GUE-IR77-14.80

APPENDICES

Appendix 1

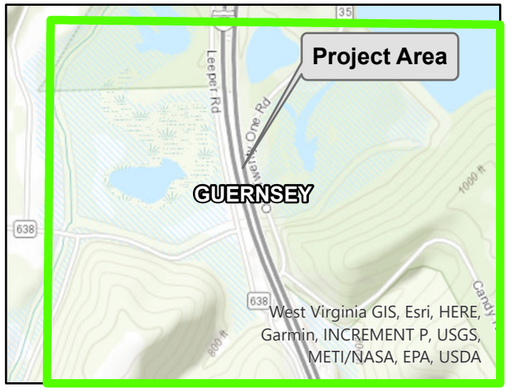
Mapping

Aerial Map
USGS
Land Use
Flowage
Easement

GUE-IR77-14.80
PID- 123901

Resources/Aerial Map





- Wetlands
- Study Area



Department of Transportation

OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 05
9600 JACKSONTOWN RD.
JACKSONTOWN, OHIO, 43030

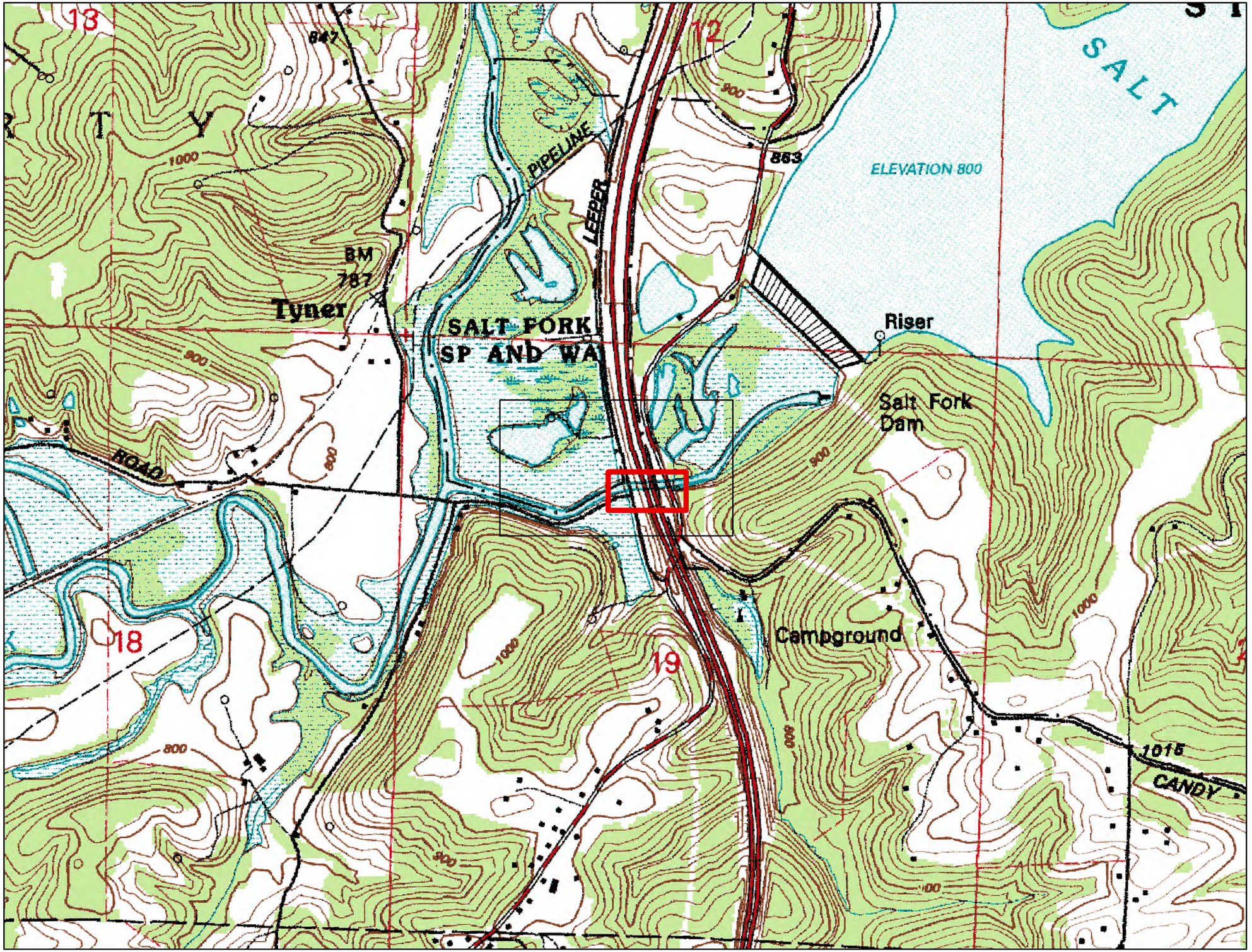
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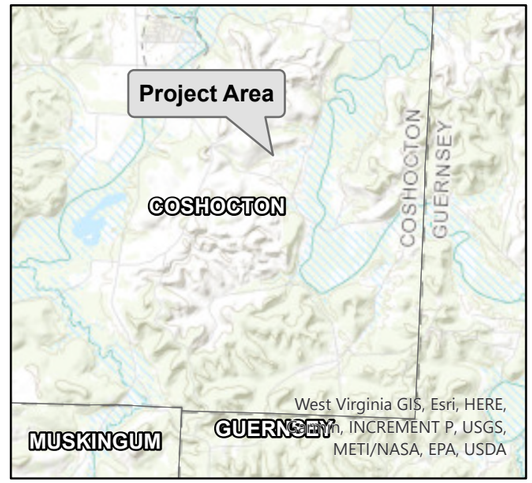
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Feet
420 210 0 420 840

N

GUE-IR 77-14.80
PID-123901
2013 OSIP Aerial Imagery
Culvert Rehabilitation at
Salt Fork Spillway at IR-77





