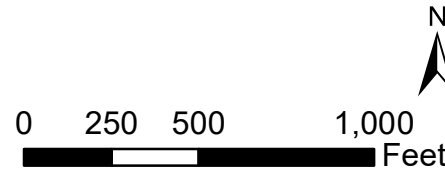


PROJECT LOCATION



WARREN COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: LEBANON AND SOUTH LEBANON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.



- Stream
- Delineated Wetland
- Project Area
- Survey Area



FIGURE:4

WATERS OF THE U.S. DELINEATION  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
IDENTIFIED FEATURES

DRAWN BY: DKT  
CHECKED: CAJ  
DATE: 10/2/2018  
APPROVED: JT



DUKE ENERGY  
5484 – 138kV Columbia Substation

## APPENDIX

# A

## SITE PHOTOGRAPHS





Photo 1. Stream 1, ephemeral, facing downstream.



Photo 2. Stream 2, Little Miami River, looking downstream.



Photo 3. Overview of Wetland 1, located adjacent to Little Miami River.



Photo 4. Stream 3, intermittent, facing upstream.





Photo 5. View of Wetland 2, facing west.



Photo 6. Stream 4, intermittent, facing downstream.



DUKE ENERGY  
5484 – 138kV Columbia Substation

APPENDIX

B

HHEI FORMS





# Primary Headwater Habitat Evaluation Form

## HHEI Score (sum of metrics 1, 2, 3) :

26

SITE NAME/LOCATION Stream 1 - Duke Energy: Columbia Substation  
SITE NUMBER Stream 1 RIVER BASIN Little Miami River DRAINAGE AREA (mi<sup>2</sup>) <1  
LENGTH OF STREAM REACH (ft) 75 LAT 39.370295 LONG -84.226376 RIVER CODE N/A RIVER MILE N/A  
DATE 7/5/2018 SCORER Danielle K. Thompson COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS: \_\_\_\_\_

1. **SUBSTRATE** (Est. % of every type of substrate present. Check ONLY 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	65
<input type="checkbox"/> BOULDER (>256mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]	10	<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input checked="" type="checkbox"/> GRAVEL (2-64mm) [9 pts]	20	<input type="checkbox"/> MUCK [0 PT]	
<input type="checkbox"/> SAND (<2mm) [6 pts]	5	<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 10 (A)

SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES:

12

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI  
Metric  
Points

Substrate  
Max = 40

16

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm - 10 cm [15 pts]
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters):

3

Pool Depth  
Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]
<input type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3'3") [5 pts]
<input type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]	

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters)

0.6

Bankfull  
Width  
Max = 30

5

This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** \* NOTE: River Left (L) and Right (R) as looking downstream

L	R	RIPARIAN WIDTH (Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

Comments \_\_\_\_\_

L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub, or Old Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

Comments \_\_\_\_\_

**SINUOSITY** (Number of bends per 61m (200ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

☐ Flat (0.5ft/100ft) ☐ Flat to Moderate ☐ Moderate (2ft/100ft) ☒ Moderate to Severe ☐ Severe (10ft/100ft)



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):****Stream 1**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Little Miami River Distance from Evaluated Stream 700 LF  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: South Lebanon (OH) NRCS Soil Map Page: N/A NRCS Soil Map Stream Order N/A  
County: Warren Township/City: Union Township

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 7/3/2018 Quantity: 0.1  
Photographer Information: 2 Photos  
Elevated Turbidity? (Y/N): N Canopy (% open): 100  
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number \_\_\_\_\_  
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A  
Is the sampling reach representative of the stream? (Y/N) N If not, please explain: Sampling reach only within the 100  
foot corridor and may not indicate the entire stream characteristics  
Additional comments/description of pollution impacts \_\_\_\_\_

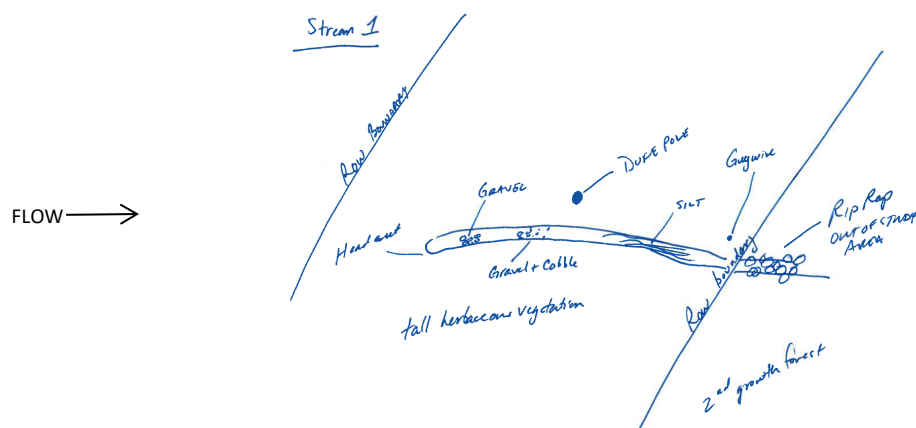
**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N  
Comments Regarding Biology \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location







# Primary Headwater Habitat Evaluation Form

## HHEI Score (sum of metrics 1, 2, 3) :

53

SITE NAME/LOCATION Stream 3 - Duke Energy: Columbia Substation  
SITE NUMBER Stream 3 RIVER BASIN Little Miami River DRAINAGE AREA (mi<sup>2</sup>) <1  
LENGTH OF STREAM REACH (ft) 75 LAT 39.363028 LONG -84.221885 RIVER CODE N/A RIVER MILE N/A  
DATE 7/5/2018 SCORER Danielle K. Thompson COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS: \_\_\_\_\_

1. **SUBSTRATE** (Est. % of every type of substrate present. Check ONLY 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	45
<input checked="" type="checkbox"/> BOULDER (>256mm) [16 pts]	40	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input type="checkbox"/> GRAVEL (2-64mm) [9 pts]	10	<input type="checkbox"/> MUCK [0 PT]	
<input type="checkbox"/> SAND (<2mm) [6 pts]	5	<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 40 (A)

SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES:

19

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI  
Metric  
Points

Substrate  
Max = 40

23

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm - 10 cm [15 pts]
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input checked="" type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters):

10

Pool Depth  
Max = 30

25

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]
<input type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3'3") [5 pts]
<input type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]	

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters)

0.6

Bankfull  
Width  
Max = 30

5

This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** \* NOTE: River Left (L) and Right (R) as looking downstream

L	R	RIPARIAN WIDTH (Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

Comments \_\_\_\_\_

L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub, or Old Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

Comments \_\_\_\_\_

**SINUOSITY** (Number of bends per 61m (200ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5ft/100ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2ft/100ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10ft/100ft)
---	---	---	--	--

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):****Stream 3**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Little Miami River Distance from Evaluated Stream 1200 LF  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: South Lebanon (OH) NRCS Soil Map Page: N/A NRCS Soil Map Stream Order N/A  
County: Warren Township/City: Hamilton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 7/3/2018 Quantity: 0.1  
Photographer Information: 2 Photos  
Elevated Turbidity? (Y/N): N Canopy (% open): 100  
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number \_\_\_\_\_  
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A  
Is the sampling reach representative of the stream? (Y/N) N If not, please explain: Sampling reach only within the 100  
foot corridor and may not indicate the entire stream characteristics  
Additional comments/description of pollution impacts \_\_\_\_\_

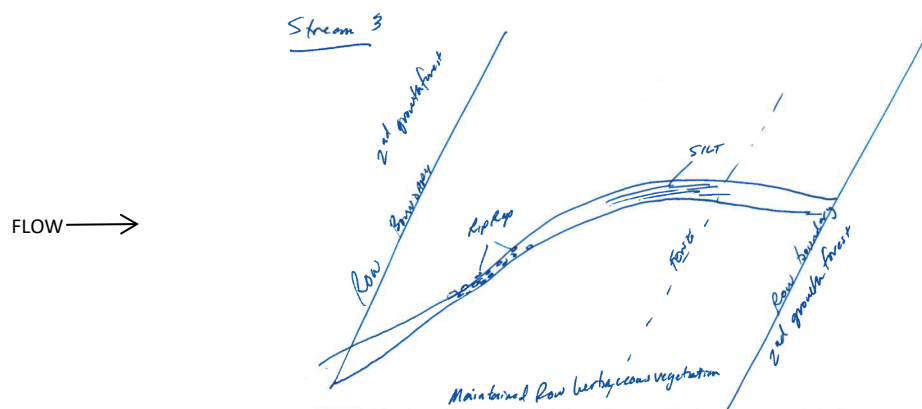
## BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N  
Comments Regarding Biology \_\_\_\_\_

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location







# Primary Headwater Habitat Evaluation Form

## HHEI Score (sum of metrics 1, 2, 3) :

67

SITE NAME/LOCATION Stream 4 - Duke Energy: Columbia Substation  
SITE NUMBER Stream 4 RIVER BASIN Little Miami River DRAINAGE AREA (mi<sup>2</sup>) <1  
LENGTH OF STREAM REACH (ft) 75 LAT 39.363028 LONG -84.221885 RIVER CODE N/A RIVER MILE N/A  
DATE 7/5/2018 SCORER Danielle K. Thompson COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS: \_\_\_\_\_

1. **SUBSTRATE** (Est. % of every type of substrate present. Check ONLY 2 predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is A + B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 PTS]	65
<input checked="" type="checkbox"/> BOULDER (>256mm) [16 pts]	30	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 PTS]	
<input type="checkbox"/> BEDROCK [16 PTS]		<input type="checkbox"/> FINE DETRITUS [3 PTS]	
<input type="checkbox"/> COBBLE (65-256mm) [12 pts]	5	<input type="checkbox"/> CLAY or HARDPAN [0 PT]	
<input type="checkbox"/> GRAVEL (2-64mm) [9 pts]		<input type="checkbox"/> MUCK [0 PT]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 PTS]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, & Bedrock 35 (A)

SCORE OF 2 MOST PREDOMINANT SUBSTRATE TYPES:

19

TOTAL NUMBER OF SUBSTRATE TYPES:

3

HHEI  
Metric  
Points

Substrate  
Max = 40

22

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61m (200') evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm - 10 cm [15 pts]
<input type="checkbox"/> >22.5 - 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input checked="" type="checkbox"/> >10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters):

15

Pool Depth  
Max = 30

25

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m - 1.5 m (>3'3" - 4'8") [15 pts]
<input type="checkbox"/> >3.0 m - 4.0 m (>9'7" - 13') [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3'3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m - 3.0 m (>4'8" - 9'7") [20 pts]	

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters)

2.1

Bankfull  
Width  
Max = 30

20

This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** \* NOTE: River Left (L) and Right (R) as looking downstream

L	R	RIPARIAN WIDTH (Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

Comments \_\_\_\_\_

L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub, or Old Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

**FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

Comments \_\_\_\_\_

**SINUOSITY** (Number of bends per 61m (200ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5ft/100ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2ft/100ft)	<input type="checkbox"/> Moderate to Severe	<input checked="" type="checkbox"/> Severe (10ft/100ft)
---	---	---	---	---

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):****Stream 4**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

## DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Little Miami River Distance from Evaluated Stream 1200 LF  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: South Lebanon (OH) NRCS Soil Map Page: N/A NRCS Soil Map Stream Order N/A  
County: Warren Township/City: Hamilton Township

## MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 7/3/2018 Quantity: 0.1  
Photographer Information: 2 Photos  
Elevated Turbidity? (Y/N): N Canopy (% open): 100  
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. And attach results) Lab Number \_\_\_\_\_  
Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A  
Is the sampling reach representative of the stream? (Y/N) N If not, please explain: Sampling reach only within the 100  
foot corridor and may not indicate the entire stream characteristics  
Additional comments/description of pollution impacts \_\_\_\_\_

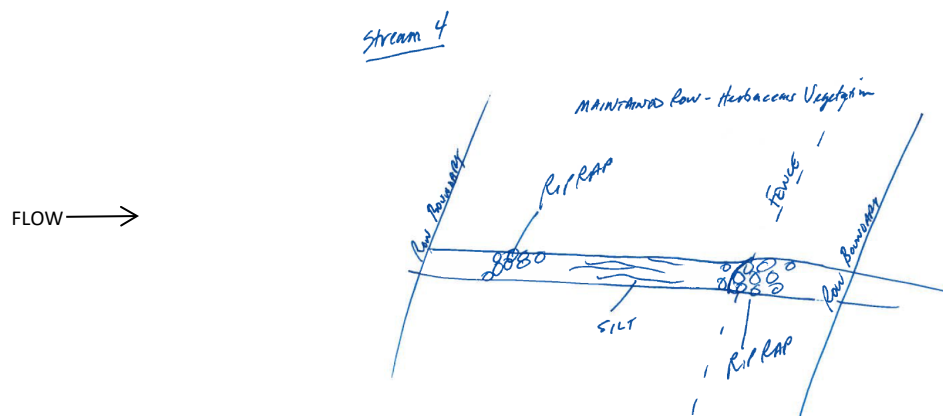
## BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Hedwater Habitat Assessment Manual)

Fish observed? (Y/N) N Voucher(Y/N) N Salamander Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher(Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N  
Comments Regarding Biology \_\_\_\_\_

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location





DUKE ENERGY  
5484 – 138kV Columbia Substation

## APPENDIX

# C

OHIO RAPID ASSESSMENT METHOD 5.0  
FORM AND USACE WETLAND  
DELINEATION DATA SHEETS

Site: Wetland 1 - RFO	Rater(s): D.K. Thompson	Date: July 5, 2018
-----------------------	-------------------------	--------------------

2	2
max 6 pts.	subtotal

**Metric 1. Wetland Area (size).**

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) ( 6 pts)  
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)  
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)  
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)  
☒ 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)  
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)  
☐ <0.1 acres (0.04ha) (0 pts)

Project: Duke Energy: Columbia Substation

14	16
max 14 pts.	subtotal

**Metric 2. Upland buffers and surrounding land use.**

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)  
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)  
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)  
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)  
☐ LOW. Old field (>10 years), shrubland, young second growth forest. (5)  
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)  
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

24	40
max 14 pts.	subtotal

**Metric 3. Hydrology**

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)  
☐ Other groundwater (3)  
☒ Precipitation (1)  
☒ Seasonal/Intermittent surface water (3)  
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)  
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)  
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)  
☐ Recovered (7)  
☐ Recovering (3)  
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100 year floodplain (1)  
☒ Between stream/lake and other human use (1)  
☒ Part of wetland/upland (e.g. forest), complex (1)  
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)  
☒ Regularly inundated/saturated (3)  
☐ Seasonally inundated (2)  
☐ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- |  |  |
|--|--|
| <input type="checkbox"/> ditch<br><input type="checkbox"/> tile<br><input type="checkbox"/> dike<br><input type="checkbox"/> weir<br><input type="checkbox"/> stormwater input | <input type="checkbox"/> point source (nonstormwater)<br><input type="checkbox"/> filling/grading<br><input type="checkbox"/> road bed/RR track<br><input type="checkbox"/> dredging<br><input type="checkbox"/> other |
|--|--|

16	56
max 20 pts.	subtotal

**Metric 4. Habitat Alteration and Development.**

4a. Substrate disturbance. Score one or double check and average.

- ☒ None or none apparent (4)  
☐ Recovered (3)  
☐ Recovering (2)  
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)  
☐ Very good (6)  
☐ Good (5)  
☐ Moderately good (4)  
☒ Fair (3)  
☐ Poor to fair (2)  
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☒ None or none apparent (9)  
☐ Recovered (6)  
☐ Recovering (3)  
☐ Recent or no recovery (1)

Check all disturbances observed

- |  |  |
|--|--|
| <input type="checkbox"/> mowing<br><input type="checkbox"/> grazing<br><input type="checkbox"/> clearcutting<br><input type="checkbox"/> selective cutting<br><input type="checkbox"/> woody debris removal<br><input type="checkbox"/> toxic pollutants | <input type="checkbox"/> shrub/sapling removal<br><input type="checkbox"/> herbaceous/aquatic bed removal<br><input type="checkbox"/> sedimentation<br><input type="checkbox"/> dredging<br><input type="checkbox"/> farming<br><input type="checkbox"/> nutrient enrichment |
|--|--|

56

subtotal this page



Site: Wetland 1 - RFO	Rater(s): D.K. Thompson	Date: July 5, 2018
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-2

subtotal this page

Site: Duke Energy: Columbia Substation

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max 10 pts: subtotal

**Metric 5. Special Wetlands**

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- ☐ Not Applicable (0)

-2

-2

max 20 pts: subtotal

**Metric 6. Plant communities, interspersions, microtopography.**

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 1 Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☒ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☒ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding pools

**Vegetation Community Cover Scale**

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

**Narrative Description of Vegetation Quality**

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

**Mudflat and Open Water Class Quality**

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

54

Grand Total (max 100 pts)

Comments:

Site: Wetland 2 - PEM	Rater(s): D.K. Thompson	Date: July 5, 2018
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<b>0</b>	<b>0</b>
max 6 pts.	subtotal

**Metric 1. Wetland Area (size).**

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) ( 6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2 pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

Project: Duke Energy: Columbia Substation

<b>6</b>	<b>6</b>
max 14 pts.	subtotal

**Metric 2. Upland buffers and surrounding land use.**

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☒ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☒ LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

<b>14</b>	<b>20</b>
max 30 pts.	subtotal

**Metric 3. Hydrology**

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☒ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☒ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- |   |   |
|---|---|
| <input type="checkbox"/> ditch            | <input type="checkbox"/> point source (nonstormwater) |
| <input type="checkbox"/> tile             | <input checked="" type="checkbox"/> filling/grading   |
| <input type="checkbox"/> dike             | <input type="checkbox"/> road bed/RR track            |
| <input type="checkbox"/> weir             | <input type="checkbox"/> dredging                     |
| <input type="checkbox"/> stormwater input | <input checked="" type="checkbox"/> other             |

<b>10</b>	<b>30</b>
max 20 pts.	subtotal

**Metric 4. Habitat Alteration and Development.**

4a. Substrate disturbance. Score one or double check and average.

