetlands Inventory Map**

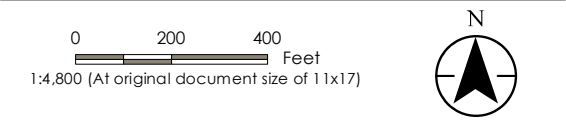
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Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

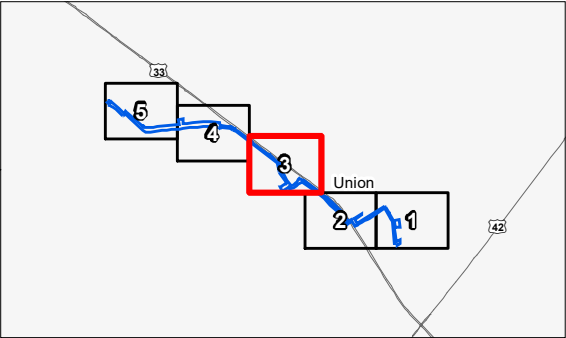
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Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
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Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
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  - National Wetlands Inventory Feature
  - National Hydrography Dataset
    - Perennial Stream
    - Intermittent Stream
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**Notes**

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3. Orthophotography: 2018 OGRIP





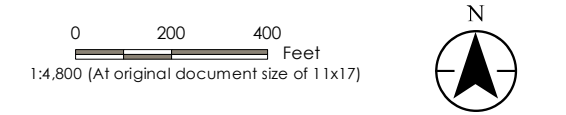


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Title  
**National Wetlands Inventory Map**

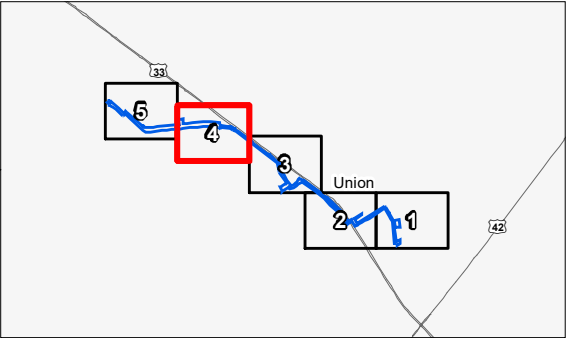
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
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193707055  
Prepared by CA on 2019-11-22  
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Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - National Wetlands Inventory Feature
  - National Hydrography Dataset
  - Perennial Stream
  - Intermittent Stream
  - Waterbody



**Notes**

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- Orthophotography: 2018 OGRIP







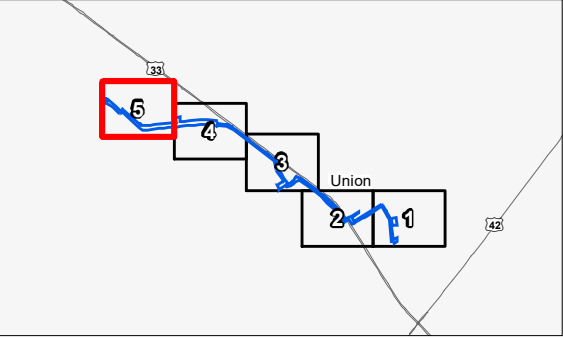
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Title  
**National Wetlands Inventory Map**

Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio  
193707055  
Prepared by CA on 2019-11-22  
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- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - National Wetlands Inventory Feature
  - National Hydrography Dataset
  - Perennial Stream
  - Intermittent Stream
  - Waterbody



**Notes**

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- Data Sources Include: Stantec, Columbia Gas, USGS, USFWS, NADS
- Orthophotography: 2018 OGRIP





**A.4     FIGURE 4 – WETLAND AND WATERBODY DELINEATION MAP**

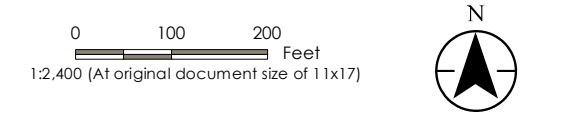




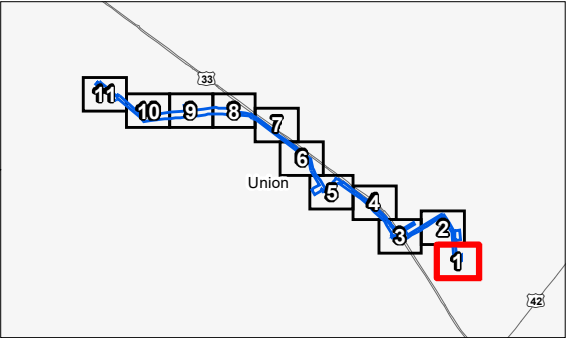
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**4**  
Title  
**Wetland and Waterbody Delineation Map**

Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio  
193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
  - Photo Location
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Approximate Wetland