Legend

- Study Area
- Construction Limits
- Polygon Notes

Guernsey_2014_rgb_20
RGB
- Red: Band_1
- Green: Band_2
- Blue: Band_3

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1980 W. BROAD ST.
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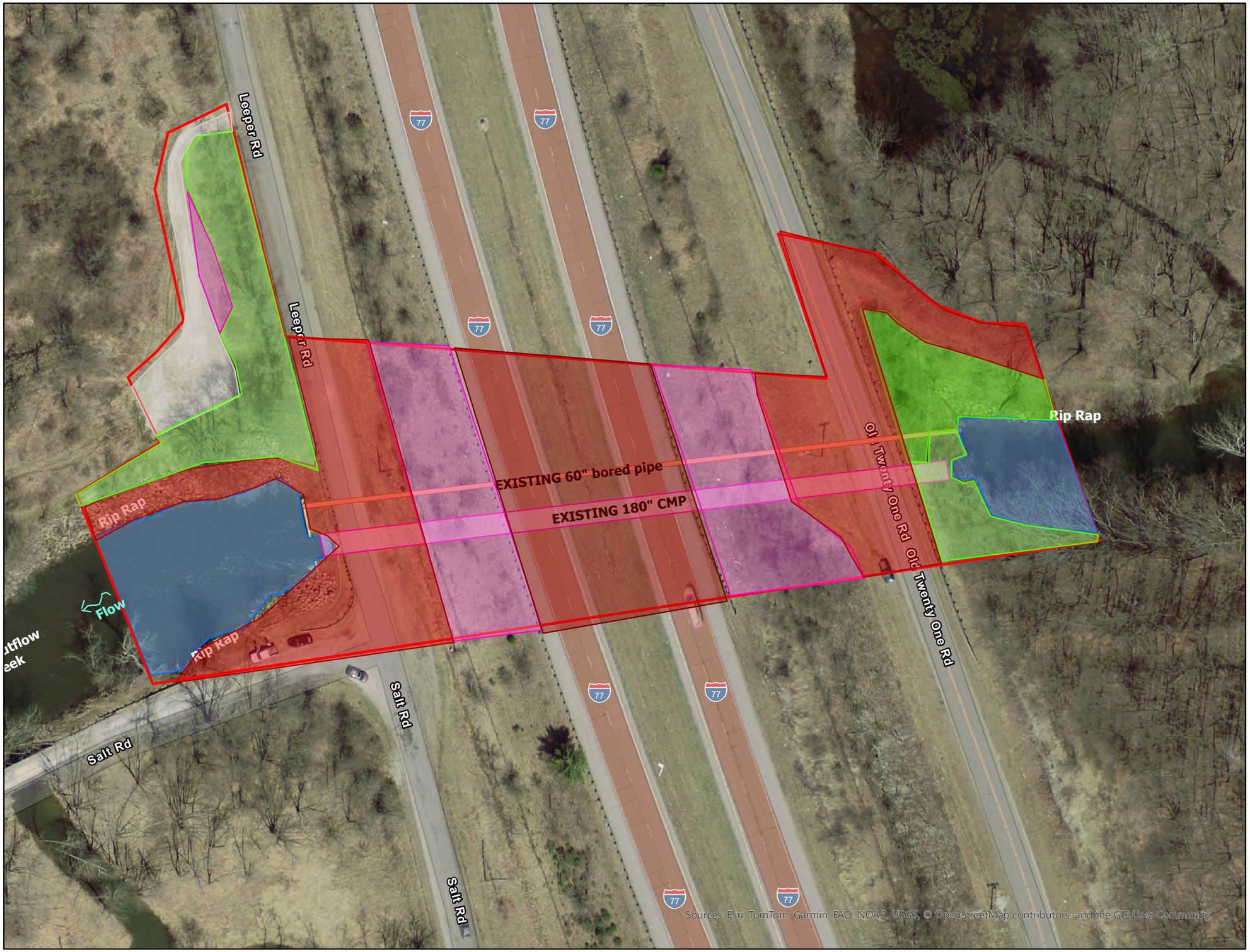
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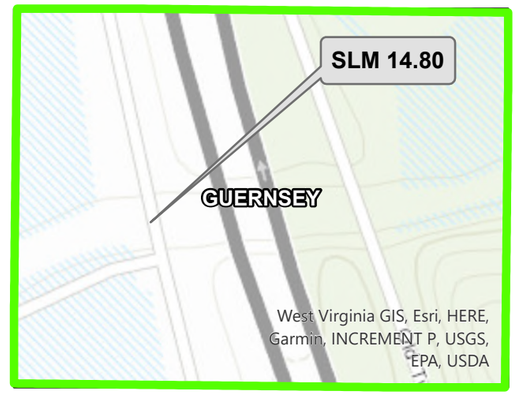
0.15 0.07 0 0.15 0.3 Miles