- ☒ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☒ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> mowing    | <input type="checkbox"/> shrub/sapling removal          |
| <input type="checkbox"/> grazing              | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting         | <input type="checkbox"/> sedimentation                  |
| <input type="checkbox"/> selective cutting    | <input type="checkbox"/> dredging                       |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming                        |
| <input type="checkbox"/> toxic pollutants     | <input type="checkbox"/> nutrient enrichment            |

**30**

subtotal this page



Site: Wetland 2 - PEM	Rater(s): D.K. Thompson	Date: July 5, 2018
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1

subtotal this page

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max 10 pts: subtotal

### Metric 5. Special Wetlands

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)
- ☐ Not Applicable (0)

Site: Duke Energy: Columbia Substation

1

1

max 20 pts: subtotal

### Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ Vegetated hummocks/tussocks
- ☒ Coarse woody debris >15cm (6in)
- ☒ Standing dead >25cm (10in) dbh
- ☒ Amphibian breeding pools

#### Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
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#### Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

#### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

31

Grand Total (max 100 pts)

Comments:

# WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Duke Energy: Columbia Substation - Wetland 1 City/County: Union Twp, Warren Count Sampling Date: 7/5/2018  
 Applicant/Owner: Duke Energy State: OH Sampling Point: DP1  
 Investigator(s): Danielle K. Thompson; James Crumpler Section, Township, Range: n/a  
 Landform (hillslope, terrace, etc.): Oxbow Local relief (concave, convex, none): concave  
 Slope (%): 2% Lat: 39.367542 Long: -84.225674 Datum: NAD83 UTM16N  
 Soil Map Unit Name: Riverwash NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>		
Remarks:				

## VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			UPL
2. <u>    </u>			
3. <u>    </u>			
4. <u>    </u>			
5. <u>    </u>			
			= Total Cover

**Dominance Test worksheet:**

Number of Dominant Species  
That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

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

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			UPL
2. <u>    </u>			
3. <u>    </u>			
4. <u>    </u>			
5. <u>    </u>			
			= Total Cover

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
That Are OBL, FACW, or FAC:	A/B
OBL species <u>5%</u>	x1 = <u>0.05</u>
FACW species <u>90%</u>	x2 = <u>1.8</u>
FAC species <u>35%</u>	x3 = <u>1.05</u>
FACU species <u>    </u>	x4 = <u>    </u>
UPL species <u>    </u>	x5 = <u>    </u>
Column Totals: <u>1.30</u> (A)	<u>2.9</u> (B)

Prevalence Index = B/A = 2.23

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phalaris arundinacea</u>	80%	Yes	FACW
2. <u>Impatiens capensis</u>	10%	No	FACW
3. <u>Carex frankii</u>	5%	No	OBL
4. <u>Toxicodendron radicans</u>	5%	No	FAC
5. <u>Ficaria verna</u>	30%	Yes	FAC
6. <u>    </u>			
7. <u>    </u>			
8. <u>    </u>			
9. <u>    </u>			
10. <u>    </u>			
11. <u>    </u>			
12. <u>    </u>			
13. <u>    </u>			
14. <u>    </u>			
15. <u>    </u>			
16. <u>    </u>			
17. <u>    </u>			
18. <u>    </u>			
19. <u>    </u>			
20. <u>    </u>			
			130% = Total Cover

**Hydrophytic Vegetation Indicators:**

     1-Rapid Test for Hydrophytic Vegetation

X 2-Dominance Test is >50%

X 3-Prevalence Index is ≤3.0<sup>1</sup>

     4-Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

     Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			UPL
2. <u>    </u>			
			= Total Cover

**Hydrophytic Vegetation Present?** Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)



## SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16"	10YR 4/2	90	10YR 4/6	10	C	M	Sandy Loam	Sand and Gravel inclusions

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators <sup>3</sup> :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	<sup>3</sup> The hydric soil indicators have been updated to comply with the <i>Field Indicators of Hydric Soils in the United States</i> , Version 8.0, 2016.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input checked="" type="checkbox"/> Redox Depressions (F8)		

**Restrictive Layer (if observed):**  
Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: \_\_\_\_\_

## HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:			
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 4	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): >18"	
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): >18"	
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: _____			

## WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Duke Energy: Columbia Substation - Wetland 1 City/County: Union Twp, Warren Count Sampling Date: 7/5/2018  
Applicant/Owner: Duke Energy State: OH Sampling Point: DP2  
Investigator(s): Danielle K. Thompson; James Crumpler Section, Township, Range: n/a  
Landform (hillslope, terrace, etc.): Oxbow Local relief (concave, convex, none): concave  
Slope (%): 15% Lat: 39.367464 Long: -84.225635 Datum: NAD83 UTM16N  
Soil Map Unit Name: Riverwash NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year?

Yes X No      (If no, explain in Remarks.)Are Vegetation     , Soil N, or Hydrology N significantly disturbed?

Are "Normal Circumstances" present?

Yes X No     Are Vegetation N, Soil N, or Hydrology N naturally problematic?

(If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>			
Remarks:					

**VEGETATION -- Use scientific names of plants.**

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Platanus occidentalis</i>	30%	Yes	FACW
2. <i>Populus deltoides</i>	30%	Yes	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	60%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Platanus occidentalis</i>	10%	Yes	FACW
2. <i>Salix nigra</i>	20%	Yes	OBL
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	30%	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Phalaris arundinacea</i>	50%	Yes	FACW
2. <i>Impatiens capensis</i>	2%	No	FACW
3. <i>Solidago canadensis</i>	30%	Yes	FACU
4. <i>Toxicodendron radicans</i>	5%	No	FAC
5. <i>Solidago altissima</i>	10%	No	FACU
6. <i>Urtica dioica</i>	20%	No	FACW
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
13. _____	_____	_____	_____
14. _____	_____	_____	_____
15. _____	_____	_____	_____
16. _____	_____	_____	_____
17. _____	_____	_____	_____
18. _____	_____	_____	_____
19. _____	_____	_____	_____
20. _____	_____	_____	_____
	117%	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Vitis riparia</i>	5%	Yes	FACW
2. _____	_____	_____	_____
	5%	= Total Cover	

**Dominance Test worksheet:**Number of Dominant Species  
That Are OBL, FACW, or FAC: 6 (A)Total Number of Dominant  
Species Across All Strata: 7 (B)Percent of Dominant Species  
That Are OBL, FACW, or FAC: 86% (A/B)**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
That Are OBL, FACW, or FAC:	A/B
OBL species <u>20%</u>	x1 = <u>0.2</u>
FACW species <u>117%</u>	x2 = <u>2.34</u>
FAC species <u>35%</u>	x3 = <u>1.05</u>
FACU species <u>40%</u>	x4 = <u>1.6</u>
UPL species <u>    </u>	x5 = <u>    </u>
Column Totals: <u>2.12</u> (A)	<u>5.19</u> (B)
Prevalence Index = B/A = <u>2.45</u>	

**Hydrophytic Vegetation Indicators:**

- 1-Rapid Test for Hydrophytic Vegetation  
X 2-Dominance Test is >50%  
3-Prevalence Index is  $\leq 3.0^1$   
4-Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**Hydrophytic  
Vegetation  
Present?**Yes X No     

Remarks: (Include photo numbers here or on a separate sheet.)

## SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16"	10YR 4/3	90	10YR 4/6	10	C	M	Sandy Loam	Sand and Gravel inclusions

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators <sup>3</sup> :		Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)	<sup>3</sup> The hydric soil indicators have been updated to comply with the <i>Field Indicators of Hydric Soils in the United States</i> , Version 8.0, 2016.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)		
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)		
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

**Restrictive Layer (if observed):**  
Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No ☒ X

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	>18"
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	>18"
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	>18"
(includes capillary fringe)			
<b>Wetland Hydrology Present?</b>		Yes _____	No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



# WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Duke Energy: Columbia Substation - Wetland 2 City/County: Union Twp, Warren Count Sampling Date: 7/5/2018  
 Applicant/Owner: Duke Energy State: OH Sampling Point: DP3  
 Investigator(s): Danielle K. Thompson; James Crumpler Section, Township, Range: n/a  
 Landform (hillslope, terrace, etc.): Stream Terrace Local relief (concave, convex, none): concave  
 Slope (%): 2% Lat: 39.361303 Long: -84.221256 Datum: NAD83 UTM16N  
 Soil Map Unit Name: Hickory Clay Loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>		
Remarks:				

## VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			UPL
2. <u>    </u>			
3. <u>    </u>			
4. <u>    </u>			
5. <u>    </u>			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>    </u>			
2. <u>    </u>			
3. <u>    </u>			
4. <u>    </u>			
5. <u>    </u>			
		= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Typha X glauca</u>	25%	Yes	OBL
2. <u>Carex vulpinoidea</u>	50%	Yes	FACW
3. <u>Scirpus atrovirens</u>	20%	No	OBL
4. <u>Carex frankii</u>	25%	Yes	OBL
5. <u>Impatiens capensis</u>	10%	No	FACW
6. <u>Solidago canadensis</u>	5%	No	FACU
7. <u>Salix nigra</u>	2%	No	OBL
8. <u>    </u>			
9. <u>    </u>			
10. <u>    </u>			
11. <u>    </u>			
12. <u>    </u>			
13. <u>    </u>			
14. <u>    </u>			
15. <u>    </u>			
16. <u>    </u>			
17. <u>    </u>			
18. <u>    </u>			
19. <u>    </u>			
20. <u>    </u>			
		137%	= Total Cover

Woody Vine Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>    </u>			
2. <u>    </u>			
		= Total Cover	

### Dominance Test worksheet:

Number of Dominant Species  
 That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant  
 Species Across All Strata: 3 (B)

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

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
That Are OBL, FACW, or FAC:	A/B
OBL species <u>72%</u>	x1 = <u>0.72</u>
FACW species <u>60%</u>	x2 = <u>1.2</u>
FAC species <u>    </u>	x3 = <u>    </u>
FACU species <u>5%</u>	x4 = <u>0.2</u>
UPL species <u>    </u>	x5 = <u>    </u>
Column Totals: <u>1.37</u> (A)	<u>2.12</u> (B)
Prevalence Index = B/A = <u>1.55</u>	

### Hydrophytic Vegetation Indicators:

X 1-Rapid Test for Hydrophytic Vegetation  
X 2-Dominance Test is >50%  
X 3-Prevalence Index is ≤3.0<sup>1</sup>  
     4-Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
     Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

### Hydrophytic Vegetation

Present? Yes X No     

Remarks: (Include photo numbers here or on a separate sheet.)

## SOIL

Sampling Point: DP3

[illegible]

## HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		
<b>Field Observations:</b>			
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	<input type="text" value="1"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text" value="18"/>
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	<input type="text" value="4"/>
(includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

Project/Site:	Duke Energy: Columbia Substation - Wetland 2		City/County:	Union Twp, Warren Count		Sampling Date:	7/5/2018	
Applicant/Owner:	Duke Energy		State:	OH	Sampling Point:	DP4		
Investigator(s):	Danielle K. Thompson; James Crumpler		Section, Township, Range:	n/a				
Landform (hillslope, terrace, etc.):	Stream Terrace		Local relief (concave, convex, none):			concave		
Slope (%):	2%	Lat:	39.361267	Long:	-84.221227	Datum:	NAD83 UTM16N	
Soil Map Unit Name: Hickory Clay Loam				NW1 classification:		none		

Are climatic / hydrologic conditions on the site typical for this time of year?				Yes	<u>X</u>	No	_____ (If no, explain in Remarks.)
Are Vegetation	_____	, Soil	<u>N</u>	, or Hydrology	<u>N</u>	significantly disturbed?	Are "Normal Circumstances" present? Yes <u>X</u> No _____
Are Vegetation	<u>N</u>	, Soil	<u>N</u>	, or Hydrology	<u>N</u>	naturally problematic?	(If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes _____	No <u>  x  </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>  x  </u>
Hydric Soil Present?	Yes _____	No <u>  x  </u>		
Wetland Hydrology Present?	Yes _____	No <u>  x  </u>		
Remarks:				

Tree <u>Stratum</u> (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <i>Robinia pseudoacacia</i>	10%	Yes	FACU	
2. <i>Fraxinus americana</i>	10%	Yes	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	20% = Total Cover			Total Number of Dominant Species Across All Strata: <u>6</u> (B)

[illegible][illegible]

Remarks: (Include photo numbers here or on a separate sheet.)	



## SOIL

Sampling Point: DP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16"	10YR 4/3	98	10YR 4/6	2	C	M	Clay Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators <sup>3</sup> :	Test Indicators of Hydric Soils:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>The hydric soil indicators have been updated to comply with the *Field Indicators of Hydric Soils in the United States*, Version 8.0, 2016.

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No	X
Type: _____				
Depth (inches): _____				

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	>18"
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	>18"
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	>18"
(includes capillary fringe)			
Wetland Hydrology Present?		Yes	No <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

DUKE ENERGY  
5484 – 138kV Columbia Substation

## APPENDIX

# D

ENDANGERED, THREATENED, AND  
RARE SPECIES CORRESPONDENCE



July 16, 2018

Mr. Dan Everson  
United States Fish and Wildlife Service  
Ecological Services Field Office  
4625 Morse Road, Suite 104  
Columbus, OH 43230

Cardno

11121 Canal Road  
Cincinnati, Ohio 45241  
USA

Phone 513 489 2402  
Fax 513 489 2404

[www.cardno.com](http://www.cardno.com)

**RE: F5484 kV 138 Columbia Substation Project  
Rare, Threatened, and Endangered Species Consultation  
South Lebanon and Hamilton Township, Warren County, Ohio**

Dear Mr. Everson:

Duke Energy (Duke) is proposing to expand the existing transmission line approximately 550 LF to facilitate the construction of the new Columbia Substation in addition to the removal and replacement of approximately 0.4 miles of existing transmission line, encompassing a total study corridor of 6.1 acres of existing 100-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW). A field investigation of the study corridor was conducted on July 5, 2018.

The project study area is located in the Village of South Lebanon and Hamilton Township, Warren County, Ohio. The location of the proposed Project is depicted on the attached South Lebanon (OH) USGS 7.5-minute topographic map excerpt (Figure 1).

Cardno was contracted by Duke to perform a boundary delineation and assessment of regulated waters, including wetlands, streams, ditches, and/or other federally regulated open waters, rare, threatened, endangered, and special habitat located within the proposed 0.4 miles of existing 100-ft wide ROW. The project study area was dominated by maintained ROW and secondary growth forest vegetation assemblages. Cardno botanists and ecologists conducted a habitat assessment to identify the presence of regulated waters, and potential Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and Running Buffalo Clover (*Trifolium stoloniferum*) habitat.

In accordance with the USFWS Section 7 ESA coordination requirements; the Project study area and its habitat characteristics has been summarized for you below.



1. Location data including latitude and longitude of the project area, site address, and county.

South Lebanon, Hamilton Township, Warren County, Ohio

Initiates: Duke Energy Structure 163 (39.3709, -84.2266)

Terminates: Duke Energy Structure 155 (39.3658, -84.2236)

2. A detailed project description, including layout of any new construction.

The proposed F5484 138kV Columbia Substation Project is necessary in order to facilitate the construction of the new Duke Columbia Substation as well as maintain the integrity of existing Duke structures to ensure adequate power supplies to current and future utility customers in the area. The project is also needed to ensure safety within the existing easements and remain in compliance with current transmission line standards. The transmission line route consists of an existing transmission line corridor and Duke Energy easement.

Construction will be accomplished largely through the use of bucket trucks with truck-mounted augers for structure installation and other construction vehicles transporting cable spools to install the transmission cable along the route. Excavation will be restricted to the locations where the installation of new structures (12 electrical poles) will occur. Earth moving activities are anticipated to be minimal. The extent of access disturbance can vary widely dependent upon many factors, including density and type of surface, vegetative cover, weather conditions, and the type of vehicles moving over the area. The existing vegetation will be preserved to the maximum extent practicable.

Project construction is expected to begin in Fall 2018.

3. A detailed description of onsite habitat, including the size, location, and quality of streams, wetlands, forested areas, and other natural areas, and proposed impacts.