**Notes**

- Coordinate System: NAD 1983 StatePlane Ohio North FIPS 3401 Feet
- Data Sources Include: Stantec, Columbia Gas, USGS, NADS
- Orthophotography: 2018 OGRIP





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Figure No.  
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Title  
**Wetland and Waterbody Delineation Map**

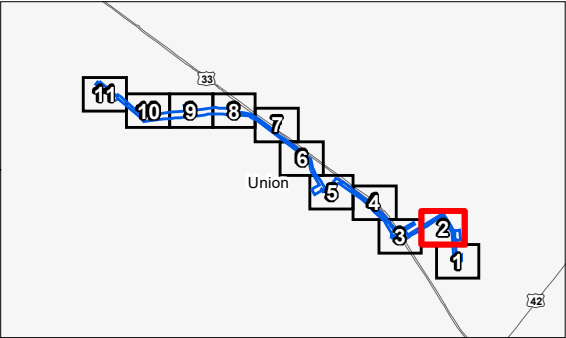
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
  - Photo Location
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Approximate Wetland



**Notes**

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





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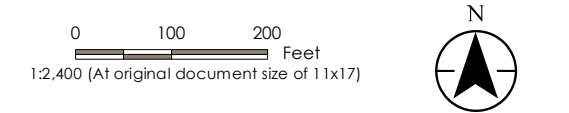


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**Wetland and Waterbody Delineation Map**

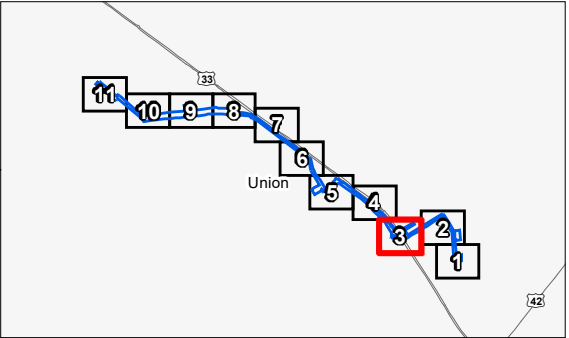
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
  - Photo Location
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Approximate Wetland



**Notes**

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2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP





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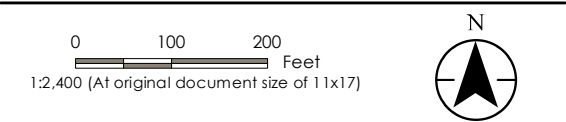


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**Wetland and Waterbody Delineation Map**

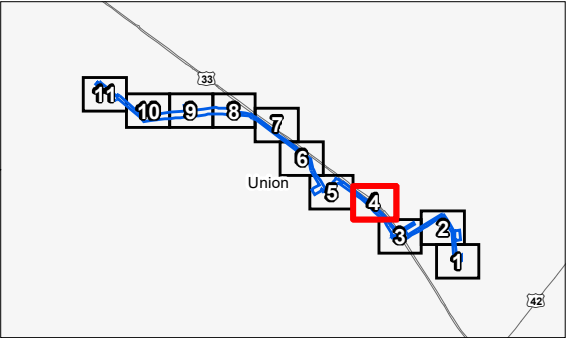
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
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- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
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  - Field Delineated Waterway
  - Approximate Waterway
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**Notes**

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2. Data Sources Include: Stantec, Columbia Gas, USGS, NADS
3. Orthophotography: 2018 OGRIP