N

GUE-IR77-14.80
PID- 123901

Land Use Map





- Open Water
- Forested
- Mowed/disturbed
- Scrub/Shrub
- Gravel/Paved



Ohio Department of Transportation

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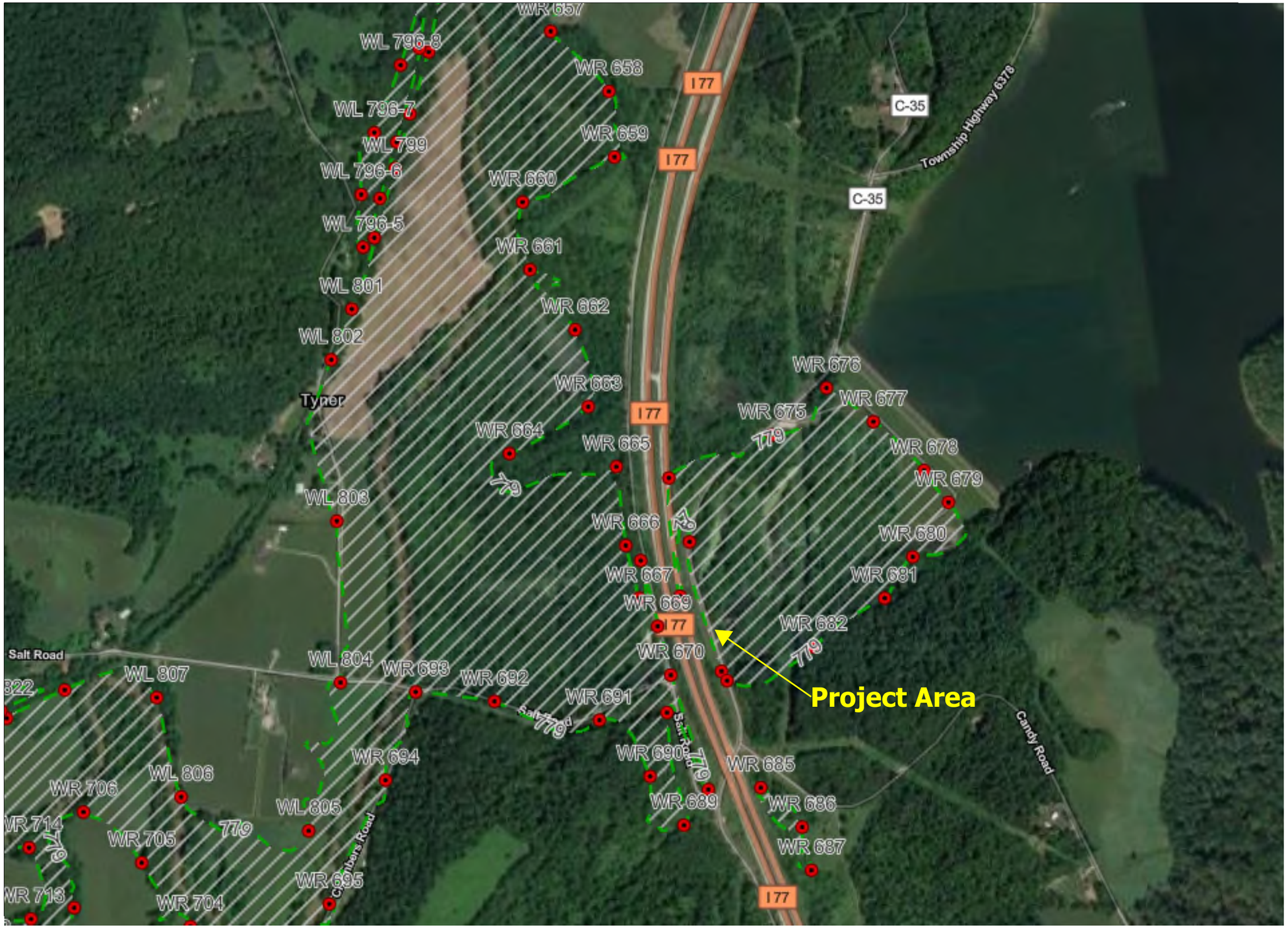
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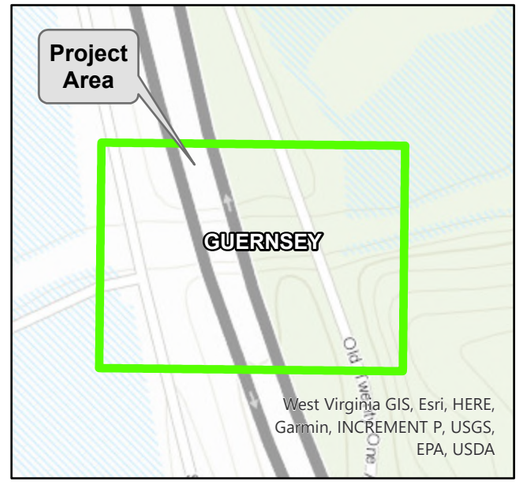
Feet
70 35 0 70 140