The proposed F5484 kV138 Columbia Substation Project is linear in scope and will take place entirely within existing transmission line corridor and Duke Energy easement (Figure 1 & 2). Six potentially regulated waters including one ephemeral stream (Stream 1), two intermittent streams (Stream 3 and Stream 4), one perennial USGS-Little Miami River (Stream 2), one palustrine emergent wetland (Wetland 2), and one riverine forested wetland (Wetland 1) were identified within the project's Study Area. Specific attention was given to the presence of habitat suitable for federally endangered and threatened species – specifically, the Indiana bat (*Myotis sodalist*), the Northern Long-Eared bat (*Myotis septentrionalis*), and Running Buffalo Clover (*Trifolium stoloniferum*). To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the project study area was performed by Cardno botanists and ecologists. The result of these habitat assessments can be found below.

### **Maintained ROW**

The maintained ROW vegetation assemblage dominated the majority of the project study area. Vegetation present in this habitat type consisted of Canada Goldenrod (*Solidago canadensis*), Frank's Sedge (*Carex frankii*), White Ash seedlings (*Fraxinus americana*), Black Locust seedlings (*Robinia pseudoacacia*), Amur Honey Suckle (*Lonicera maackii*), Kentucky Bluegrass (*Poa pratensis*), Tall Fescue (*Festuca arundinacea*), Poison Ivy (*Toxicodendron radicans*), Grape Vine (*Vitis riparia*), Daisy Flea Bane (*Erigeron annuus*), White Clover (*Trifolium repens*), and Red Clover (*Trifolium pretense*). Although a formal study was not part of this scope, no potential habitat for listed species was identified within this habitat.

### **Secondary Growth Forest**

The secondary growth forest vegetation assemblage was located adjacent to the actively maintained ROW as well as within the riparian corridor of the Little Miami River (Stream 2). Dominant canopy species in this habitat type consisted of White Ash (*Fraxinus americana*), Bur Oak (*Quercus macrocarpa*), and Black Walnut (*Juglans nigra*). Less dominant species in this habitat type included Black Locust (*Robinia pseudoacacia*), Silver Maple (*Acer saccharinum*), Bitternut Hickory (*Carya cordiformis*), and Tree of Heaven (*Ailanthus altissima*). Understory vegetation was dominated by dense Bush Honeysuckle and Multiflora Rose (*Rosa multiflora*) with lesser amounts of White Ash and Tree of Heaven seedlings.

#### 4. A description of the forested habitat onsite, including type of forest, and presence of dead trees, split branches or trunks, and exfoliating bark, and proposed impacts.

Approximately 2.5 acres of the study area consisted of secondary growth forest located outside the actively maintained ROW and along the riparian corridor of the Little Miami River (Stream 2). Approximately 0.02 acres of secondary growth forest may need to be cleared to accommodate proposed access route from Duke Energy Structure 158 to Structure 161. Additionally, one dead ash tree will be cleared near Duke Energy Structure 162.

#### 5. Photographs representative of all cover types on the site and encompassing views of the entire site.

See the attached photograph log.

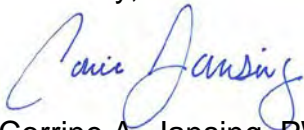
#### 6. Conclusion

Based on the physical site characteristics, the site contains moderate quality habitat for the federally endangered Indiana and NLE bat based on the woody species composition and intensity of surrounding land use. All tree clearing activities will be conducted during the USFWS recommended winter tree clearing window between November 15 and March 31.

We are requesting a review by your office and a written response regarding effects on federally listed threatened and/or endangered species and their critical habitat within the vicinity of the project area. Enclosed for your review are the project location map, aerial map and photograph log.

If you have any questions concerning this request or would like additional information, please do not hesitate to contact me at (513) 833-6392 or [Cori.Jansing@cardno.com](mailto:Cori.Jansing@cardno.com).

Sincerely,



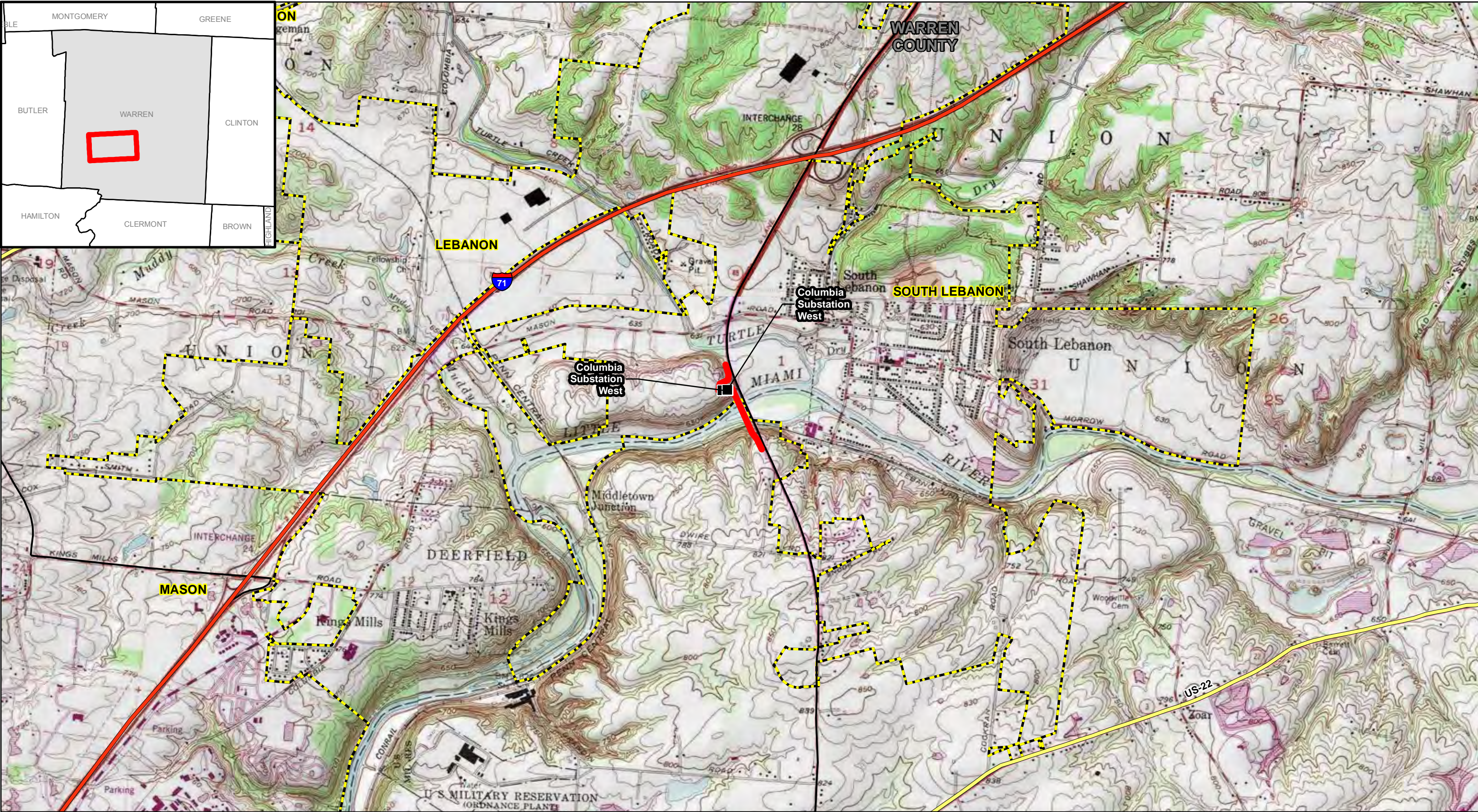
Corrine A. Jansing, PWS  
Botanist, Project Scientist  
for Cardno, Inc.

Enc: USGS map, Aerial Map, Site Plans, Photo Log

ATTACHMENTS:

PROJECT LOCATION MAP  
PROJECT AERIAL MAP  
SITE PLANS  
PHOTOGRAPH LOG



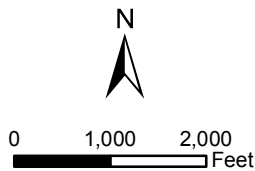


PROJECT LOCATION



WARREN COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: LEBANON AND SOUTH LEBANON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.



- |                    |                    |
|--------------------|--------------------|
| Project Centerline | Railroad           |
| Interstate         | County Boundary    |
| State Highway      | Municipal Boundary |
| US Highway         | Existing Facility  |

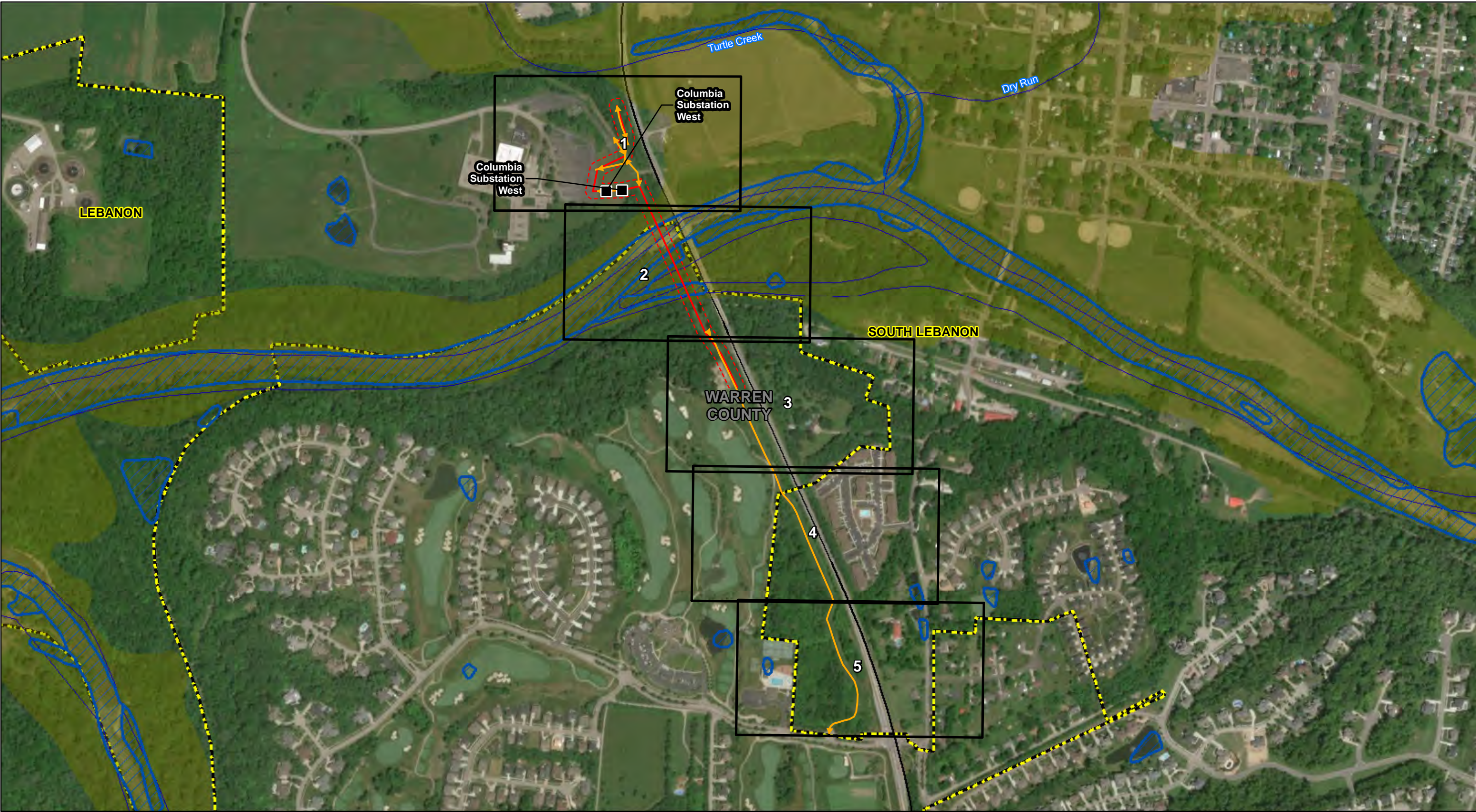


**FIGURE 1**  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
PROJECT VICINITY MAP

DRAWN BY: COD  
CHECKED: CJ

DATE: 7/5/2018  
APPROVED: JT





Project Location

REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

0 160 320 640 Feet 1 inch = 600 feet

N

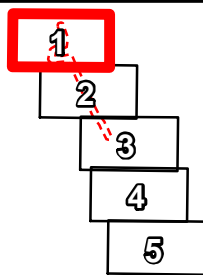
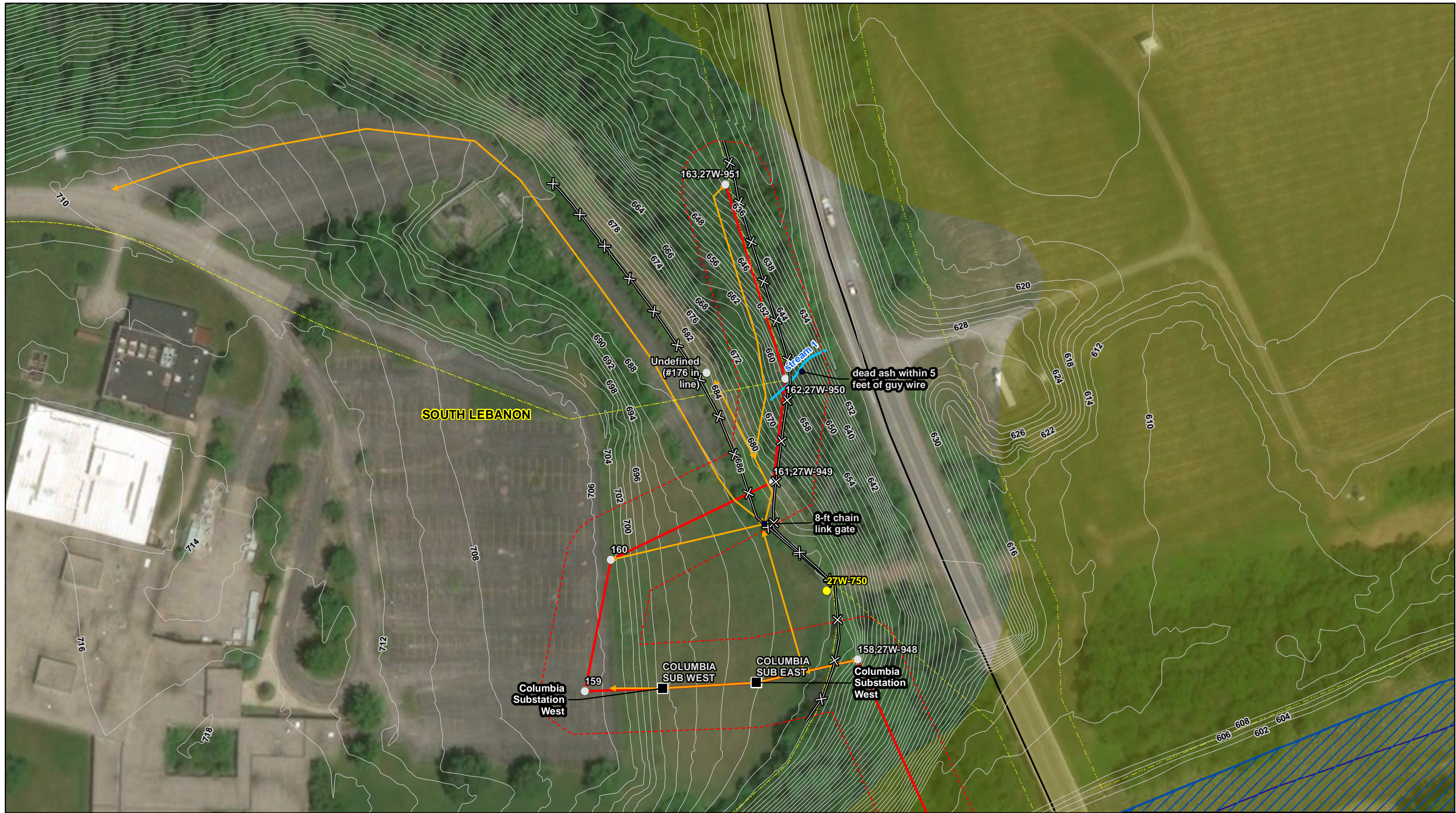
Existing Facility	US Highway	100yr Floodplain	Municipal Boundary
Sheet Index	Railroad	100ft Corridor	Proposed Access
Interstate	NWI Wetland	Project Centerline	
State Highway	NHD Flowline	County Boundary	

**FIGURE: 2**  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
ENVIRONMENTAL ACCESS INDEX SHEET

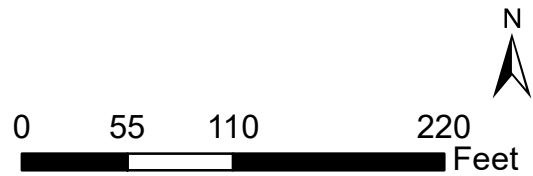
DRAWN BY: COD  
CHECKED: CJ

DATE: 7/11/2018  
APPROVED: JT





REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017



Existing Facility	100ft Corridor	Existing Grades	Railroad
Identified Feature	Delineated Wetland	Municipal Boundary	Little Miami River
Fence Line	Proposed Access	Interstate	NWI Wetland
Proposed Structure	Ditch	State Highway	NHD Flowline
Existing Structure	Delineated Stream	US Highway	100yr Floodplain
Parcels	Project Centerline		