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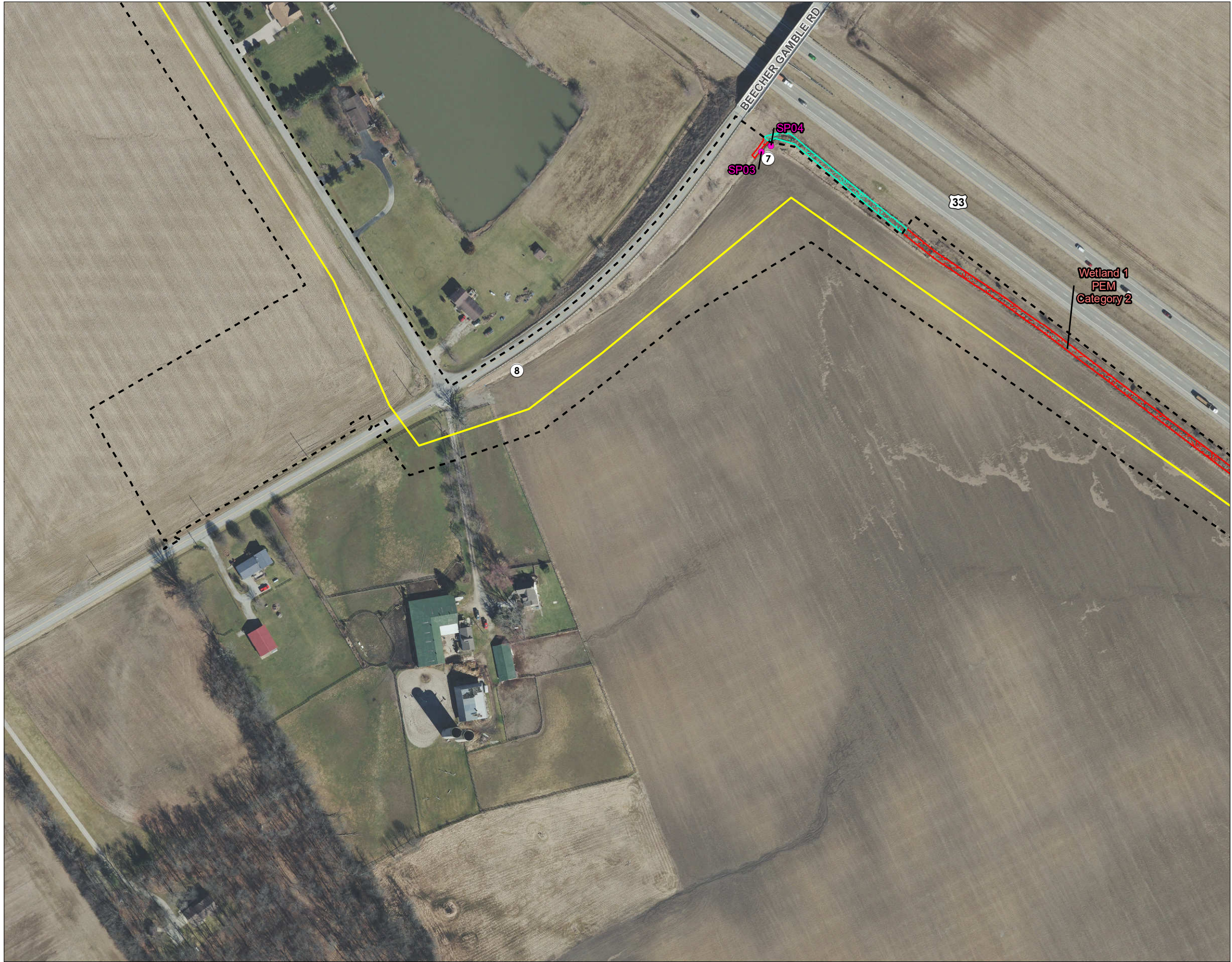
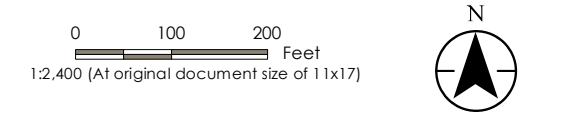


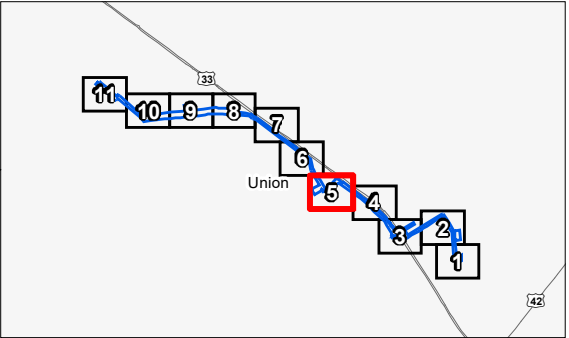
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Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio  
193707055  
Prepared by CA on 2019-11-22  
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Independent Review by MT on 2019-12-05



- Legend**
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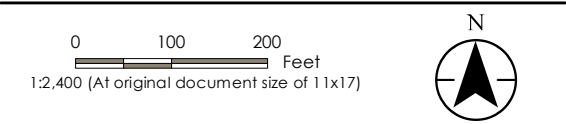


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**Wetland and Waterbody Delineation Map**

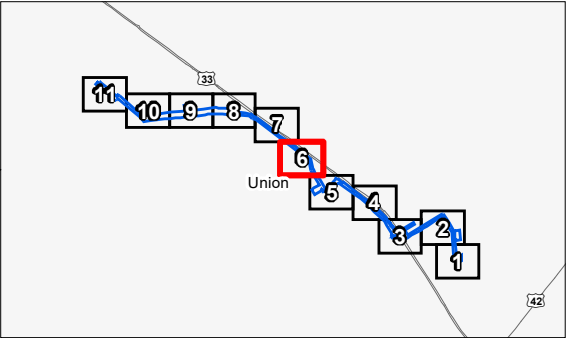
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  - Approximate Waterway
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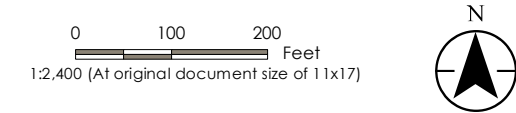


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Title  
**Wetland and Waterbody Delineation Map**