N

GUE-IR77-14.80
PID 123901

Flowage Easement Map





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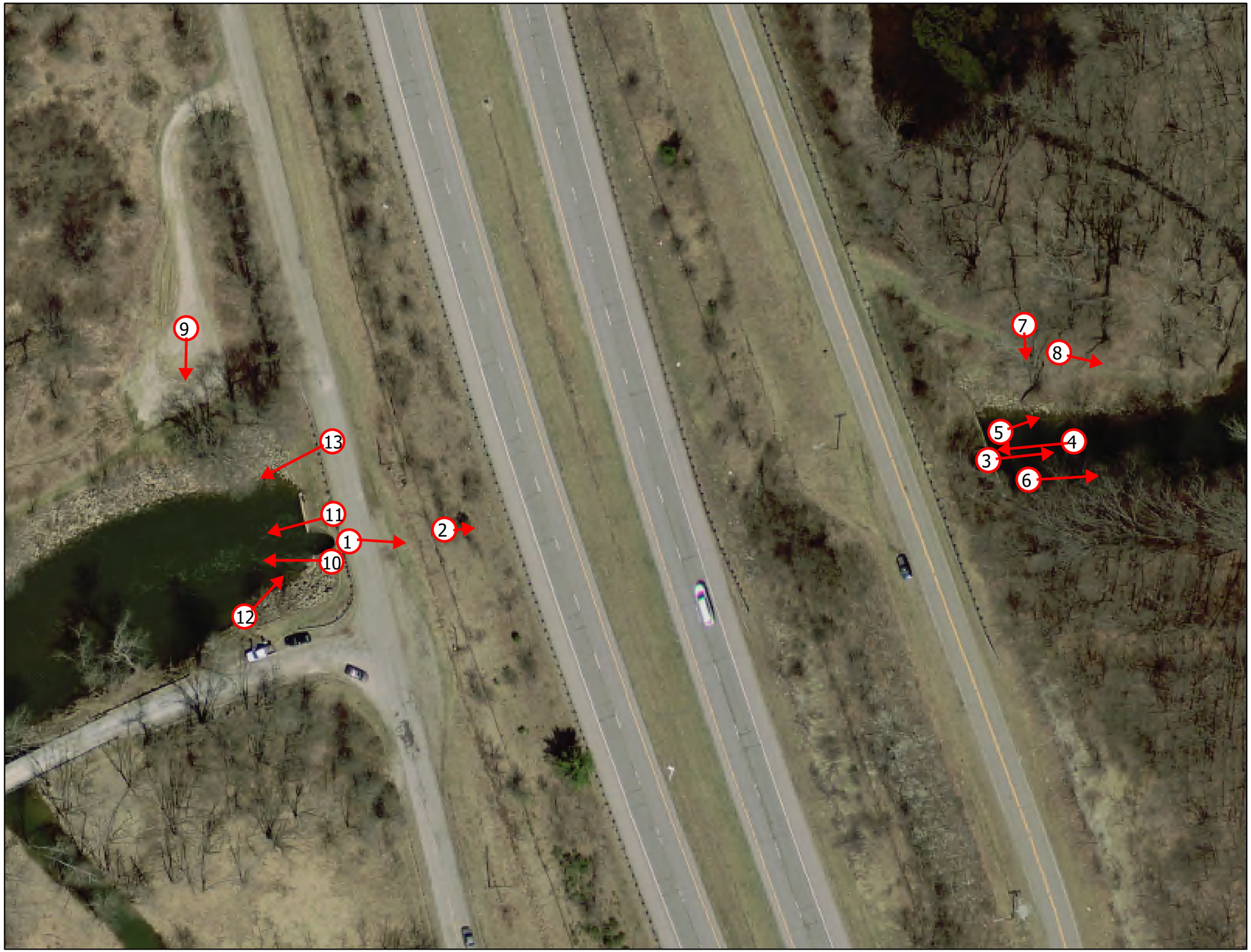
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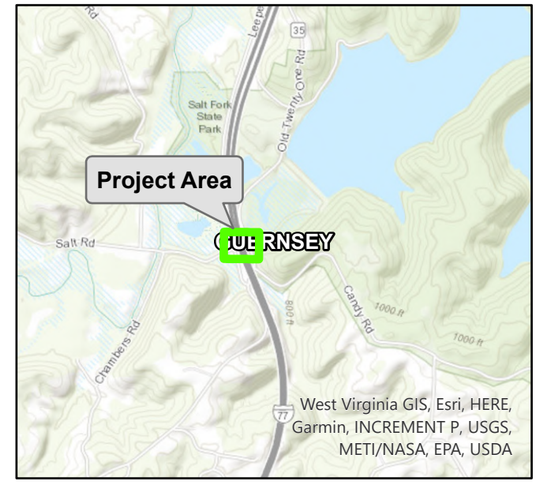
Appendix 2

Photolog

GUE-IR77-12.80
PID 123901

Photolog





#	Photo Point

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0.01 0.01 0 0.01 0.02 Miles

N

Department of Transportation

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PRODUCED WITH ARC GIS SOFTWARE
DATE CREATED: 8/12/2025



Figure 1- Culvert wall from inside on west side



Figure 2 - Inside ceiling of culvert with bat sp.



Figure 3 - Stream from east side of culvert



Figure 4 - East culvert entrance from east side of stream



Figure 5 - North bank of stream from east culvert entrance



Figure 6 - South bank of stream from east culvert entrance



Figure 7 - ODNR Wildlife Area on North side of stream from east side of culvert



Figure 8 - Path southeast on north side of stream east of culvert



Figure 9 - Gravel parking area north of west side of culvert



Figure 10 - West side of stream from west side of Salt Road



Figure 11 - West side of stream from Salt Road



Figure 12 - West culvert entrance from south band of west stream



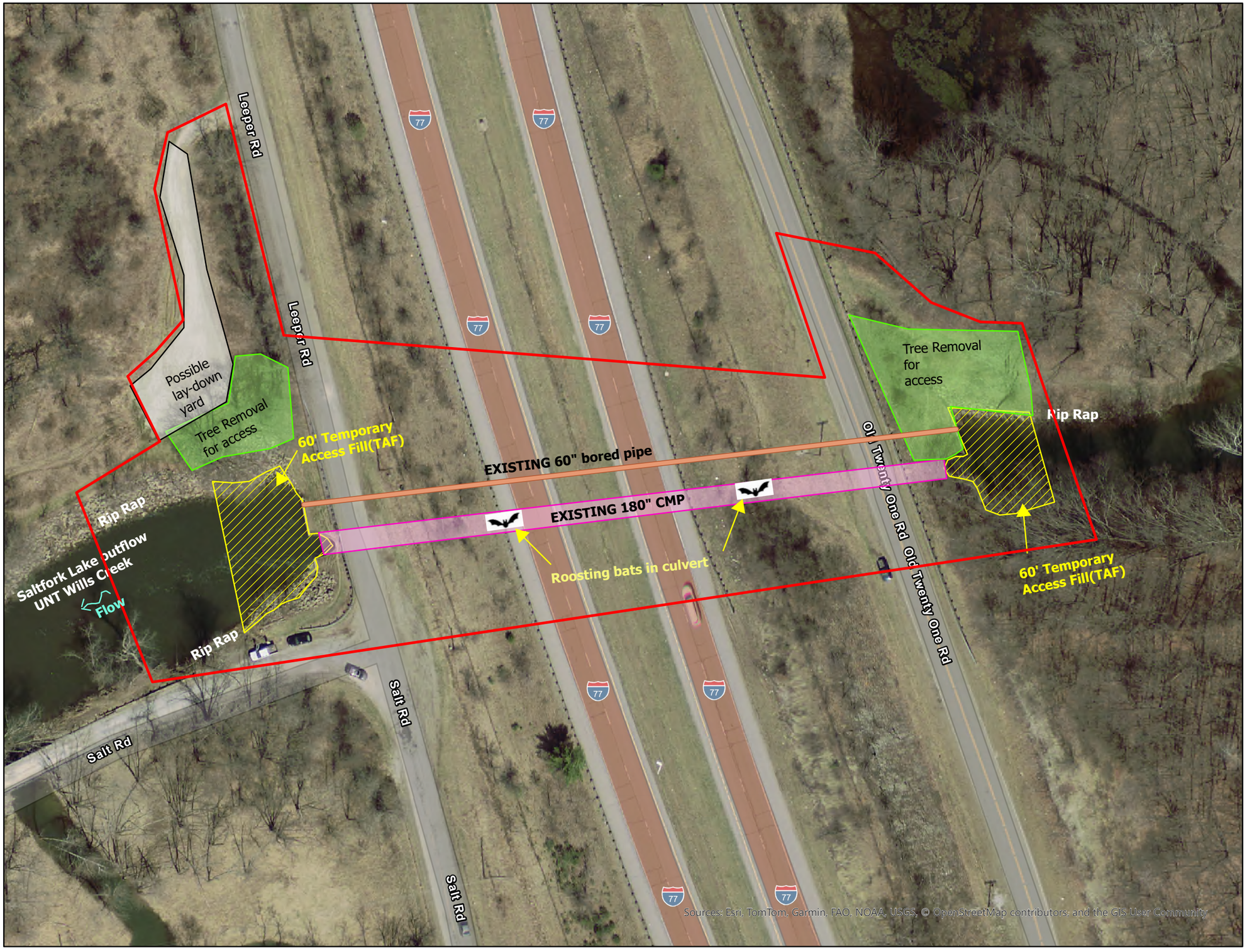
Figure 13 - North bank of west stream from Salt Road