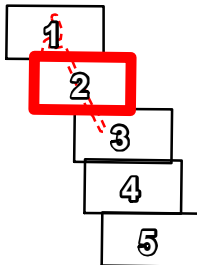
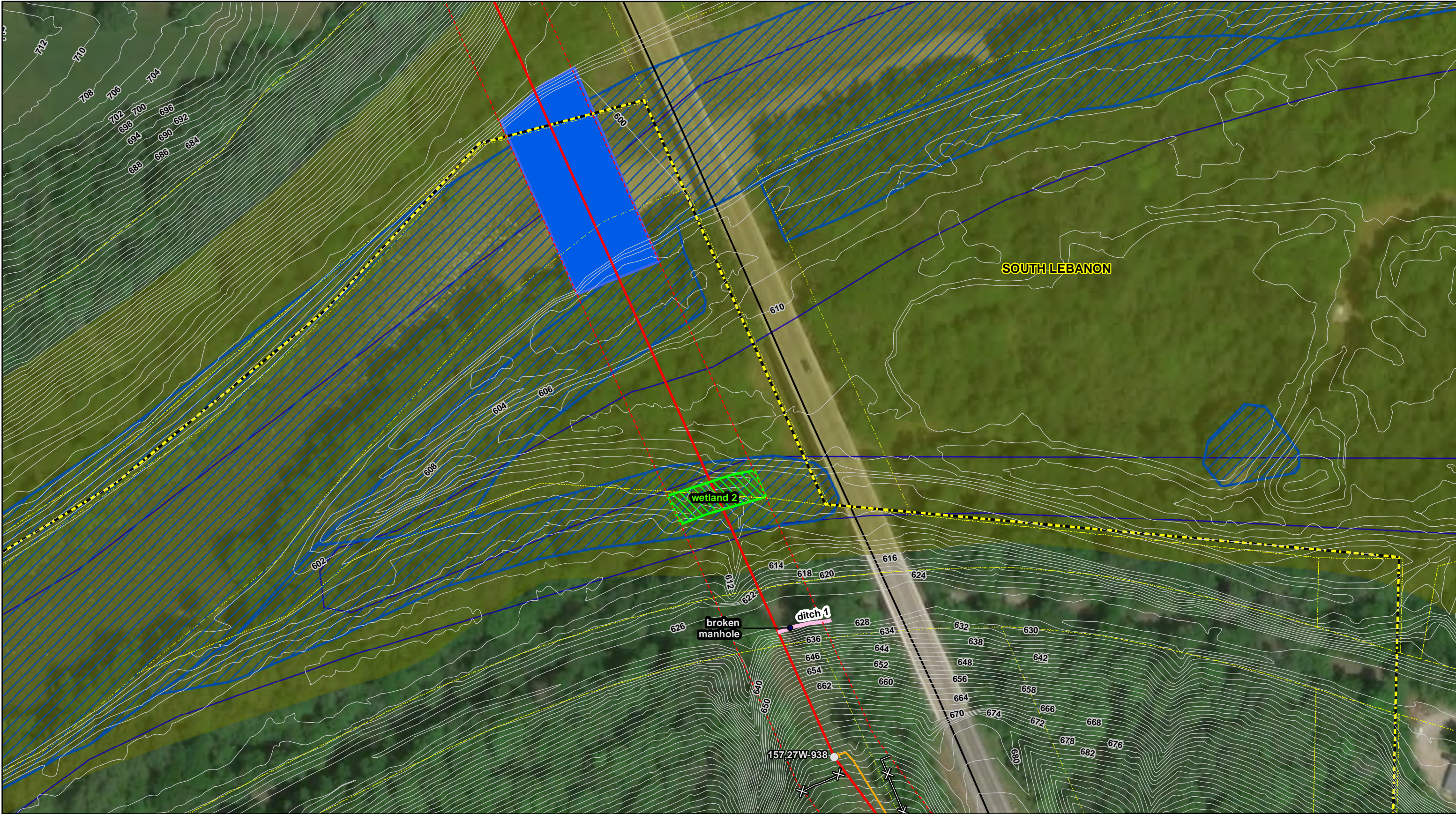


FIGURE: 2.01  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138KV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
ENVIRONMENTAL ACCESS PLAN

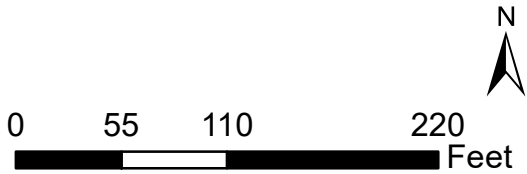
DRAWN BY: COD  
CHECKED: CJ

DATE: 7/13/2018  
APPROVED: JT





REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017



Existing Facility	100ft Corridor	Existing Grades	Railroad
Identified Feature	Delineated Wetland	Municipal Boundary	Little Miami River
Fence Line	Proposed Access	Interstate	NWI Wetland
Proposed Structure	Ditch	State Highway	NHD Flowline
Existing Structure	Delineated Stream	US Highway	100yr Floodplain
Parcels	Project Centerline		



FIGURE: 2.02  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138KV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
ENVIRONMENTAL ACCESS PLAN

DRAWN BY: COD  
CHECKED: CJ  
DATE: 7/13/2018  
APPROVED: JT





1

2

3

4

5

REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

055110220

Feet

Existing Facility

Identified Feature

Fence Line

Proposed Structure

Existing Structure

Parcels

100ft Corridor

Delineated Wetland

Proposed Access

Ditch

Delineated Stream

Project Centerline

Existing Grades

Municipal Boundary

Interstate

State Highway

US Highway

Railroad

Little Miami River

NWI Wetland

NHD Flowline

100yr Floodplain

DUKE ENERGY

Cardno

Shaping the Future

FIGURE: 2.03

LINE ENVIRONMENTAL ASSESSMENT

F5484 – 138kV COLUMBIA SUBSTATION

REBUILD AND EXTENSION

DUKE ENERGY

ENVIRONMENTAL ACCESS PLAN

DRAWN BY: COD

CHECKED: CJ

DATE: 7/13/2018

APPROVED: JT

\\cardno.corp\Global\US\Shared\CJFNProjects\Projects\15\156\156720M\_DukeEnergy9193\M59\_SOW22\_5484 138kVColumbiaSubstation\GIS\MXD\LineEnvironmentAssessment\L2\_Access\_M59.mxd





1

2

3

4

5

REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 55 110 220 Feet

Existing Facility	100ft Corridor	Existing Grades	Railroad
Identified Feature	Delineated Wetland	Municipal Boundary	Little Miami River
Fence Line	Proposed Access	Interstate	NWI Wetland
Proposed Structure	Ditch	State Highway	NHD Flowline
Existing Structure	Delineated Stream	US Highway	100yr Floodplain
Parcels	Project Centerline		

DUKE ENERGY

Cardno  
Shaping the Future

FIGURE: 2.04

LINE ENVIRONMENTAL ASSESSMENT

F5484 – 138kV COLUMBIA SUBSTATION

REBUILD AND EXTENSION

DUKE ENERGY

ENVIRONMENTAL ACCESS PLAN

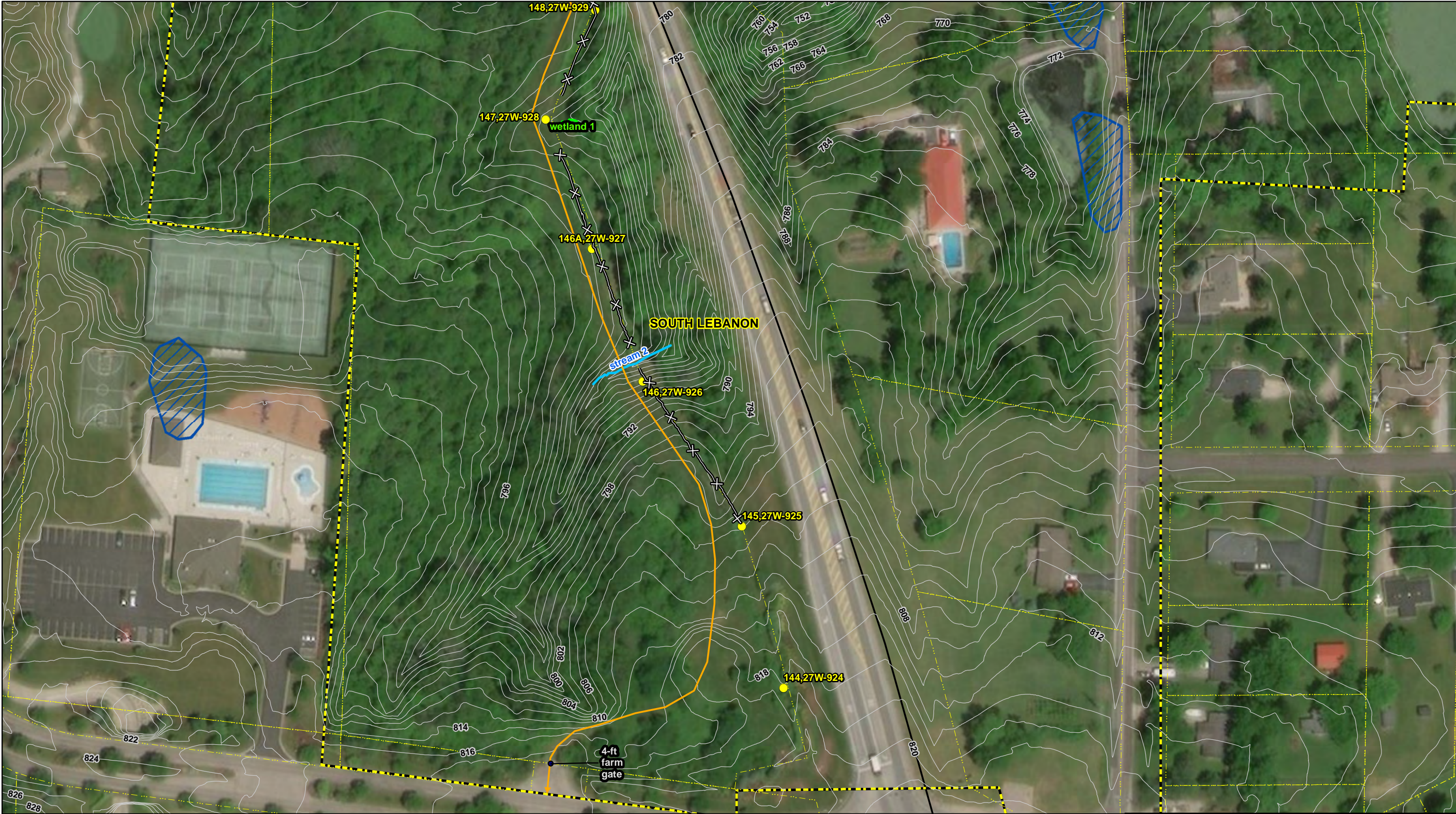
DRAWN BY: COD

CHECKED: CJ

DATE: 7/13/2018

APPROVED: JT





1

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REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 55 110 220 Feet

Existing Facility

Identified Feature

Fence Line

Proposed Structure

Existing Structure

Parcels

100ft Corridor

Delineated Wetland

Proposed Access

Ditch

Delineated Stream

Project Centerline

Existing Grades

Municipal Boundary

Interstate

State Highway

US Highway

Railroad

Little Miami River

NWI Wetland

NHD Flowline

100yr Floodplain

DUKE ENERGY

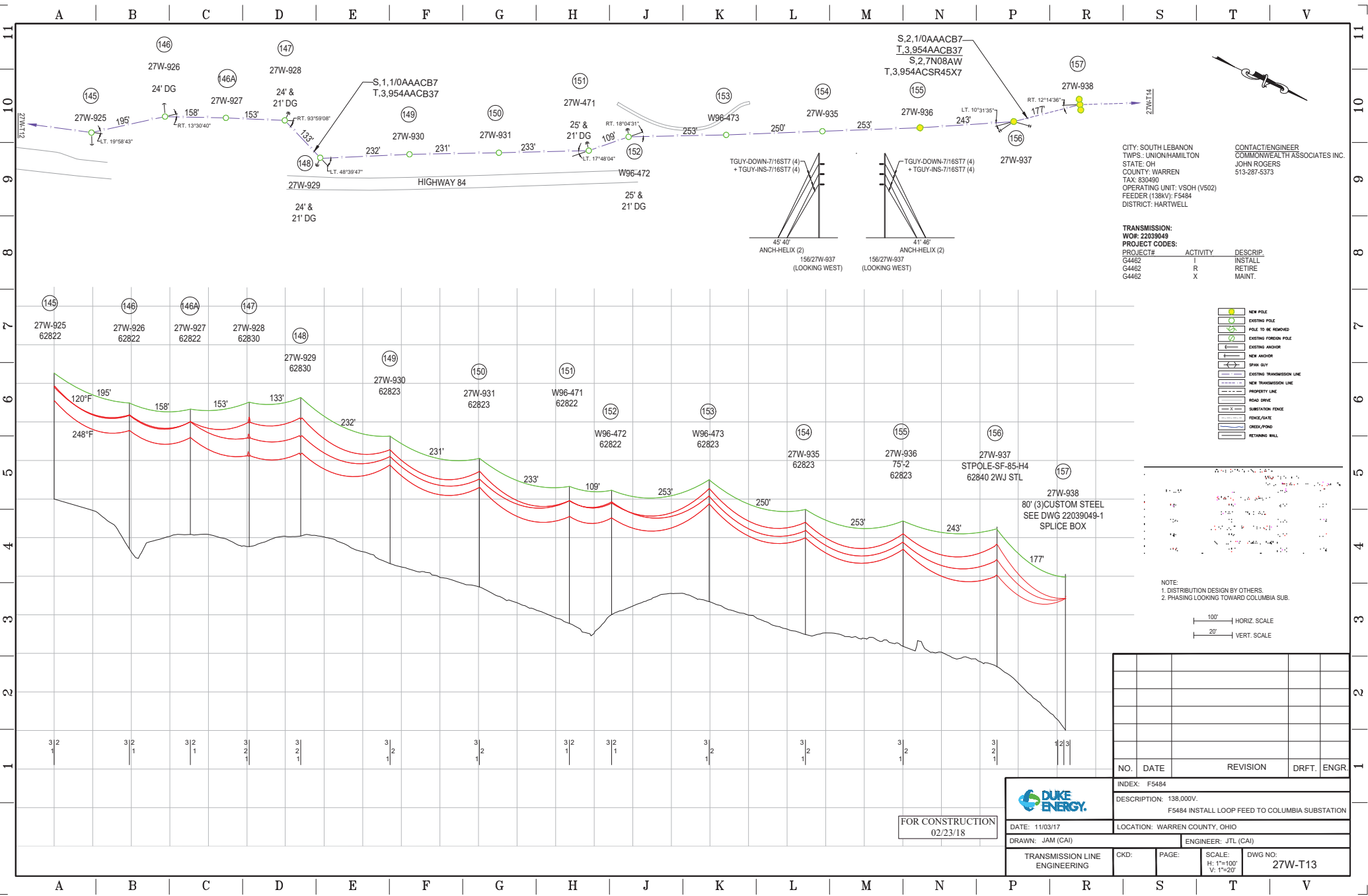
Cardno  
Shaping the Future

FIGURE: 2.05  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
ENVIRONMENTAL ACCESS PLAN

DRAWN BY: COD  
CHECKED: CJ

DATE: 7/13/2018  
APPROVED: JT





CITY: SOUTH LEBANON  
TOWNSHIP: UNION/HAMILTON  
STATE: OH  
COUNTY: WARREN  
TAX: 630490  
OPERATING UNIT: VSOH (V502)  
FEEDER (138KV): F5484  
DISTRICT: HARTWELL

CONTACT/ENGINEER  
COMMONWEALTH ASSOCIATES INC.  
JOHN ROGERS  
513-287-5373

TRANSMISSION:  
WO#: 22039049  
PROJECT CODES:  
PROJECT# ACTIVITY DESCRIP.  
G4462 I INSTALL  
G4462 R RETIRE  
G4462 X MAINT.

- NEW POLE
- EXISTING POLE
- POLE TO BE REMOVED
- EXISTING TOWER POLE
- EXISTING ANCHOR
- NEW ANCHOR
- SPAN GUY
- EXISTING TRANSMISSION LINE
- NEW TRANSMISSION LINE
- PROPERTY LINE
- ROAD DRIVE
- SUBSTATION FENCE
- FENCE/GATE
- CREAK/POND
- RETAINING WALL

NOTE:  
1. DISTRIBUTION DESIGN BY OTHERS.  
2. PHASING LOOKING TOWARD COLUMBIA SUB.