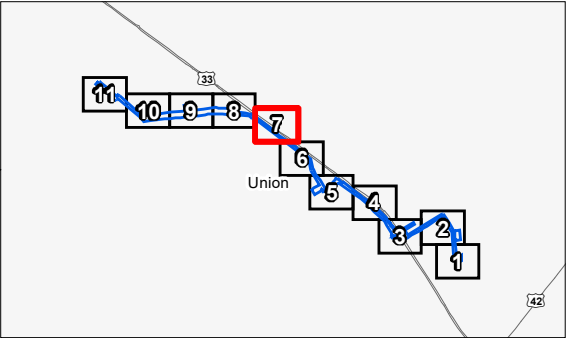
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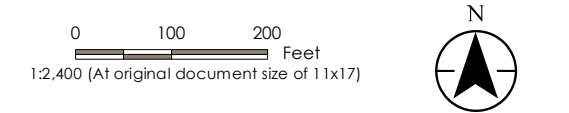


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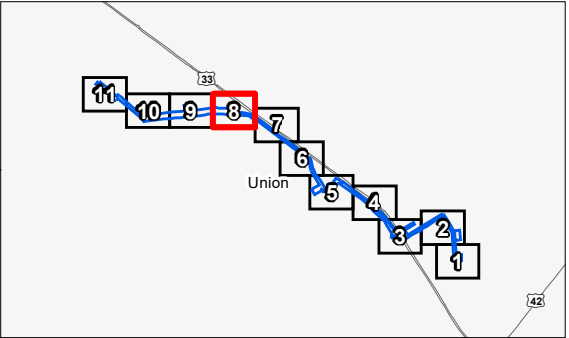
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**Notes**

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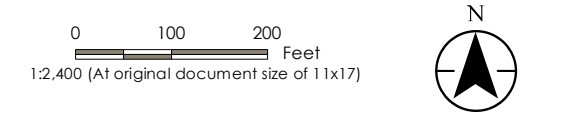


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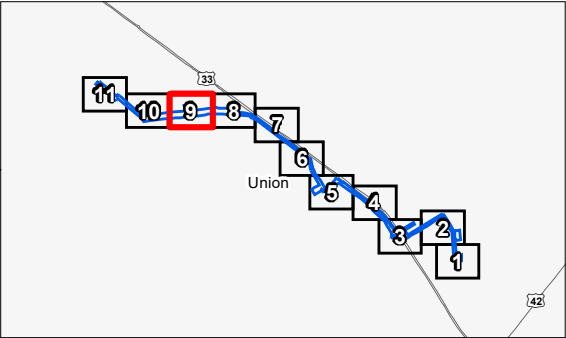
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- Data Sources Include: Stantec, Columbia Gas, USGS, NADS
- Orthophotography: 2018 OGRIP





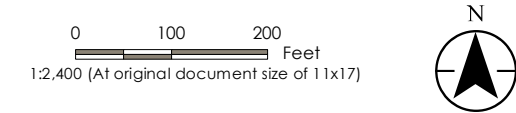


Figure No.  
**4**  
Title  
**Wetland and Waterbody Delineation Map**

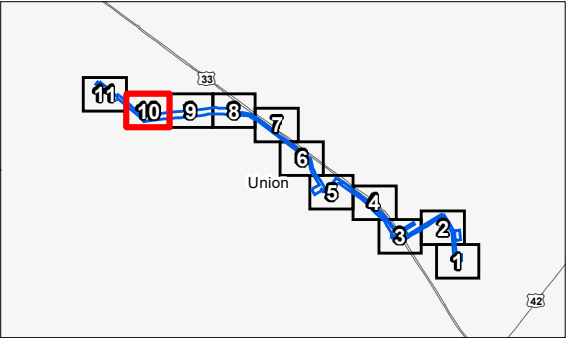
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
Technical Review by AS on 2019-12-04  
Independent Review by MT on 2019-12-05



- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
  - Photo Location
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Approximate Wetland



**Notes**

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





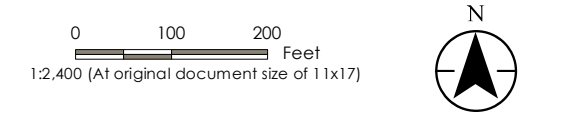


Figure No.  
**4**  
Title  
**Wetland and Waterbody Delineation Map**

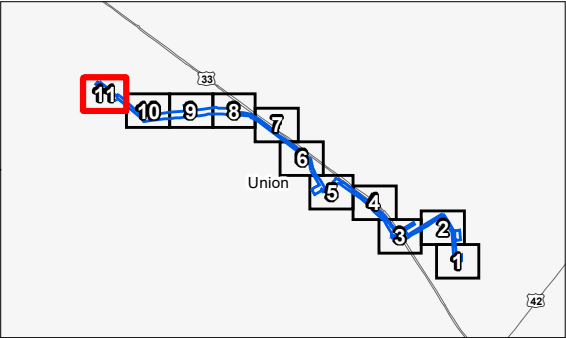
Client/Project  
Columbia Gas of Ohio  
Marysville Connector Pipeline Project  
Wetland and Waterbody Delineation