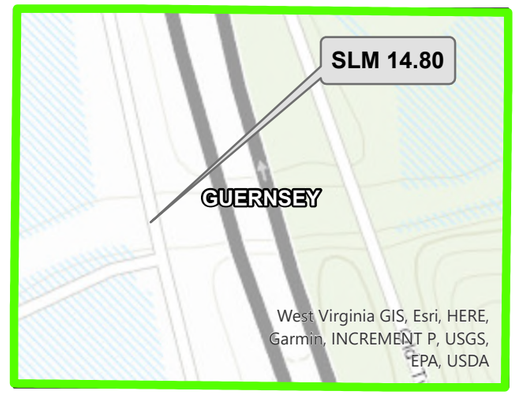
Appendix 3

Plan

GUE-IR77-14.80
PID- 123901

Resources/Aerial Map





- Wetlands
- Study Area



Department of Transportation

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Feet
70 35 0 70 140

N

Appendix 4

TAF Checklist/Design Worksheet

TAF STRUCTURE HYDRAULIC REPORT

GUE-I.R. 77-10.80
PID: 123901
Bridge No. GUE-77-10.80; I.R. 77 over UNT Wills Creek

Placement of a 12’ diameter pipe liner thru existing 15’ diameter structural plate culvert.



Submitted: August 2025

Prepared by:
Ohio Department of Transportation, District 5
Bridge Design Section
Project Manager: Tracy Greenwald, P.E.

Ohio Department of Transportation

OHIO DEPARTMENT OF TRANSPORTATION

DISTRICT 5 BRIDGE

CALCULATION SHEET

DATE: 26-Aug-25 INITIALS: TAG

PID: 123901 CHECKED BY:

CRS: GUE-77-14.84

DESCRIPTION: Hydraulic Design Data

Design Year ADT (2023)	1700
Design Functional Classification	1 - Principle Arterial Interstate

		Email/ Stream Stats	Stream Stats	Total	
Slope of Channel	-	0	3.37	0.0006	ft/ft
Drainage Area	-	159	0.19	159.19	square miles
1 - Hydraulic Design AEP Storm	2%	754	42.3	796.3	ft^3/s
2 - Hydraulic Design Check AEP Storm	1%	1405	49	1454	ft^3/s
TAF	October	32.8	0.416	33.216	ft^3/s
5 - TAF (2 X mean monthly flow)	October	65.6	0.832	66.432	ft^3/s

OHWM = 761 Bridge Inspector

Centerline STA. of Bridge = 17+50

15' Paved Inlet Elevation = 757.7

15' Paved Outlet Elevation = 757.34

60" Inlet Elevation = 758.14 SV1003

60" Outlet Elevation = 757.66 SV1007

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OHIO DEPARTMENT OF TRANSPORTATION

DISTRICT 5 BRIDGE

CALCULATION SHEET

DATE: 26-Aug-25 INITIALS: TAG

PID: 123901 CHECKED BY:

CRS: GUE-77-14.84

DESCRIPTION: Hydraulic Design Data

HEC-RAS

1 15' Dia. Culvert
2 15' Diameter Culvert + 5' Dia. Culvert
3 12' Diameter Culvert + 5' Dia. Culvert

River Sta.	Profile	2 W.S. Elev.	Difference	1 W.S. Elev.	Difference	3 W.S. Elev.
2750	50 Yr	766.46	-0.83	767.29	0.21	767.50
	100 Yr	770.09	-0.83	770.92	0.71	771.63
2650	50 Yr	766.45	-0.83	767.28	0.22	767.50
	100 Yr	770.09	-0.83	770.92	0.71	771.63
2494	50 Yr	766.38	-0.85	767.23	0.22	767.45
	100 Yr	770.04	-0.84	770.88	0.73	771.61
2350	50 Yr	766.39	-0.84	767.23	0.22	767.45
	100 Yr	770.04	-0.85	770.89	0.72	771.61
2250	50 Yr	766.34	-0.86	767.20	0.22	767.42
	100 Yr	770.00	-0.85	770.85	0.74	771.59
2005 --- Culvert						
1750	50 Yr	764.2	0.00	764.20	0.00	764.2
	100 Yr	766.74	0.00	766.74	0.00	766.74
1650	50 Yr	764.22	0.00	764.22	0.00	764.22
	100 Yr	766.76	0.00	766.76	0.00	766.76
1550	50 Yr	764.18	0.00	764.18	0.00	764.18
	100 Yr	766.72	0.00	766.72	0.00	766.72
1450	50 Yr	764.15	0.00	764.15	0.00	764.15
	100 Yr	766.66	0.00	766.66	0.00	766.66

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Temporary Construction, Access and Dewatering Activities Checklist

The purpose of this form is to aid the Office of Environmental Services - Waterway Permits Unit (OES-WPU) in the Permit Determination and Special Provisions processes. This form shall be completed by the project designer for each aquatic resource and reflect the anticipated temporary fill activities in the aquatic resource (including streams, impounded streams, lakes, reservoirs, rivers). If the type and amount of temporary fill is unknown, assume a reasonable and logical worst-case scenario of what could be needed. A complete copy of this form shall be provided to the District Environmental Coordinator (DEC) to be included in the Permit Determination Request submitted to OES-WPU. Please use the current version of this TAF Checklist found on the Waterway Permits website.