100' HORIZ. SCALE  
20' VERT. SCALE

NO.	DATE	REVISION	DRFT.	ENGR.

DUKE ENERGY		INDEX: F5484	
DATE: 11/03/17		LOCATION: WARREN COUNTY, OHIO	
DRAWN: JAM (CAI)		ENGINEER: JTL (CAI)	
TRANSMISSION LINE ENGINEERING		CKD:	PAGE:
SCALE: H: 1"=100' V: 1"=20'		DWG NO: 27W-T13	

FOR CONSTRUCTION  
02/23/18

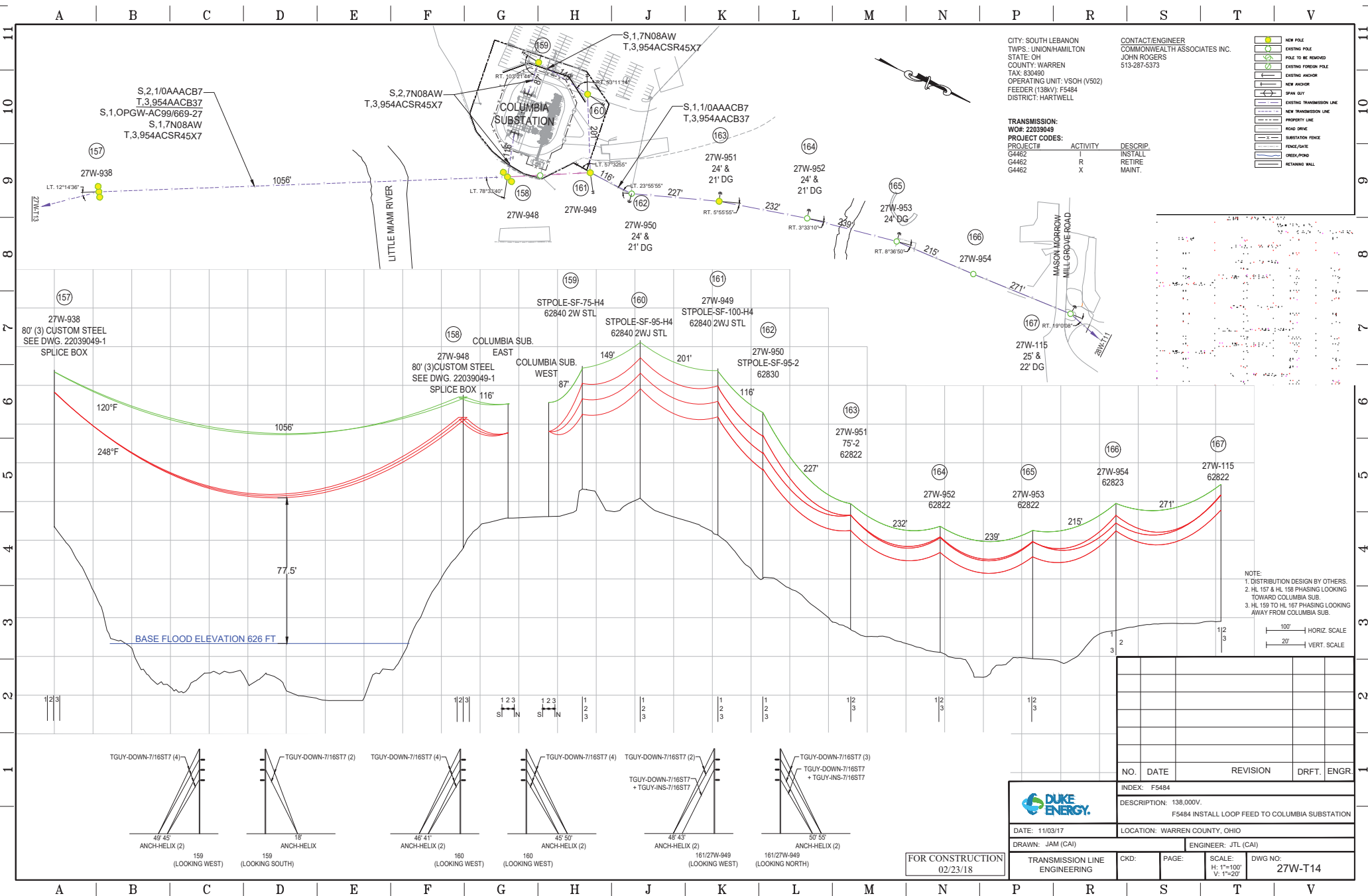






Photo 1. Stream 1, ephemeral, facing downstream.



Photo 2. Stream 2, Little Miami River, looking downstream.



Photo 3. Overview of Wetland 1, located adjacent to Little Miami River.



Photo 4. Ditch 1.





Photo 5. Stream 3, intermittent, facing upstream.



Photo 6. View of Wetland 2, facing west.



Photo 7: Stream 4, intermittent, facing downstream.



Photo 8: Manhole, located in Ditch 1.





July 16, 2018

Mr. John Kessler  
Ohio Department of Natural Resources  
Office of Real Estate  
2045 Morse Road, Building E-2  
Columbus, OH 43230

Cardno

11121 Canal Road  
Cincinnati, Ohio 45241  
USA

Phone 513 489 2402  
Fax 513 489 2404

[www.cardno.com](http://www.cardno.com)

**RE: F5484 kV 138 Columbia Substation Project  
Rare, Threatened, and Endangered Species Consultation  
South Lebanon and Hamilton Township, Warren County, Ohio**

Dear Mr. Kessler:

Duke Energy (Duke) is proposing to expand the existing transmission line approximately 550 LF to facilitate the construction of the new Columbia Substation in addition to the removal and replacement of approximately 0.4 miles of existing transmission line, encompassing a total study corridor of 6.1 acres of existing 100-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW). A field investigation of the study corridor was conducted on July 5, 2018.

The project study area is located in the Village of South Lebanon and Hamilton Township, Warren County, Ohio. The location of the proposed Project is depicted on the attached South Lebanon (OH) USGS 7.5-minute topographic map excerpt (Figure 1).

Cardno was contracted by Duke to perform a boundary delineation and assessment of regulated waters, including wetlands, streams, ditches, and/or other federally regulated open waters, rare, threatened, endangered, and special habitat located within the proposed 0.4 miles of existing 100-ft wide ROW. The project study area was dominated by maintained ROW and secondary growth forest vegetation assemblages. Cardno botanists and ecologists conducted a habitat assessment to identify the presence of regulated waters, and potential Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and Running Buffalo Clover (*Trifolium stoloniferum*) habitat.

In accordance with the USFWS Section 7 ESA coordination requirements; the Project study area and its habitat characteristics has been summarized for you below.

1. Location data including latitude and longitude of the project area, site address, and county.

South Lebanon, Hamilton Township, Warren County, Ohio

Initiates: Duke Energy Structure 163 (39.3709, -84.2266)

Terminates: Duke Energy Structure 155 (39.3658, -84.2236)

2. A detailed project description, including layout of any new construction.

The proposed F5484 138kV Columbia Substation Project is necessary in order to facilitate the construction of the new Duke Columbia Substation as well as maintain the integrity of existing Duke structures to ensure adequate power supplies to current and future utility customers in the area. The project is also needed to ensure safety within the existing easements and remain in compliance with current transmission line standards. The transmission line route consists of an existing transmission line corridor and Duke Energy easement.

Construction will be accomplished largely through the use of bucket trucks with truck-mounted augers for structure installation and other construction vehicles transporting cable spools to install the transmission cable along the route. Excavation will be restricted to the locations where the installation of new structures (12 electrical poles) will occur. Earth moving activities are anticipated to be minimal. The extent of access disturbance can vary widely dependent upon many factors, including density and type of surface, vegetative cover, weather conditions, and the type of vehicles moving over the area. The existing vegetation will be preserved to the maximum extent practicable.

Project construction is expected to begin in Fall 2018.

3. A detailed description of onsite habitat, including the size, location, and quality of streams, wetlands, forested areas, and other natural areas, and proposed impacts.

The proposed F5484 kV138 Columbia Substation Project is linear in scope and will take place entirely within existing transmission line corridor and Duke Energy easement (Figure 1 & 2). Six potentially regulated waters including one ephemeral stream (Stream 1), two intermittent streams (Stream 3 and Stream 4), one perennial USGS-Little Miami River (Stream 2), one palustrine emergent wetland (Wetland 2), and one riverine forested wetland (Wetland 1) were identified within the project's Study Area. Specific attention was given to the presence of habitat suitable for federally endangered and threatened species – specifically, the Indiana bat (*Myotis sodalists*), the Northern Long-Eared bat (*Myotis septentrionalis*), and Running Buffalo Clover (*Trifolium stoloniferum*). To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the project study area was performed by Cardno botanists and ecologists. The result of these habitat assessments can be found below.

### **Maintained ROW**

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### **Secondary Growth Forest**

The secondary growth forest vegetation assemblage was located adjacent to the actively maintained ROW as well as within the riparian corridor of the Little Miami River (Stream 2). Dominant canopy species in this habitat type consisted of White Ash (*Fraxinus americana*), Bur Oak (*Quercus macrocarpa*), and Black Walnut (*Juglans nigra*). Less dominant species in this habitat type included Black Locust (*Robinia pseudoacacia*), Silver Maple (*Acer saccharinum*), Bitternut Hickory (*Carya cordiformis*), and Tree of Heaven (*Ailanthus altissima*). Understory vegetation was dominated by dense Bush Honeysuckle and Multiflora Rose (*Rosa multiflora*) with lesser amounts of White Ash and Tree of Heaven seedlings.

#### 4. A description of the forested habitat onsite, including type of forest, and presence of dead trees, split branches or trunks, and exfoliating bark, and proposed impacts.

Approximately 2.5 acres of the study area consisted of secondary growth forest located outside the actively maintained ROW and along the riparian corridor of the Little Miami River (Stream 2). Approximately 0.02 acres of secondary growth forest may need to be cleared to accommodate proposed access route from Duke Energy Structure 158 to Structure 161. Additionally, one dead ash tree will be cleared near Duke Energy Structure 162.

#### 5. Photographs representative of all cover types on the site and encompassing views of the entire site.

See the attached photograph log.

#### 6. Conclusion

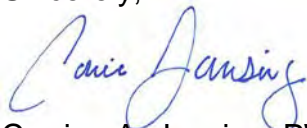
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We are requesting a review by your office and a written response regarding effects on federally listed threatened and/or endangered species and their critical habitat within the vicinity of the

project area. Enclosed for your review are the project location map, aerial map and photograph log.

If you have any questions concerning this request or would like additional information, please do not hesitate to contact me at (513) 833-6392 or [Cori.Jansing@cardno.com](mailto:Cori.Jansing@cardno.com).

Sincerely,



Corrine A. Jansing, PWS  
Botanist, Project Scientist  
for Cardno, Inc.

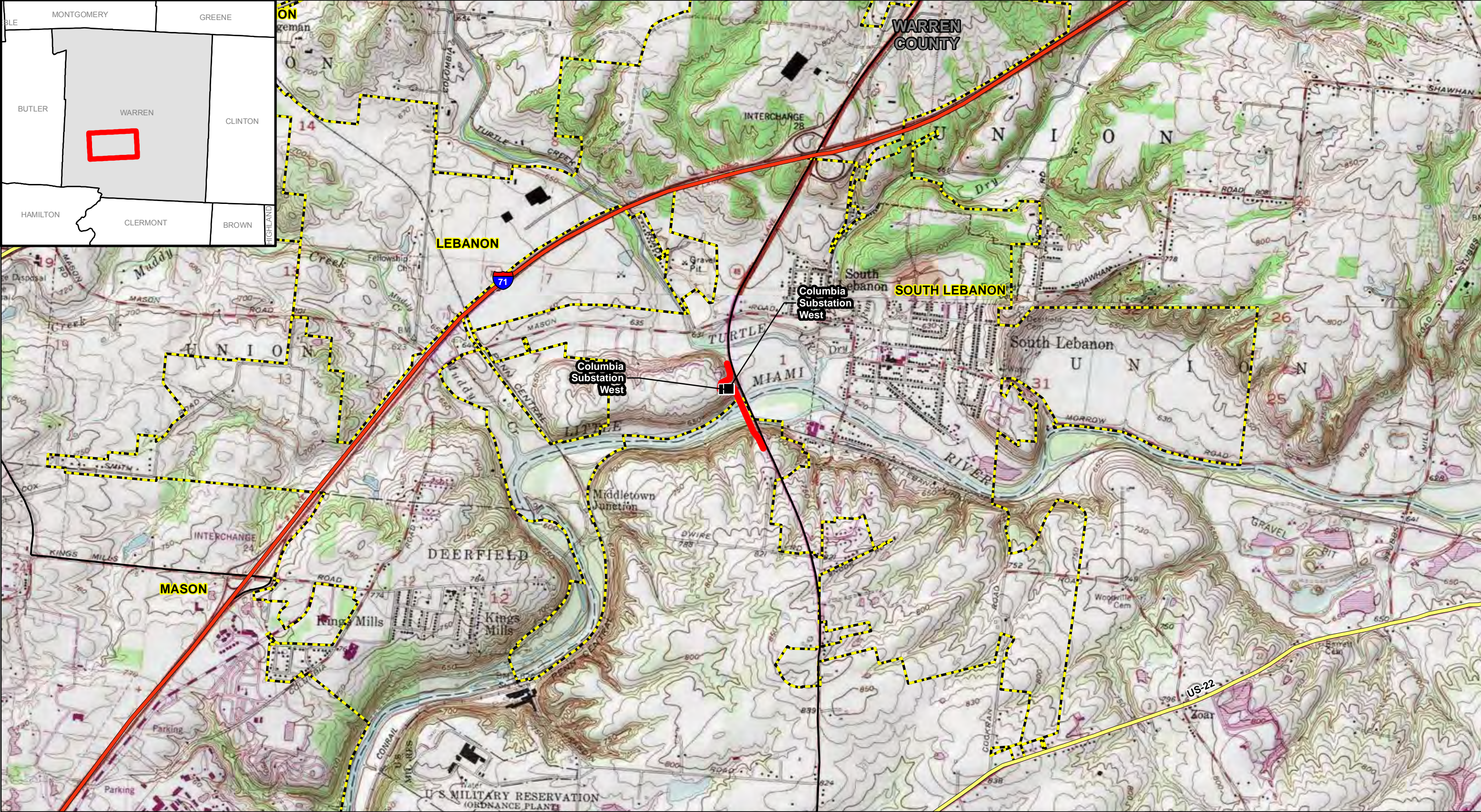
Enc: USGS map, Aerial Map, Site Plans, Photo Log, GIS Shapefile



ATTACHMENTS:

PROJECT LOCATION MAP  
PROJECT AERIAL MAP  
SITE PLANS  
PHOTOGRAPH LOG





REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: LEBANON AND SOUTH LEBANON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

0 1,000 2,000 Feet

- |                    |                    |
|--------------------|--------------------|
| Project Centerline | Railroad           |
| Interstate         | County Boundary    |
| State Highway      | Municipal Boundary |
| US Highway         | Existing Facility  |