Project Location  
Union County, Ohio

193707055  
Prepared by CA on 2019-11-22  
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- Legend**
- Survey Corridor
  - Approximate Proposed Pipeline
  - Sample Point
  - Photo Location
  - Field Delineated Waterway
  - Approximate Waterway
  - Field Delineated Emergent Wetland
  - Approximate Wetland



**Notes**

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





## Appendix B DATA FORMS

### B.1 WETLAND DETERMINATION FORMS

Project/Site: <b>Marysville Connector</b>		Stantec Project #: <b>193707055</b>		Date: <b>11/20/19</b>							
Applicant: <b>Columbia Gas of Ohio</b>		Investigator #1: <b>Angela Sjollega</b>		County: <b>Union</b>							
Investigator #2: <b>Julie Slater</b>		Soil Unit: <b>Big1A1 - Blount silt loam, ground moraine, 0-2% slopes</b>		State: <b>Ohio</b>							
Landform: <b>Toeslope</b>		Local Relief: <b>Concave</b>		Wetland ID: <b>Wetland 1</b>							
Slope (%): <b>0</b>		Latitude: <b>40.18004</b>		Sample Point: <b>SP01</b>							
		Longitude: <b>-83.249404</b>		Community ID: <b>PEM</b>							
		Datum: <b>WGS 1984</b>		Section: <b>N/A</b>							
Are climatic/hydrologic conditions on the site typical for this time of year? (if no, explain in remarks) <input type="checkbox"/> Yes <input type="checkbox"/> No				Township: <b>N/A</b>							
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Range: <b>N/A</b> Dir: <b>N/A</b>							
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?											
<b>SUMMARY OF FINDINGS</b>											
Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No		Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No									
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Is This Sampling Point Within A Wetland?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No									
Remarks:											
<b>HYDROLOGY</b>											
Wetland Hydrology Indicators (Check here if indicators are not present <input type="checkbox"/> ):											
Primary:			Secondary:								
<input type="checkbox"/> A1 - Surface Water	<input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B6 - Surface Soil Cracks									
<input type="checkbox"/> A2 - High Water Table	<input type="checkbox"/> B13 - Aquatic Fauna	<input type="checkbox"/> B10 - Drainage Patterns									
<input type="checkbox"/> A3 - Saturation	<input type="checkbox"/> B14 - True Aquatic Plants	<input type="checkbox"/> C2 - Dry-Season Water Table									
<input type="checkbox"/> B1 - Water Marks	<input type="checkbox"/> C1 - Hydrogen Sulfide Odor	<input type="checkbox"/> C8 - Crayfish Burrows									
<input type="checkbox"/> B2 - Sediment Deposits	<input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots	<input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery									
<input type="checkbox"/> B3 - Drift Deposits	<input type="checkbox"/> C4 - Presence of Reduced Iron	<input type="checkbox"/> D1 - Stunted or Stressed Plants									
<input type="checkbox"/> B4 - Algal Mat or Crust	<input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils	<input type="checkbox"/> D2 - Geomorphic Position									
<input type="checkbox"/> B5 - Iron Deposits	<input type="checkbox"/> C7 - Thin Muck Surface	<input type="checkbox"/> D5 - FAC-Neutral Test									
<input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery	<input type="checkbox"/> D9 - Gauge or Well Data										
<input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> Other (Explain in Remarks)										
<b>Field Observations:</b>											
Surface Water Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>5</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No									
Water Table Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>3.5</b> (in.)										
Saturation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>0</b> (in.)										
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <b>N/A</b>											
Remarks:											
<b>SOILS</b>											
Map Unit Name: <b>Big1A1 - Blount silt loam, ground moraine, 0-2% slopes</b>											
Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)											
Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)		
			Color (Moist)	%	Color (Moist)	%	Type	Location			
<b>0</b>	<b>2</b>	<b>--</b>	<b>10YR</b>	<b>3/3</b>	<b>100</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>silty clay loam</b>	
<b>2</b>	<b>6</b>	<b>--</b>		<b>2.5/10Y</b>	<b>97</b>	<b>5YR</b>	<b>4/6</b>	<b>3</b>	<b>C</b>	<b>PL</b>	<b>silty clay loam</b>
<b>6</b>	<b>17</b>	<b>--</b>		<b>2.5/10Y</b>	<b>100</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>silty clay loam</b>
<b>17</b>	<b>20</b>	<b>--</b>	<b>10YR</b>	<b>4/1</b>	<b>100</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>clay</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ):						<b>Indicators for Problematic Soils</b> <sup>1</sup>					
<input type="checkbox"/> A1 - Histosol	<input type="checkbox"/> S4 - Sandy Gleyed Matrix					<input type="checkbox"/> A16 - Coast Prairie Redox					
<input type="checkbox"/> A2 - Histic Epipedon	<input type="checkbox"/> S5 - Sandy Redox					<input type="checkbox"/> S7 - Dark Surface					
<input type="checkbox"/> A3 - Black Histic	<input type="checkbox"/> S6 - Stripped Matrix					<input type="checkbox"/> F12 - Iron-Manganese Masses					
<input type="checkbox"/> A4 - Hydrogen Sulfide	<input type="checkbox"/> F1 - Loamy Muck Mineral					<input type="checkbox"/> TF12 - Very Shallow Dark Surface					
<input type="checkbox"/> A5 - Stratified Layers	<input type="checkbox"/> F2 - Loamy Gleyed Matrix					<input type="checkbox"/> Other (Explain in Remarks)					
<input type="checkbox"/> A10 - 2 cm Muck	<input type="checkbox"/> F3 - Depleted Matrix										
<input type="checkbox"/> A11 - Depleted Below Dark Surface	<input type="checkbox"/> F6 - Redox Dark Surface										
<input type="checkbox"/> A12 - Thick Dark Surface	<input type="checkbox"/> F7 - Depleted Dark Surface										
<input type="checkbox"/> S1 - Sandy Muck Mineral	<input type="checkbox"/> F8 - Redox Depressions										
<input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat											
<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.											
<b>Restrictive Layer (If Observed)</b>		Type: <b>None</b>	Depth: <b>N/A</b>		<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No						
Remarks:											