CRS:	GUE-77-14.80	PID:	123901
Aquatic resource name*	UNT Wills Creek		

*Provide stationing if more than one location on the same aquatic resource will be impacted

1. During the construction of this project, the following fill activities in the aquatic resource are anticipated: (check all that apply)

☐	Temporary bridge or structure (CMS Item 502)
☒	Cofferdams (temporary dewatering)
☐	Demolition and debris (intentional fill)
☐	Causeways and work pads

2. ODOT requires that the temporary activity accommodates a minimum flow equal to twice the maximum mean monthly flow without creating a rise in backwater above the OHWM. This flow is the Standard Temporary Discharge (STD).

Yes	Is U.S. Geological Survey Stream Stats data available for this location?
66 cfs	Provide the minimum flow (cfs) to be maintained throughout construction for this location

3. The method that will most likely be implemented by the Contractor to maintain this flow will be (check all that apply):

☐	Conduits (Provide TAF Design Worksheet and hydraulic calculations when the STD is 10 cfs or greater)
☒	Open channel(s)/temporary bridge (Provide TAF Design Worksheet and hydraulic calculations when the STD is 10 cfs or greater)
☐	Pump around (TAF Design Worksheet and hydraulic calculations are NOT required for cofferdams with pump around scenarios). For minimum flows over 15 cfs, work will be limited to months <15 cfs.
Yes	Verify if the project meet flow requirements outlined in the Location & Design Manual Vol. 2 Section 1010? Provide TAF Design Worksheet and attach hydraulic calculations when specified above.

4. Additional information

30 days	Provide the proposed duration (weeks, months or years) of temporary fill in the aquatic resource.
No	Will temporary fill occur within a flowage easement of a federal flood control facility? *This item only applies to federal flood control facilities. Flowage easements associated with these facilities can occur several miles away from the facility. If uncertain that the project is in a flowage easement area, please consult the district's real estate office for assistance.*

Click on the link below to access ODOT's Waterway Permits manual, guidance, and other resources:

https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/waterway-permits-program/waterway-permits

OHIO DEPARTMENT OF TRANSPORTATION

TAF DESIGN WORKSHEET

January 19, 2024

Project:	GUE-77-14.80	**PID:**	123901
PERFORMED BY:	Tracy A. Greenwald	**DATE:**	8/26/2025
CHECKED BY:		**DATE:**	
SUBJECT:	Tunner Liner for GUE-77-14.80 (October was determined to be the month for accessing		
STREAM:	UNT Willis Creek		

TAF DESIGN

STREAM CHARACTERISTICS AT PROPOSED TAF LOCATION (NO TAF INSTALLED)

Is StreamStats data for the site available?	**Yes**
Is the stream's flow influenced by hydraulic controlling features (i.e. dams)?	**Yes**
Basin drainage area (mi^2)	**160**
Ordinary High Water Mark elevation [OHWM] (ft)	**761.0**
Top of bank elevation (ft)	**768.6**
50% AEP flow water surface elevation (ft)	**No Data from Dam**
OHWM flow rate [without TAF] (cfs)	**80**
Maximum mean monthly flow (cfs)	**33**
2x maximum mean monthly flow (cfs)	**66**
2x maximum mean monthly flow water surface elevation (ft)	**760.8**

Tier 1 TAF Analysis

Proposed TAF obstruction	**Partial**
For partial TAFs: minimum channel opening width (ft) at the OHWM elevation	**5**
Calculated backwater elevation (ft) with the TAF in place.	**761.66**
Does the site pass two-times highest monthly flow without backwater rise above OHWM with TAF in place?	**Yes**

End Analysis: Proceed to TAF Stability section and Summary.

After verifying OHWM, does the site pass 2x highest monthly flow?	**Yes**

Tier 2 TAF Analysis

Do not complete this section, analysis complete.

Calculated backwater elevation	
Modified height of TAF (backwater elevation+1' freeboard)	**1**
Calculated backwater from modified TAF height	
Calculated freeboard	**1**

TAF Design acceptable (greater than 0.5-feet)

Is the TAF height acceptable based on viability considerations?	

Proceed to Tier 3 TAF Design

Final top of TAF elevation (ft)	**1.0**

OHIO DEPARTMENT OF TRANSPORTATION

TAF DESIGN WORKSHEET

January 19, 2024

Tier 3 TAF Analysis

Complete if adjusted STD is necessary

Initial height of TAF (1' above OHWM or necessary to facilitate construction)	
Calculated STD (flow producing WSE equal to height of TAF)	
Is historical waterway flow available (USGS Gage data availability)?	
Does probability of exceedance of STD facilitate the project schedule?	

TAF STABILITY- Based on Bureau of Reclamation

Suggested rock sizing and corresponding Manning's n based on hydraulic analysis velocities

Note: Sizing based on velocity due to unavailability of accurate point shear in 1D models

Velocity at edge of TAF corresponding to 20% AEP flow (ft/s)	0.5
Suggested dumped rock size	ODOT Type D (n=0.035)

SUMMARY

Streamflow data source	Stream Stats
Stream contains hydraulic controlling features?	Yes
Top of TAF elevation (ft)	762
Partial TAF: minimum channel opening width (ft) at the OHWM elevation:	5
Suggested size for TAF dumped rock:	ODOT Type D (n=0.035)
Suggested HEC-RAS scoping (1D or 2D)	2D Hydraulic Model