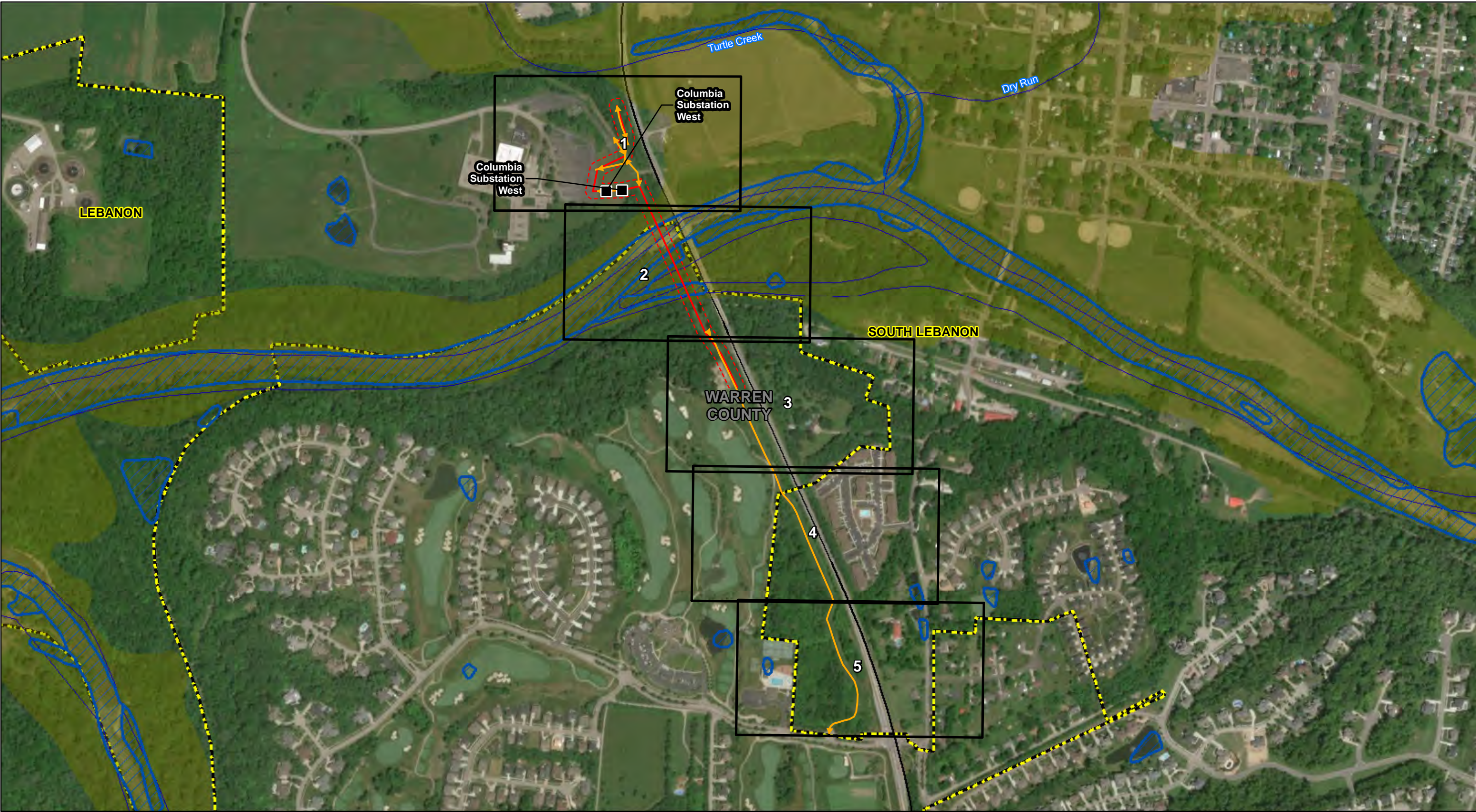


**FIGURE 1**  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
PROJECT VICINITY MAP

DRAWN BY: COD  
CHECKED: CJ

DATE: 7/5/2018  
APPROVED: JT





REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

0 160 320 640 Feet 1 inch = 600 feet

N

Existing Facility	US Highway	100yr Floodplain	Municipal Boundary
Sheet Index	Railroad	100ft Corridor	Proposed Access
Interstate	NWI Wetland	Project Centerline	
State Highway	NHD Flowline	County Boundary	

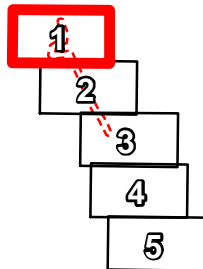
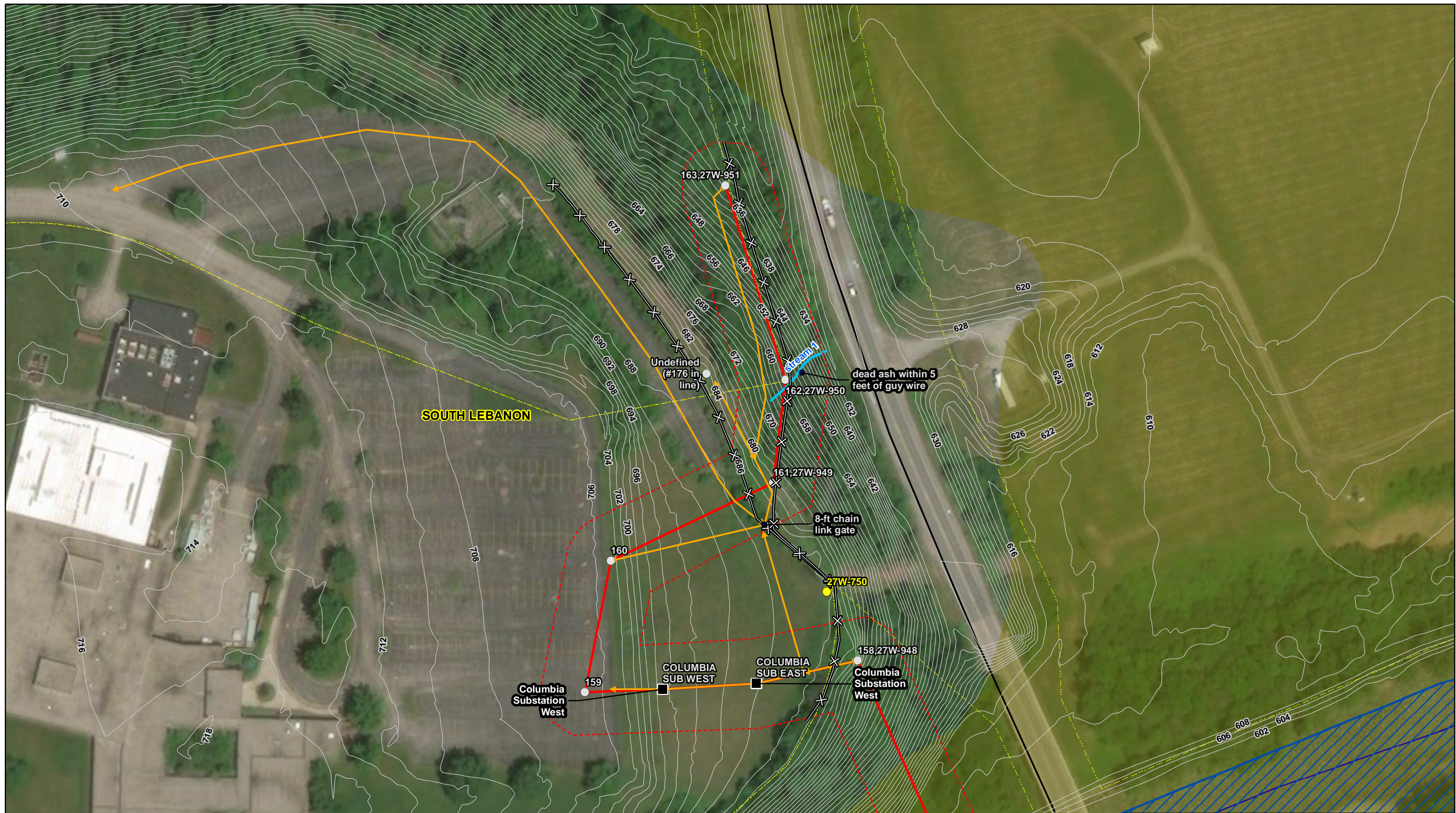


**FIGURE: 2**  
**LINE ENVIRONMENTAL ASSESSMENT**  
**F5484 – 138kV COLUMBIA SUBSTATION**  
**REBUILD AND EXTENSION**  
**DUKE ENERGY**  
**ENVIRONMENTAL ACCESS INDEX SHEET**

DRAWN BY: COD  
CHECKED: CJ

DATE: 7/11/2018  
APPROVED: JT





REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

0 55 110 220 Feet

N

- |                      |                    |                    |                    |
|----------------------|--------------------|--------------------|--------------------|
| ■ Existing Facility  | 100ft Corridor     | Existing Grades    | Railroad           |
| ● Identified Feature | Delineated Wetland | Municipal Boundary | Little Miami River |
| ✕ Fence Line         | Proposed Access    | Interstate         | NWI Wetland        |
| ○ Proposed Structure | Ditch              | State Highway      | NHD Flowline       |
| ● Existing Structure | Delineated Stream  | US Highway         | 100yr Floodplain   |
| Parcels              | Project Centerline |                    |                    |

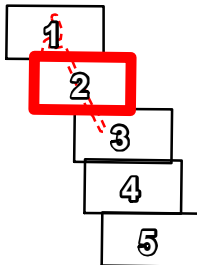
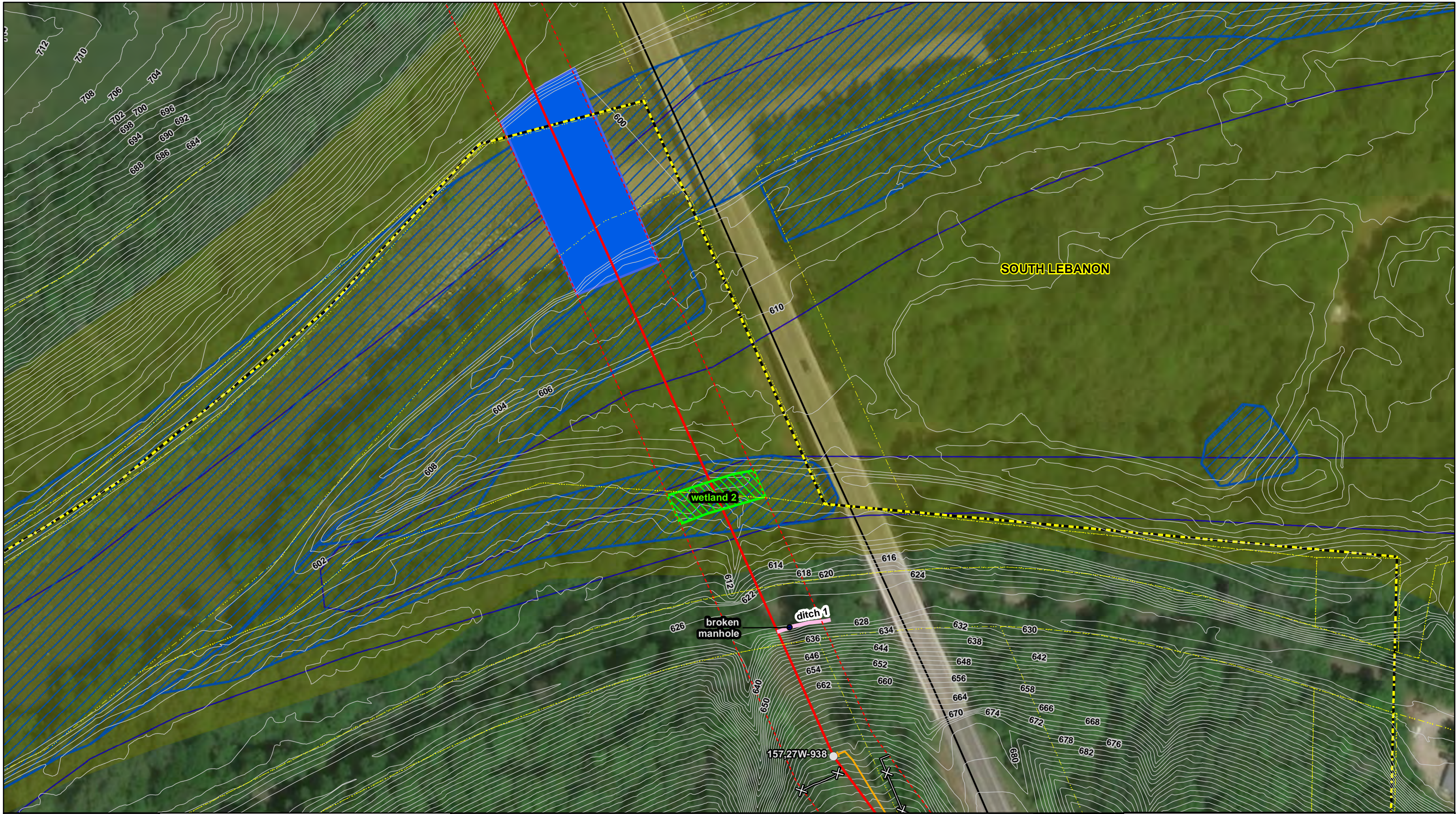


**FIGURE: 2.01**  
**LINE ENVIRONMENTAL ASSESSMENT**  
**F5484 – 138kV COLUMBIA SUBSTATION**  
**REBUILD AND EXTENSION**  
**DUKE ENERGY**  
**ENVIRONMENTAL ACCESS PLAN**

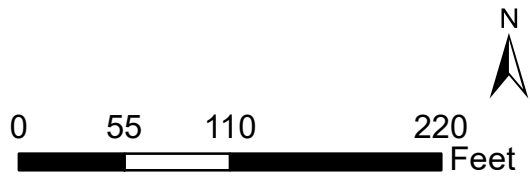
DRAWN BY: COD  
CHECKED: CJ

DATE: 7/13/2018  
APPROVED: JT





REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017



Existing Facility	100ft Corridor	Existing Grades	Railroad
Identified Feature	Delineated Wetland	Municipal Boundary	Little Miami River
Fence Line	Proposed Access	Interstate	NWI Wetland
Proposed Structure	Ditch	State Highway	NHD Flowline
Existing Structure	Delineated Stream	US Highway	100yr Floodplain
Parcels	Project Centerline		



FIGURE: 2.02  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
ENVIRONMENTAL ACCESS PLAN

DRAWN BY: COD  
CHECKED: CJ  
DATE: 7/13/2018  
APPROVED: JT





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REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 55 110 220 Feet

Existing Facility	100ft Corridor	Existing Grades	Railroad
Identified Feature	Delineated Wetland	Municipal Boundary	Little Miami River
Fence Line	Proposed Access	Interstate	NWI Wetland
Proposed Structure	Ditch	State Highway	NHD Flowline
Existing Structure	Delineated Stream	US Highway	100yr Floodplain
Parcels	Project Centerline		

**FIGURE: 2.03**  
**LINE ENVIRONMENTAL ASSESSMENT**  
**F5484 – 138kV COLUMBIA SUBSTATION**  
**REBUILD AND EXTENSION**  
**DUKE ENERGY**  
**ENVIRONMENTAL ACCESS PLAN**

DRAWN BY: COD

CHECKED: CJ

DATE: 7/13/2018

APPROVED: JT





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REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 55 110 220 Feet

<div>Existing Facility</div> <div>Identified Feature</div> <div>Fence Line</div> <div>Proposed Structure</div> <div>Existing Structure</div> <div>Parcels</div>	<div>100ft Corridor</div> <div>Delineated Wetland</div> <div>Proposed Access</div> <div>Ditch</div> <div>Delineated Stream</div> <div>Project Centerline</div>	<div>Existing Grades</div> <div>Municipal Boundary</div> <div>Interstate</div> <div>State Highway</div> <div>US Highway</div>	<div>Railroad</div> <div>Little Miami River</div> <div>NWI Wetland</div> <div>NHD Flowline</div> <div>100yr Floodplain</div>
---	--	---	--

DUKE ENERGY

Cardno

Shaping the Future

FIGURE: 2.04

LINE ENVIRONMENTAL ASSESSMENT

F5484 – 138kV COLUMBIA SUBSTATION

REBUILD AND EXTENSION

DUKE ENERGY

ENVIRONMENTAL ACCESS PLAN

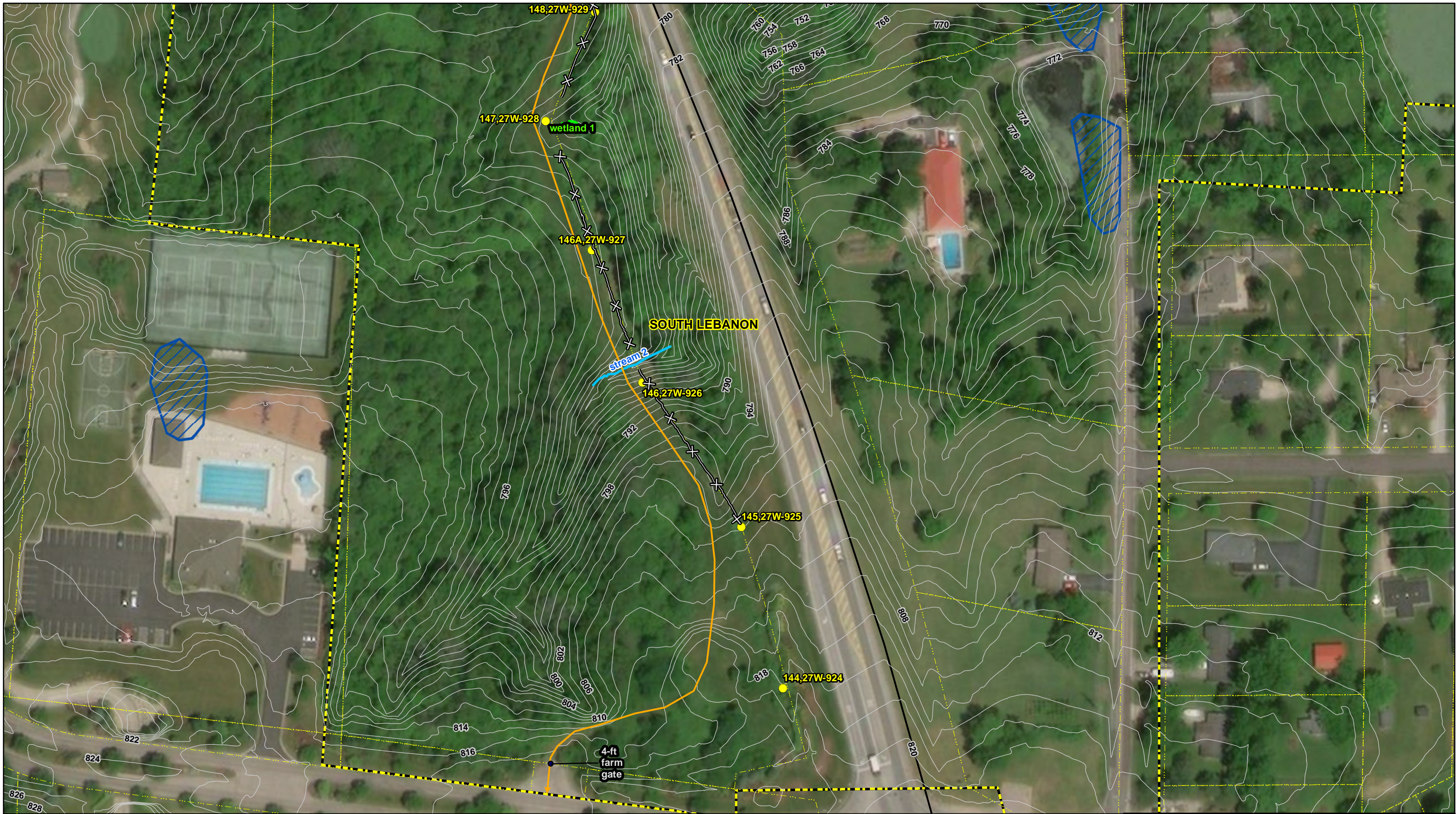
DRAWN BY: COD

CHECKED: CJ

DATE: 7/13/2018

APPROVED: JT





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REFERENCE:  
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD  
IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