Project/Site: **Marysville Connector**

Wetland ID: **Wetland 1**

Sample Point: **SP01**

**VEGETATION** (Species identified in all uppercase are non-native species.)

**Tree Stratum** (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind. Status
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--

Total Cover = **0**

**Sapling/Shrub Stratum** (Plot size: 15 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--

Total Cover = **0**

**Herb Stratum** (Plot size: 5 ft radius)

1.	<b><i>Typha angustifolia</i></b>	<b>100</b>	<b>Y</b>	<b>OBL</b>
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--

Total Cover = **100**

**Woody Vine Stratum** (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--

Total Cover = **0**

Remarks:

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

Multiply by:

OBL spp.	x 1 =	
FACW spp.	x 2 =	
FAC spp.	x 3 =	
FACU spp.	x 4 =	
UPL spp.	x 5 =	

Total (A) (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- |                              |                             |  |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Rapid Test for Hydrophytic Vegetation      |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Dominance Test is > 50%                    |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Prevalence Index is ≤ 3.0 *                |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Morphological Adaptations (Explain) *      |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Problem Hydrophytic Vegetation (Explain) * |

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present** ☐ Yes ☐ No

**Additional Remarks:**



Project/Site: <b>Marysville Connector</b>		Stantec Project #: <b>193707055</b>		Date: <b>11/20/19</b>						
Applicant: <b>Columbia Gas of Ohio</b>				County: <b>Union</b>						
Investigator #1: <b>Angela Sjollem</b>		Investigator #2: <b>Julie Slater</b>		State: <b>Ohio</b>						
Soil Unit: <b>Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes</b>		NWI/WWI Classification: <b>N/A</b>		Wetland ID: <b>Wetland 1</b>						
Landform: <b>Terrace</b>		Local Relief: <b>Concave</b>		Sample Point: <b>SP02</b>						
Slope (%): <b>0</b>		Latitude: <b>40.18003</b> Longitude: <b>-83.249511</b>		Community ID: <b>Upland</b>						
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input type="checkbox"/> Yes <input type="checkbox"/> No										
Are Vegetation, Soil, or Hydrology significantly disturbed?			Are normal circumstances present?							
Are Vegetation, Soil, or Hydrology naturally problematic?			<input type="checkbox"/> Yes <input type="checkbox"/> No							
				Township: <b>N/A</b>						
				Range: <b>N/A</b> Dir: <b>N/A</b>						
<b>SUMMARY OF FINDINGS</b>										
Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No			Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No			Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Remarks:										
<b>HYDROLOGY</b>										
Wetland Hydrology Indicators (Check here if indicators are not present - ):										
<u>Primary:</u> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B14 - True Aquatic Plants <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> D9 - Gauge or Well Data <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> Other (Explain in Remarks)			<u>Secondary:</u> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test							
<b>Field Observations:</b> Surface Water Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.) Water Table Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.) Saturation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.)			<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <b>N/A</b>										
Remarks:										
<b>SOILS</b>										
Map Unit Name: <b>Blg1A1 - Blount silt loam, ground moraine, 0-2% slopes</b>										
Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)										
Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%	Color (Moist)	%	Type	Location		
0	20	--	10YR	3/4	100	--	--	--	--	loam
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
<b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present - ): <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> A1 - Histosol  <input type="checkbox"/> A2 - Histic Epipedon  <input type="checkbox"/> A3 - Black Histic  <input type="checkbox"/> A4 - Hydrogen Sulfide  <input type="checkbox"/> A5 - Stratified Layers  <input type="checkbox"/> A10 - 2 cm Muck  <input type="checkbox"/> A11 - Depleted Below Dark Surface  <input type="checkbox"/> A12 - Thick Dark Surface  <input type="checkbox"/> S1 - Sandy Muck Mineral  <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat           </div> <div> <input type="checkbox"/> S4 - Sandy Gleyed Matrix  <input type="checkbox"/> S5 - Sandy Redox  <input type="checkbox"/> S6 - Stripped Matrix  <input type="checkbox"/> F1 - Loamy Muck Mineral  <input type="checkbox"/> F2 - Loamy Gleyed Matrix  <input type="checkbox"/> F3 - Depleted Matrix  <input type="checkbox"/> F6 - Redox Dark Surface  <input type="checkbox"/> F7 - Depleted Dark Surface  <input type="checkbox"/> F8 - Redox Depressions           </div> <div> <input type="checkbox"/> A16 - Coast Prairie Redox  <input type="checkbox"/> S7 - Dark Surface  <input type="checkbox"/> F12 - Iron-Manganese Masses  <input type="checkbox"/> TF12 - Very Shallow Dark Surface  <input type="checkbox"/> Other (Explain in Remarks)           </div> </div>										
<b>Restrictive Layer (If Observed)</b> Type: <b>None</b> Depth: <b>N/A</b>										
<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No										
Remarks:										