2 x Mean Monthly Flow Without TAF

HEC-RAS Plan: Plan 02 River: CLX_1 Reach: Reach Profile: MF1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	3750	MF1	67.00	757.34	760.88		760.88	0.000083	0.59	112.73	47.38	0.07
Reach	3650	MF1	67.00	757.34	760.87		760.87	0.000084	0.60	112.33	47.33	0.07
Reach	3550	MF1	67.00	757.34	760.86		760.86	0.000085	0.60	111.93	47.28	0.07
Reach	3450	MF1	67.00	757.34	760.85		760.86	0.000086	0.60	111.53	47.22	0.07
Reach	3350	MF1	67.00	757.34	760.84		760.85	0.000087	0.60	111.12	47.17	0.07
Reach	3250	MF1	67.00	757.34	760.83		760.84	0.000088	0.61	110.71	47.12	0.07
Reach	3150	MF1	67.00	757.34	760.82		760.83	0.000089	0.61	110.29	47.06	0.07
Reach	3050	MF1	67.00	757.34	760.81		760.82	0.000090	0.61	109.87	47.01	0.07
Reach	2950	MF1	67.00	755.95	760.81		760.82	0.000023	0.41	164.94	45.88	0.04
Reach	2850	MF1	67.00	755.87	760.81		760.81	0.000017	0.36	184.27	49.03	0.03
Reach	2750	MF1	67.00	756.10	760.81		760.81	0.000020	0.38	176.90	48.16	0.03
Reach	2650	MF1	67.00	756.26	760.81		760.81	0.000015	0.33	200.59	53.50	0.03
Reach	2494	MF1	67.00	756.79	760.80		760.80	0.000067	0.61	109.86	36.06	0.06
Reach	2350	MF1	67.00	754.19	760.80		760.80	0.000007	0.28	243.19	45.21	0.02
Reach	2250	MF1	67.00	756.28	760.80	757.11	760.80	0.000035	0.49	136.31	38.91	0.05
Reach	2005		Culvert									
Reach	1750	MF1	67.00	755.42	759.02		759.03	0.000076	0.58	114.93	46.90	0.07
Reach	1650	MF1	67.00	752.12	759.02		759.02	0.000004	0.20	342.62	79.03	0.02
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Reach	1450	MF1	67.00	755.61	759.01		759.01	0.000096	0.61	110.36	50.19	0.07
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Reach	950	MF1	67.00	756.26	758.77		758.89	0.004069	2.79	24.00	18.01	0.43
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Reach	750	MF1	67.00	756.83	758.74		758.75	0.000340	0.94	71.59	43.93	0.13
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Reach	450	MF1	67.00	756.83	758.62		758.64	0.000429	1.01	66.49	43.53	0.14
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2 x Mean Monthly Flow With TAF

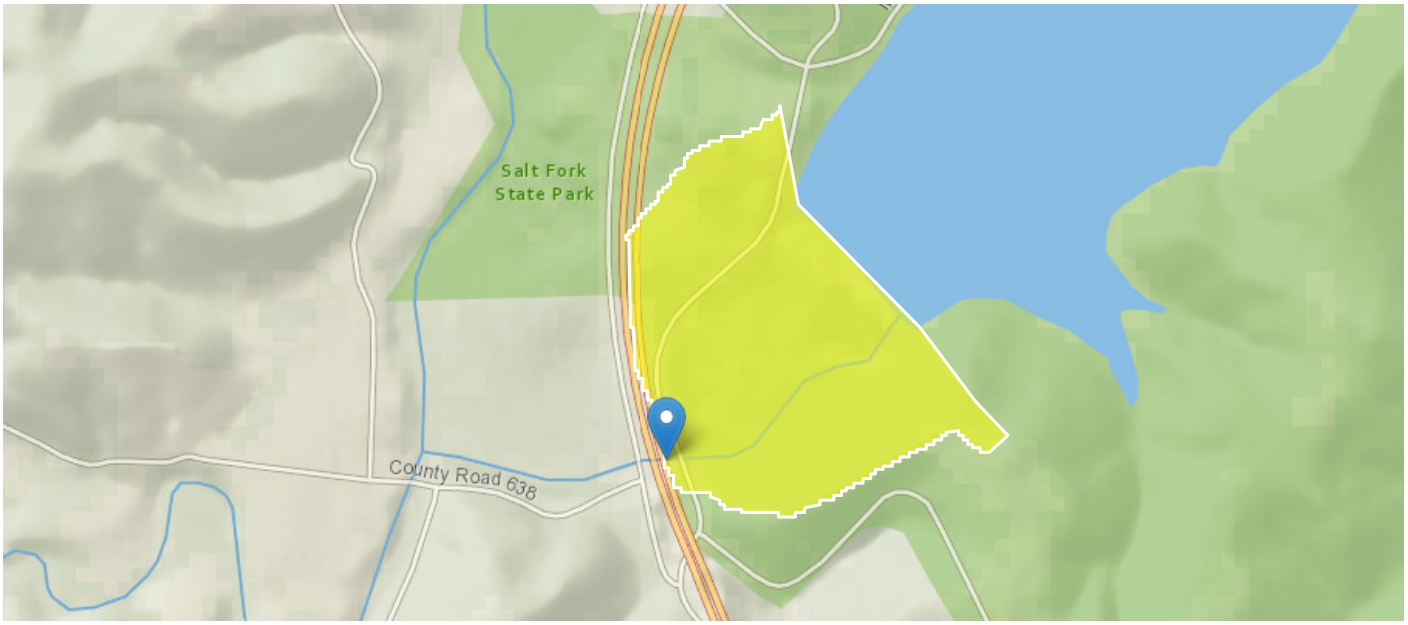
HEC-RAS Plan: 006 River: CLX_1 Reach: Reach Profile: MMF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	3750	MMF 1	67.00	757.34	761.70		761.70	0.000033	0.44	153.34	51.07	0.04
Reach	3650	MMF 1	67.00	757.34	761.69		761.70	0.000033	0.44	153.17	51.06	0.04
Reach	3550	MMF 1	67.00	757.34	761.69		761.69	0.000033	0.44	153.00	51.05	0.04
Reach	3450	MMF 1	67.00	757.34	761.69		761.69	0.000035	0.44	153.08	52.50	0.05
Reach	3350	MMF 1	67.00	757.34	761.68		761.68	0.000034	0.44	152.65	51.03	0.04
Reach	3250	MMF 1	67.00	757.34	761.68		761.68	0.000034	0.44	152.48	51.02	0.04
Reach	3150	MMF 1	67.00	757.34	761.68		761.68	0.000034	0.44	152.31	51.01	0.04
Reach	3050	MMF 1	67.00	757.34	761.67		761.67	0.000034	0.44	152.13	51.00	0.04
Reach	2950	MMF 1	67.00	755.95	761.67		761.67	0.000012	0.33	205.52	48.75	0.03
Reach	2850	MMF 1	67.00	755.87	761.67		761.67	0.000009	0.29	227.80	52.33	0.02
Reach	2750	MMF 1	67.00	756.10	761.67		761.67	0.000010	0.31	219.15	50.14	0.03
Reach	2650	MMF 1	67.00	756.26	761.67		761.67	0.000008	0.27	247.76	56.16	0.02
Reach	2494	MMF 1	67.00	756.79	761.66		761.67	0.000031	0.47	142.07	38.47	0.04
Reach	2350	MMF 1	67.00	754.19	761.66		761.66	0.000005	0.24	283.35	47.78	0.02
Reach	2250	MMF 1	67.00	756.28	761.66	757.11	761.66	0.000019	0.39	171.29	42.03	0.03
Reach	2005		Culvert									
Reach	1750	MMF 1	67.00	755.42	759.02		759.03	0.000076	0.58	114.93	46.90	0.07
Reach	1650	MMF 1	67.00	752.12	759.02		759.02	0.000004	0.20	342.62	79.03	0.02
Reach	1550	MMF 1	67.00	755.60	759.02		759.02	0.000077	0.53	127.06	59.41	0.06
Reach	1450	MMF 1	67.00	755.61	759.01		759.01	0.000096	0.61	110.36	50.19	0.07
Reach	1350	MMF 1	67.00	754.00	759.00		759.01	0.000049	0.50	133.23	47.87	0.05
Reach	1250	MMF 1	67.00	756.83	758.99		759.00	0.000217	0.81	82.64	44.80	0.11
Reach	1092	MMF 1	67.00	755.81	758.96		758.97	0.000157	0.83	81.01	32.42	0.09
Reach	950	MMF 1	67.00	756.26	758.77		758.89	0.004069	2.79	24.00	18.01	0.43
Reach	850	MMF 1	67.00	756.83	758.77		758.78	0.000319	0.92	73.07	44.05	0.13
Reach	750	MMF 1	67.00	756.83	758.74		758.75	0.000340	0.94	71.59	43.93	0.13
Reach	650	MMF 1	67.00	756.83	758.70		758.71	0.000365	0.96	70.02	43.81	0.13
Reach	550	MMF 1	67.00	756.83	758.66		758.68	0.000394	0.98	68.32	43.67	0.14
Reach	450	MMF 1	67.00	756.83	758.62		758.64	0.000429	1.01	66.49	43.53	0.14
Reach	350	MMF 1	67.00	756.83	758.57		758.59	0.000473	1.04	64.49	43.37	0.15
Reach	250	MMF 1	67.00	756.83	758.52		758.54	0.000528	1.08	62.28	43.19	0.16
Reach	150	MMF 1	67.00	756.83	758.46	757.44	758.48	0.000600	1.12	59.79	42.98	0.17