055110220

Feet

Existing Facility

Identified Feature

Fence Line

Proposed Structure

Existing Structure

Parcels

100ft Corridor

Delineated Wetland

Proposed Access

Ditch

Delineated Stream

Project Centerline

Existing Grades

Municipal Boundary

Interstate

State Highway

US Highway

Railroad

Little Miami River

NWI Wetland

NHD Flowline

100yr Floodplain

DUKE ENERGY

Cardno  
Shaping the Future

FIGURE: 2.05

LINE ENVIRONMENTAL ASSESSMENT

F5484 – 138kV COLUMBIA SUBSTATION

REBUILD AND EXTENSION

DUKE ENERGY

ENVIRONMENTAL ACCESS PLAN

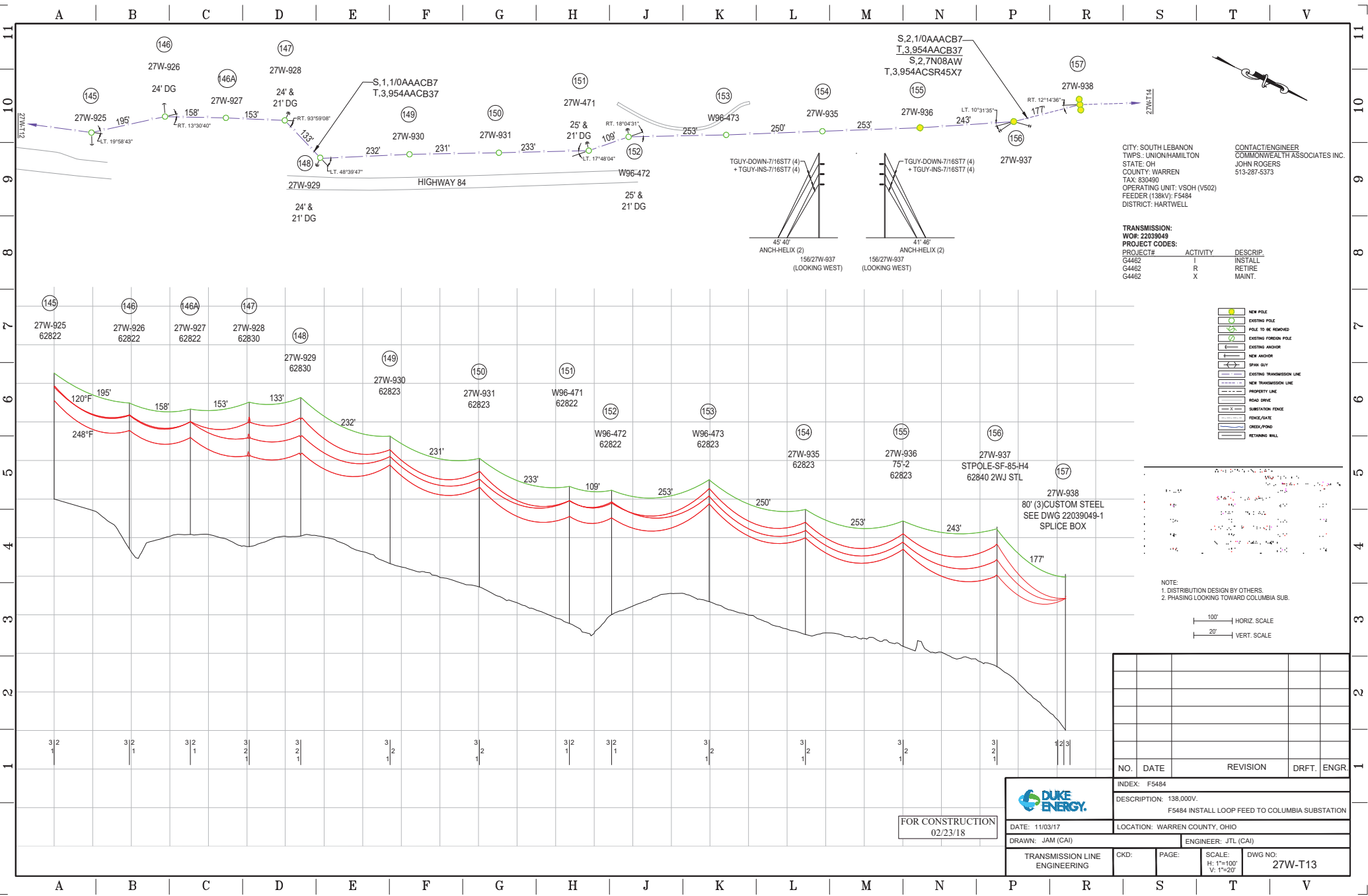
DRAWN BY: COD

CHECKED: CJ

DATE: 7/13/2018

APPROVED: JT



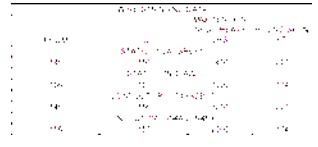


CITY: SOUTH LEBANON  
TOWNSHIP: UNION/HAMILTON  
STATE: OH  
COUNTY: WARREN  
TAX: 630490  
OPERATING UNIT: VSOH (V502)  
FEEDER (138KV): F5484  
DISTRICT: HARTWELL

CONTACT/ENGINEER  
COMMONWEALTH ASSOCIATES INC.  
JOHN ROGERS  
513-287-5373

TRANSMISSION:  
WO#: 22039049  
PROJECT CODES:  
PROJECT# ACTIVITY DESCRIP.  
G4462 I INSTALL  
G4462 R RETIRE  
G4462 X MAINT.

- NEW POLE
- EXISTING POLE
- POLE TO BE REMOVED
- EXISTING TOWER POLE
- EXISTING ANCHOR
- NEW ANCHOR
- SPAN GUY
- EXISTING TRANSMISSION LINE
- NEW TRANSMISSION LINE
- PROPERTY LINE
- ROAD DRIVE
- SUBSTATION FENCE
- FENCE/GATE
- CREAK/POND
- RETAINING WALL



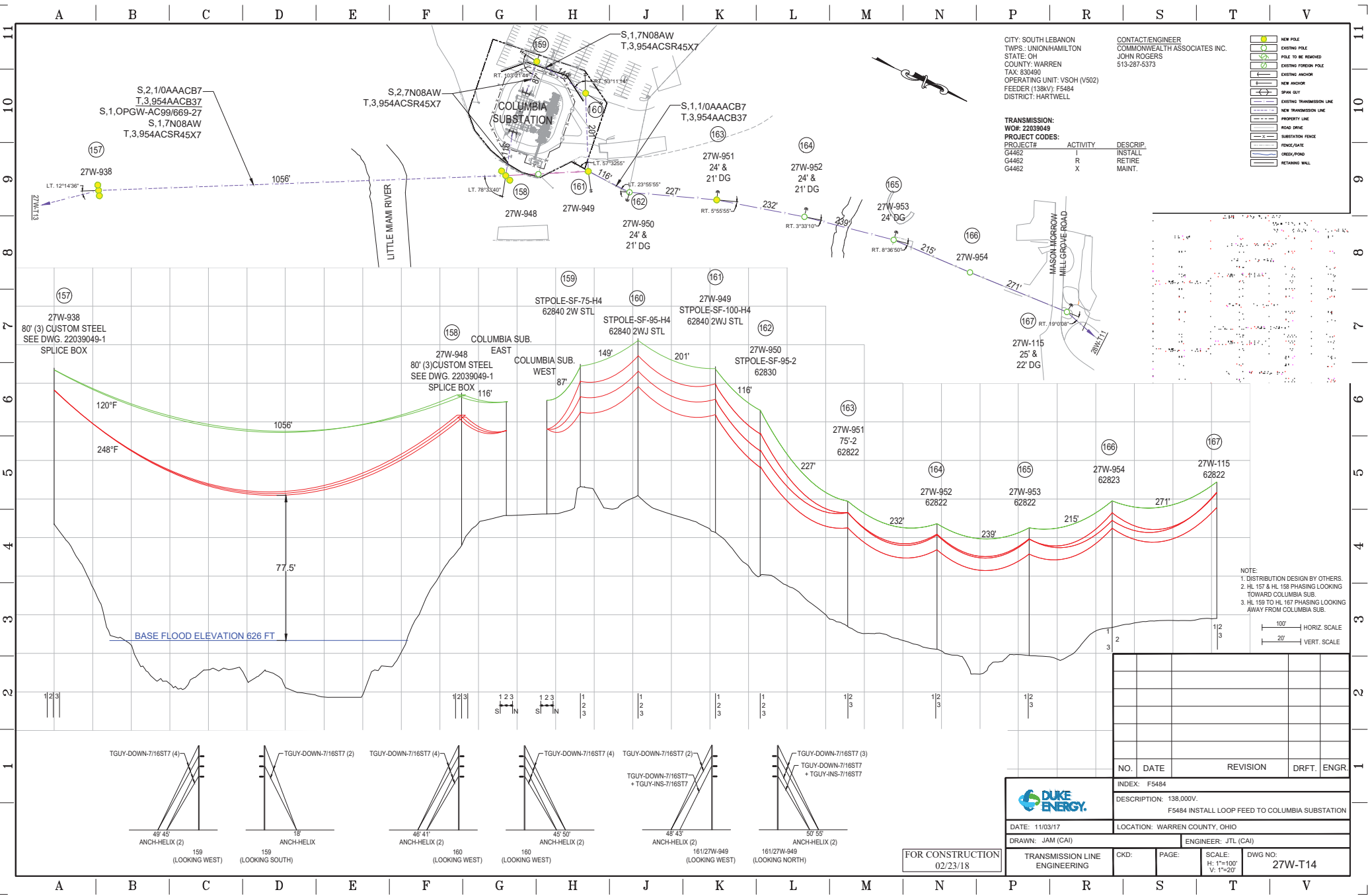
NOTE:  
1. DISTRIBUTION DESIGN BY OTHERS.  
2. PHASING LOOKING TOWARD COLUMBIA SUB.

100' HORIZ. SCALE  
20' VERT. SCALE

NO.	DATE	REVISION	DRFT.	ENGR.

FOR CONSTRUCTION  
02/23/18

		INDEX: F5484	
DATE: 11/03/17		LOCATION: WARREN COUNTY, OHIO	
DRAWN: JAM (CAI)		ENGINEER: JTL (CAI)	
TRANSMISSION LINE ENGINEERING		CKD:	PAGE:
		SCALE: H: 1"=100' V: 1"=20'	DWG NO: 27W-T13

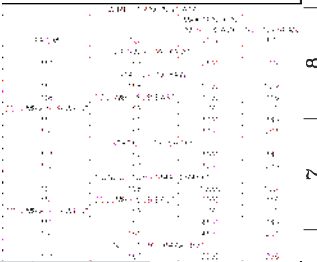


CITY: SOUTH LEBANON  
TOWNSHIP: UNION/HAMILTON  
STATE: OH  
COUNTY: WARREN  
TAX: 530400  
OPERATING UNIT: VSOH (V502)  
FEEDER (138kV): F5484  
DISTRICT: HARTWELL

CONTACT/ENGINEER  
COMMONWEALTH ASSOCIATES INC.  
JOHN ROGERS  
513-287-5373

TRANSMISSION:  
WOP: 22039049  
PROJECT CODES:  
PROJECT# ACTIVITY DESCRIP.  
G4462 R INSTALL  
G4462 X RETIRE  
G4462 MAINT.

LEGEND:  
NEW POLE  
EXISTING POLE  
POLE TO BE REMOVED  
EXISTING FOREIGN POLE  
EXISTING ANCHOR  
NEW ANCHOR  
SPAN GUY  
EXISTING TRANSMISSION LINE  
NEW TRANSMISSION LINE  
PROPERTY LINE  
ROAD DRIVE  
WISCONSIN FENCE  
FENCE/GATE  
CREEK/POND  
RETAINING WALL



NOTE:  
1. DISTRIBUTION DESIGN BY OTHERS.  
2. HL 157 & HL 158 PHASING LOOKING TOWARD COLUMBIA SUB.  
3. HL 159 TO HL 167 PHASING LOOKING AWAY FROM COLUMBIA SUB.

100' HORIZ. SCALE  
20' VERT. SCALE

NO.		DATE	REVISION	DRFT.	ENGR.
INDEX:		F5484			
DESCRIPTION:		138.000V. F5484 INSTALL LOOP FEED TO COLUMBIA SUBSTATION			
DATE:		11/03/17		LOCATION: WARREN COUNTY, OHIO	
DRAWN:		JAM (CAI)		ENGINEER: JTL (CAI)	
TRANSMISSION LINE ENGINEERING		CKD:	PAGE:	SCALE: H: 1"=100' V: 1"=20'	DWG NO: 27W-T14

FOR CONSTRUCTION  
02/23/18





Photo 1. Stream 1, ephemeral, facing downstream.



Photo 2. Stream 2, Little Miami River, looking downstream.



Photo 3. Overview of Wetland 1, located adjacent to Little Miami River.



Photo 4. Ditch 1.





Photo 5. Stream 3, intermittent, facing upstream.



Photo 6. View of Wetland 2, facing west.



Photo 7: Stream 4, intermittent, facing downstream.



Photo 8: Manhole, located in Ditch 1.





Photo 9. Fence line located north of Stream 2, facing north.



Photo 10. ROW looking south towards the Little Miami River (Stream 2).



Photo 11. View of fence line within ROW.



Photo 12. Overview of Maintained ROW vegetation assemblage.





Photo 9. Fence line located north of Stream 2, facing north.



Photo 10. ROW looking south towards the Little Miami River (Stream 2).



Photo 11. View of fence line within ROW.



Photo 12. Overview of Maintained ROW vegetation assemblage.



**From:** Cori Jansing  
**To:** [Danielle Thompson](#)  
**Subject:** FW: Cardno - F5484 Columbia Substation Expansion 138 kV Project, Warren County  
**Date:** Monday, September 24, 2018 6:35:04 AM  
**Attachments:** [image001.jpg](#)  
[image002.jpg](#)

---

**Corrine Jansing**  
PROJECT SCIENTIST  
CARDNO

**Office** +1 513 489 2402 **Direct** +1 513 233 7034 **Mobile** +1 513 833 6392  
**Address** 11121 Canal Rd., Cincinnati (Sharonville), Ohio 45241  
**Email** [cori.jansing@cardno.com](mailto:cori.jansing@cardno.com) **Web** [www.cardno.com](http://www.cardno.com)

This email and its attachments may contain confidential and/or privileged information for the sole use of the intended recipient(s). All electronically supplied data must be checked against an applicable hardcopy version which shall be the only document which Cardno warrants accuracy. If you are not the intended recipient, any use, distribution or copying of the information contained in this email and its attachments is strictly prohibited. If you have received this email in error, please email the sender by replying to this message and immediately delete and destroy any copies of this email and any attachments. The views or opinions expressed are the author's own and may not reflect the views or opinions of Cardno.

**From:** susan\_zimmermann@fws.gov <susan\_zimmermann@fws.gov> **On Behalf Of** Ohio, FW3  
**Sent:** Monday, July 23, 2018 8:50 AM  
**To:** Cori Jansing <cori.jansing@cardno.com>  
**Subject:** Cardno - F5484 Columbia Substation Expansion 138 kV Project, Warren County



TAILS# 03E15000-2018-TA-1693

Dear Ms. Jansing,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. We recommend that proposed activities minimize water quality impacts, including fill in streams and wetlands. Best management practices should be utilized to minimize erosion and sedimentation.

**FEDERALLY LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS:** Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (clearing of trees =3 inches diameter at breast height between October 1 and March 31) to avoid impacts to the federally listed endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (*Myotis septentrionalis*), we do not anticipate adverse effects to any federally endangered, threatened, proposed or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the U.S. Fish and Wildlife Service (Service) should be initiated to assess any potential impacts.