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Project/Site: **Marysville Connector**

Wetland ID: **Wetland 1**

Sample Point: **SP02**

**VEGETATION** (Species identified in all uppercase are non-native species.)

Tree Stratum (Plot size: 30 ft radius)

	Species Name	% Cover	Dominant	Ind. Status
1.	<i>Ulmus americana</i>	13	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--

Total Cover = **13**

Sapling/Shrub Stratum (Plot size: 15 ft radius)

1.	<i>Celtis occidentalis</i>	10	Y	FAC
2.	<i>Fraxinus pennsylvanica</i>	10	Y	FACW
3.	<i>Lonicera maackii</i>	10	Y	UPL
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--

Total Cover = **30**

Herb Stratum (Plot size: 5 ft radius)

1.	<i>Phalaris arundinacea</i>	90	Y	FACW
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--

Total Cover = **90**

Woody Vine Stratum (Plot size: 30 ft radius)

1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--

Total Cover = **0**

Remarks:

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: **4** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **80%** (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

Multiply by:

OBL spp.	x 1 =	
FACW spp.	x 2 =	
FAC spp.	x 3 =	
FACU spp.	x 4 =	
UPL spp.	x 5 =	

Total (A) (B)

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

- Yes • No Rapid Test for Hydrophytic Vegetation
- Yes • No Dominance Test is > 50%
- Yes • No Prevalence Index is ≤ 3.0 \*
- Yes • No Morphological Adaptations (Explain) \*
- Yes • No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present** • Yes • No

**Additional Remarks:**

Project/Site: <b>Marysville Connector</b>		Stantec Project #: <b>193707055</b>		Date: <b>11/20/19</b>							
Applicant: <b>Columbia Gas of Ohio</b>				County: <b>Union</b>							
Investigator #1: <b>Angela Sjollega</b>		Investigator #2: <b>Julie Slater</b>		State: <b>Ohio</b>							
Soil Unit: <b>Pk - Pewamo silty clay loam, 0 to 1 percent slopes</b>		NW1/WW1 Classification: <b>N/A</b>		Wetland ID: <b>Wetland 1</b>							
Landform: <b>Toeslope</b>		Local Relief: <b>Concave</b>		Sample Point: <b>SP03</b>							
Slope (%): <b>0</b>		Latitude: <b>40.18703</b>	Longitude: <b>-83.26002</b>	Community ID: <b>PEM</b>							
		Datum: <b>WGS 1984</b>		Section: <b>N/A</b>							
Are climatic/hydrologic conditions on the site typical for this time of year? (if no, explain in remarks) <input type="checkbox"/> Yes <input type="checkbox"/> No											
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present? <input type="checkbox"/> Yes <input type="checkbox"/> No								
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?			Township: <b>N/A</b>								
			Range: <b>N/A</b> Dir: <b>N/A</b>								
<b>SUMMARY OF FINDINGS</b>											
Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No			Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No								
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No			<b>Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input type="checkbox"/> No</b>								
Remarks:											
<b>HYDROLOGY</b>											
Wetland Hydrology Indicators (Check here if indicators are not present <input type="checkbox"/> ):											
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <u>Primary:</u>  <input type="checkbox"/> A1 - Surface Water  <input type="checkbox"/> A2 - High Water Table  <input type="checkbox"/> A3 - Saturation  <input type="checkbox"/> B1 - Water Marks  <input type="checkbox"/> B2 - Sediment Deposits  <input type="checkbox"/> B3 - Drift Deposits  <input type="checkbox"/> B4 - Algal Mat or Crust  <input type="checkbox"/> B5 - Iron Deposits  <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery  <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface </div> <div style="width: 30%;"> <input type="checkbox"/> B9 - Water-Stained Leaves  <input type="checkbox"/> B13 - Aquatic Fauna  <input type="checkbox"/> B14 - True Aquatic Plants  <input type="checkbox"/> C1 - Hydrogen Sulfide Odor  <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots  <input type="checkbox"/> C4 - Presence of Reduced Iron  <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils  <input type="checkbox"/> C7 - Thin Muck Surface  <input type="checkbox"/> D9 - Gauge or Well Data  <input type="checkbox"/> Other (Explain in Remarks) </div> <div style="width: 30%;"> <u>Secondary:</u>  <input type="checkbox"/> B6 - Surface Soil Cracks  <input type="checkbox"/> B10 - Drainage Patterns  <input type="checkbox"/> C2 - Dry-Season Water Table  <input type="checkbox"/> C8 - Crayfish Burrows  <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery  <input type="checkbox"/> D1 - Stunted or Stressed Plants  <input type="checkbox"/> D2 - Geomorphic Position  <input type="checkbox"/> D5 - FAC-Neutral Test </div> </div>											
<b>Field Observations:</b> Surface Water Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.) Water Table Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.) Saturation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No      Depth: (in.)			<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No								
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: <b>N/A</b>											
Remarks:											
<b>SOILS</b>											
Map Unit Name: <b>Pk - Pewamo silty clay loam, 0 to 1 percent slopes</b>											
Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)											
Top Depth	Bottom Depth	Horizon	Matrix		Redox Features				Texture (e.g. clay, sand, loam)		
			Color (Moist)	%	Color (Moist)	%	Type	Location			
<b>0</b>	<b>3</b>	<b>1</b>	<b>10YR</b>	<b>3/2</b>	<b>95</b>	<b>5YR</b>	<b>5/8</b>	<b>2</b>	<b>C</b>	<b>PL</b>	<b>silty clay loam</b>
						<b>5YR</b>	<b>4/6</b>	<b>3</b>	<b>C</b>	<b>M</b>	<b>silty clay loam</b>
<b>3</b>	<b>10</b>	<b>2</b>	<b>10YR</b>	<b>4/1</b>	<b>85</b>	<b>5YR</b>	<b>4/6</b>	<b>15</b>	<b>C</b>	<b>M</b>	<b>silty clay loam</b>
<b>10</b>	<b>20</b>	<b>3</b>	<b>10YR</b>	<b>5/1</b>	<b>50</b>	<b>10YR</b>	<b>5/8</b>	<b>50</b>	<b>C</b>	<b>M</b>	<b>clay</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present <input type="checkbox"/> ): <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> A1 - Histosol  <input type="checkbox"/> A2 - Histic Epipedon  <input type="checkbox"/> A3 - Black Histic  <input type="checkbox"/> A4 - Hydrogen Sulfide  <input type="checkbox"/> A5 - Stratified Layers  <input type="checkbox"/> A10 - 2 cm Muck  <input type="checkbox"/> A11 - Depleted Below Dark Surface  <input type="checkbox"/> A12 - Thick Dark Surface  <input type="checkbox"/> S1 - Sandy Muck Mineral  <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat </div> <div style="width: 30%;"> <input type="checkbox"/> S4 - Sandy Gleyed Matrix  <input type="checkbox"/> S5 - Sandy Redox  <input type="checkbox"/> S6 - Stripped Matrix  <input type="checkbox"/> F1 - Loamy Muck Mineral  <input type="checkbox"/> F2 - Loamy Gleyed Matrix  <input type="checkbox"/> F3 - Depleted Matrix  <input type="checkbox"/> F6 - Redox Dark Surface  <input type="checkbox"/> F7 - Depleted Dark Surface  <input type="checkbox"/> F8 - Redox Depressions </div> <div style="width: 30%;"> <b>Indicators for Problematic Soils <sup>1</sup></b>  <input type="checkbox"/> A16 - Coast Prairie Redox  <input type="checkbox"/> S7 - Dark Surface  <input type="checkbox"/> F12 - Iron-Manganese Masses  <input type="checkbox"/> TF12 - Very Shallow Dark Surface  <input type="checkbox"/> Other (Explain in Remarks) </div> </div>											
<b>Restrictive Layer (If Observed)</b> Type: <b>NA</b> Depth:						<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No					
Remarks:											

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.



**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**12/20/2019 12:27:17 PM**

**in**

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

Summary: Letter of Notification /Appendix C Part 1 electronically filed by Cheryl A MacDonald on behalf of Columbia Gas of Ohio, Inc.