If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing should occur on any portion of the project area until consultation under section 7 of the Endangered Species Act (ESA), between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), ESA, and are consistent with the intent of the National Environmental Policy Act of 1969 and the Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document. We recommend that the project be coordinated with the Ohio Department of Natural Resources due to the potential for the project to affect state listed species and/or state lands. Contact John Kessler, Environmental Services Administrator, at (614) 265-6621 or at [john.kessler@dnr.state.oh.us](mailto:john.kessler@dnr.state.oh.us).

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or [ohio@fws.gov](mailto:ohio@fws.gov).

Sincerely,



Scott Pruitt  
Acting Field Supervisor





# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

**Office of Real Estate**  
*Paul R. Baldrige, Chief*  
2045 Morse Road – Bldg. E-2  
Columbus, OH 43229  
*Phone: (614) 265-6649*  
*Fax: (614) 267-4764*

September 18, 2018

Cori Jansing  
Cardno  
11121 Canal Road  
Cincinnati, Ohio 45241

**Re:** 18-852; F5484 kV 138 Columbia Substation Project

**Project:** The proposed project involves expanding existing line approximately 550 LF to facilitate the construction of the new Columbia Substation in addition to the removal and replacement of approximately 0.4 miles of existing transmission line.

**Location:** The proposed project is in South Lebanon and Hamilton Townships, Warren County, Ohio.

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

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

Snuffbox (*Epioblasma triquetra*), E, FE  
Fawnsfoot (*Truncilla donaciformis*), T  
Mountain madtom (*Noturus eleutherus*), T  
Little Miami State Scenic River  
Little Miami Scenic State Park – ODNR Division of Parks & Watercraft  
Deerfield Gorge Scenic River Lands – ODNR Scenic Rivers Program  
City of Lebanon, River Bend Land Co., TEJ Holdings, Taft Broadcast, & Tournament Players  
Club Scenic Rivers Easements – ODNR Scenic Rivers Program

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



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

Statuses are defined as: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; A = species recently added to state inventory, status not yet determined; X = presumed extirpated in Ohio; FE = federal endangered, FT = federal threatened, FSC = federal species of concern, FC = federal candidate species.

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

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

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

The project is within the range of the club shell (*Pleurobema clava*), a state endangered and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federally endangered mussel, the snuffbox (*Epioblasma triquetra*), a state endangered and federally endangered mussel, the washboard (*Megaloniaias nervosa*), a state endangered mussel, the threehorn wartyback (*Obliquaria reflexa*), a state threatened mussel, the black sandshell (*Ligumia recta*), a state threatened mussel, and the fawnsfoot (*Truncilla donaciformis*), a state threatened mussel. The DOW has reviewed this project with the assumption that in-water work within the Little Miami River will not be necessary. Therefore, this project is not likely to impact these or other mussel species.

The project is within the range of the northern brook lamprey (*Ichthyomyzon fossor*), a state endangered fish, the goldeye (*Hiodon alosoides*), a state endangered fish, the mountain brook lamprey (*Ichthyomyzon greeleyi*), a state endangered fish, the bigeye shiner (*Notropis boops*) a state threatened fish, the American eel (*Anguilla rostrata*), a state threatened fish, and the paddlefish (*Polyodon spathula*) a state threatened fish. 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. If no in-water work is proposed in a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern massasauga (*Sistrurus catenatus*), a state endangered and federally threatened snake species. The eastern massasauga uses a range of habitats including wet prairies, fens, and other wetlands, as well as drier upland habitat. Due to the location, the type of habitat present at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the spotted turtle (*Clemmys guttata*), a state threatened species. This species prefers fens, bogs and marshes, but is also known to inhabit wet prairies, meadows, pond edges, wet woods, and the shallow sluggish waters of small streams and ditches. Due to the location, the type of habitat present at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Kirtland's snake (*Clonophis kirtlandii*), a state threatened species. This secretive species prefers wet fields and meadows. Due to the location, the type of habitat present at the project site and within the vicinity of the project area, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus cyaneus*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. Due to the location, the type of habitat present at the project site, and the type of work proposed, this project is not likely to impact this species.

The project is within the range of the Sloan's crayfish (*Orconectes sloanii*), a state threatened species. Due to the location, and the habitat within the project area, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

**Scenic Rivers:** The Ohio Scenic Rivers Program has the following comment.

The proposed Duke Energy F5484 kv 138 Columbia Substation expansion project falls within 1,000 of the Little Miami State and National Scenic River in Warren County, Ohio. It crosses the Little Miami State and National Scenic River, the Little Miami State Park and protected conservation land owned and managed by the ODNR Scenic Rivers Program. Scenic Rivers and Park Management staff request that Cardno and Duke Energy schedule a time to meet on site to discuss the project in greater detail, including any potential real estate and mitigation needs, before the project moves forward. Please contact the ODNR regional manager, Melissa Clark at [Melissa.clark@dnr.state.oh.us](mailto:Melissa.clark@dnr.state.oh.us) or (937)408-8554.

**Water Resources:** The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.



[http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List\\_8\\_16.pdf](http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf)

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler  
ODNR Office of Real Estate  
2045 Morse Road, Building E-2  
Columbus, Ohio 43229-6693  
John.Kessler@dnr.state.oh.us



## **Attachment H**

### **Section 10 Permit Application**



October 14, 2018



Ms. Teresa Spanga  
U.S. Army Corps of Engineers, Huntington District  
Regulatory Branch (OR-F)  
502 8<sup>th</sup> Street  
Huntington, WV 25701-2070

Cardno

11121 Canal Road  
Cincinnati, Ohio 45241  
USA

Phone 513 489 2402  
Fax 513 489 2404  
[www.cardno.com](http://www.cardno.com)

[www.cardno.com](http://www.cardno.com)

**Re: Section 10 Navigable Waters Permit Application  
5484 – 138kV Columbia Substation Rebuild and Expansion Project  
Warren County, Ohio**

Dear Ms. Spanga:

Cardno is contacting the U.S. Army Corps of Engineers (USACE) on behalf of Duke Energy ("Duke"), who seeks authorization under Section 10: Navigable Waters Permit to remove existing wood utility structures and replace them with upgraded galvanized steel structures, which support a 138kV overhead power line that traverses the Little Great Miami River, near mile marker 22. The 5484 Columbia Substation Rebuild and Expansion project begins at the Duke Energy's Columbia Substation located west of State Route 48 and south of Mason Morrow Millgrove Road (39.369349, -84.226636) and terminates at Duke Energy's Structure No. 936 located west of State Route 48 and south of the Little Miami River (39.363899, -84.222795). See Appendix A.

The Columbia Substation 138kV Rebuild and Expansion Project aims to maintain and improve the quality of the electric service and reliability to the service area as well as ensure the integrity of the transmission line by replacing the existing wood structures to galvanized steel structures. The Study Area consisted of a mix of habitats including forested wetland, secondary growth deciduous forest, and scrub-shrub/maintained right-of-way (ROW). A total of two potentially regulated waters including the Little Miami River (Stream 2), and one unnamed ephemeral stream (Stream 1) and one wetland (Wetland 1) were identified within the Project Study Area (Appendix A). No identified streams will be impacted by the project; however, the structures that support Duke's existing overhead 138kV electric power line over the Little Miami River will be replaced at the same location and height of the original allowing for the same clearance of the existing line. The project activities will result in no net fill within the floodplain of the Little Miami River. See Appendix B, for project Engineering Plans.

We request verification that the project, as proposed, meets the conditions of the Section 10 USACE Permit that is required for work on structures in, over, or under navigable



waters of the United States. If you have any questions concerning this Section 10 permit authorization request, please do not hesitate to contact me at your convenience.

Sincerely,

A handwritten signature in blue ink, appearing to read "Danielle K. Thompson". The signature is fluid and cursive, with the first name "Danielle" being more prominent.

Danielle K. Thompson  
Senior Project Scientist  
for Cardno

cc: Dustin Giesler, Duke Energy

Enc: Appendix A: Figures  
Appendix B: Engineering Plans  
Appendix C: USFWS and ODNR Correspondence

File: J156702M59  
Duke Project No.: G4462



**U.S. ARMY CORPS OF ENGINEERS**  
**APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT**  
33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -*  
*OMB No. 0710-0003*  
*Expires: 30-SEPTEMBER-2015*

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

**PRIVACY ACT STATEMENT**

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

**(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)**

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
--------------------	----------------------	------------------	------------------------------

**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

5. APPLICANT'S NAME First - Dustin      Middle -      Last - Giesler Company - Duke Energy E-mail Address - dustin.giesler@duke-energy.com		8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Danielle      Middle - K      Last - Thompson Company - Cardno E-mail Address - danielle.thompson@cardno.com	
6. APPLICANT'S ADDRESS: Address- 139 E. 4th Street City - Cincinnati      State - OH      Zip - 45202      Country - USA		9. AGENT'S ADDRESS: Address- 11121 Canal Rd City - Cincinnati      State - OH      Zip - 45241      Country - USA	
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence      b. Business      c. Fax 859-380-1468		10. AGENTS PHONE NOS. w/AREA CODE a. Residence      b. Business      c. Fax 513-489-2402	

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, Cardno to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

\_\_\_\_\_  
SIGNATURE OF APPLICANT

\_\_\_\_\_  
DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME OR TITLE (see instructions) 5484 - Columbia Substation Rebuild and Expansion			
13. NAME OF WATERBODY, IF KNOWN (if applicable) Little Miami River		14. PROJECT STREET ADDRESS (if applicable) Address n/a	
15. LOCATION OF PROJECT Latitude: N 39.369199      Longitude: W -84.226046		City - South Lebanon      State- OH      Zip- 45036	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID      Municipality Hamilton Twp., Warren County Section -      Township -      Range -			



**17. DIRECTIONS TO THE SITE**

The 5484 Columbia Substation Rebuild and Expansion project begins at the Duke Energy's Columbia Substation located west of State Route 48 and south of Mason Morrow Millgrove Road (39.369349, -84.226636) and terminates at Duke Energy's Structure No. 936 located west of State Route 48 and south of the Little Miami River (39.363899, -84.222795). See Appendix A, Figure 2 for project corridor.

From Cincinnati take I-71 North to Exit 28 to SR-48 South, the project corridor runs parallel to SR-48 from approximately 0.25 mile north of the Little Miami River to approximately 0.25 mile south of the Little Miami River.

**18. Nature of Activity (Description of project, include all features)**

The Columbia Substation 138kV Rebuild and Expansion Project aims to maintain and improve the quality of the electric service and reliability to the service area as well as ensure the integrity of the transmission line by replacing the existing wood structures to galvanized steel structures. The Study Area consisted of a mix of habitats including forested wetland, secondary growth deciduous forest, and scrub-shrub/maintained right-of-way (ROW). A total of two potentially regulated waters including the Little Miami River (Stream 2), and one unnamed ephemeral stream (Stream 1) and one wetland (Wetland 1) were identified within the Project Study Area (Appendix A). No identified streams will be impacted by the project; however, the structures that support Duke's existing overhead 138kV electric power line over the Little Miami River will be replaced at the same location and height of the original allowing for the same clearance of the existing line. The project activities will result in no net fill within the floodplain of the Little Miami River. See Appendix B, for project Engineering Plans.

**19. Project Purpose (Describe the reason or purpose of the project, see instructions)**

The purpose and need for the Columbia Substation 138kV Rebuild and Expansion Project is to maintain and improve the quality of the electric service and reliability to the service area as well as ensure the integrity of the transmission line by replacing the existing wood structures to galvanized steel structures.

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED****20. Reason(s) for Discharge**

No fill material will be discharged into 'Waters of the US'.

**21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:**

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
N/A	N/A	N/A

**22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)**

Acres N/A  
or  
Linear Feet N/A

**23. Description of Avoidance, Minimization, and Compensation (see instructions)**

The proposed Project will occur entirely within existing Duke Right-of-Way. No additional long term impacts to adjacent properties are anticipated as a result of the rebuild Project. Therefore, the current alignment is the only reasonable alternative available and no alternatives were considered.



24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list)

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.



SIGNATURE OF APPLICANT

10/15/18

DATE



SIGNATURE OF AGENT

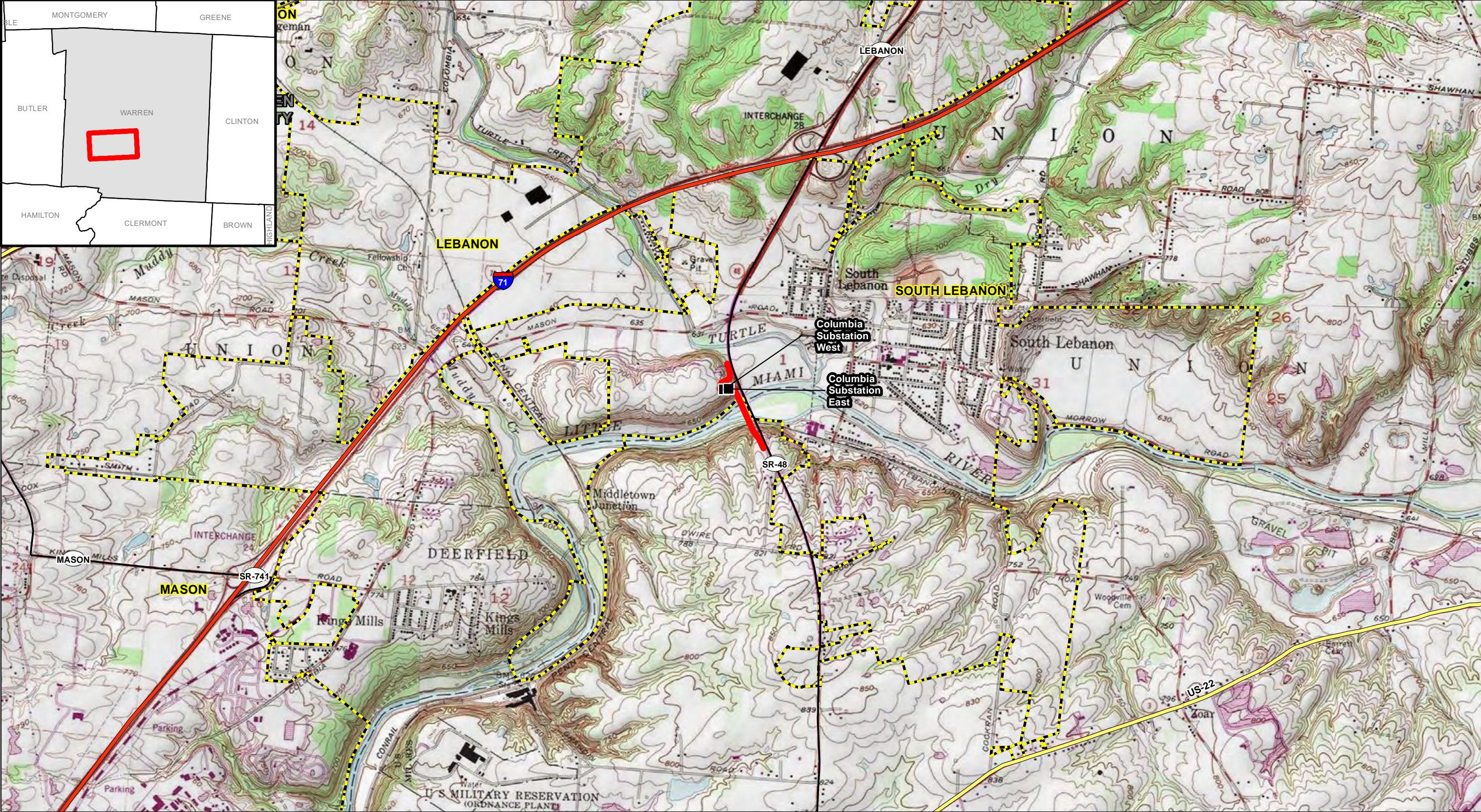
10/15/18

DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.



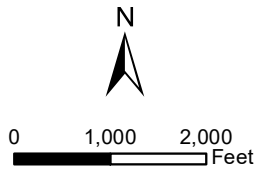


PROJECT LOCATION



WARREN COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: LEBANON AND SOUTH LEBANON, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.



- |                    |                    |
|--------------------|--------------------|
| Project Centerline | Railroad           |
| Interstate         | County Boundary    |
| State Highway      | Municipal Boundary |
| US Highway         | Existing Facility  |



FIGURE 1  
LINE ENVIRONMENTAL ASSESSMENT  
F5484 – 138kV COLUMBIA SUBSTATION  
REBUILD AND EXTENSION  
DUKE ENERGY  
PROJECT LOCATION

DRAWN BY: COD  
CHECKED: CJ

DATE: 9/25/2018  
APPROVED: JT



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

**Commission of Ohio Docketing Information System on**

**11/14/2018 1:06:31 PM**

**in**

**Case No(s). 18-1571-EL-BNR**

Summary: Notification CONSTRUCTION NOTICE FOR THE F5484 – 138 kV COLUMBIA SUBSTATION- PART 2 electronically filed by Carys Cochern on behalf of Kingery, Jeanne W Ms.