Below Dam

StreamStats Report

Region ID: OH
Workspace ID: OH20250403144833098000
Clicked Point (Latitude, Longitude): 40.10082, -81.56173
Time: 2025-04-03 10:48:53 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CSL1085LFP	Change in elevation divided by length between points 10 and 85 percent of distance along the longest flow path to the basin divide, LFP from 2D grid	3.37	feet per mi
DRNAREA	Area that drains to a point on a stream	0.19	square miles
FOREST	Percentage of area covered by forest	64.6	percent
LAT_CENT	Latitude of Basin Centroid	40.1034	decimal degrees
LC92STOR	Percentage of water bodies and wetlands determined from the NLCD	10.9	percent
LONG_CENT	Longitude Basin Centroid	81.5587	decimal degrees
LONG_OUT	Longitude of Basin Outlet	-81.561746	degrees
OH_SVI2024	Mapped Ohio Streamflow Variability Index as defined in SIR 2024-5075	0.56	Log base 10
OHREGA	Ohio Region A Indicator	1	dimensionless
OHREGC	Ohio Region C Indicator	0	dimensionless
PRECIPCENT	Mean Annual Precip at Basin Centroid	38.9	inches
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.66	dimensionless

General Disclaimers

This watershed has been edited, computed flows and basin characteristics may not apply. For more information, submit a support request from the 'Help' button in the upper-right of the screen, attach a pdf of this report and request assistance from your local StreamStats regional representative.

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Full Model Reg A SIR2019 5018]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CSL1085LFP	Stream Slope 10 and 85 Longest Flow Path	3.37	feet per mi	1.53	516
DRNAREA	Drainage Area	0.19	square miles	0.04	5989
LC92STOR	Percent Storage from NLCD1992	10.9	percent	0	25.35
OHREGA	Ohio Region A Indicator 1 if in A else 0	1	dimensionless	0	1
OHREGC	Ohio Region C Indicator 1 if in C else 0	0	dimensionless	0	1

Peak-Flow Statistics Flow Report [Peak Flow Full Model Reg A SIR2019 5018]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	15	ft^3/s	7.54	29.9	40.1
20-percent AEP flood	22.7	ft^3/s	11.9	43.2	37.2
10-percent AEP flood	28.3	ft^3/s	14.7	54.4	37.6
4-percent AEP flood	36.1	ft^3/s	18.5	70.3	38.1
2-percent AEP flood	42.3	ft^3/s	21.4	83.6	37.8
1-percent AEP flood	49	ft^3/s	24.4	98.4	39.6
0.2-percent AEP flood	66.1	ft^3/s	32.1	136	40.3

Peak-Flow Statistics Citations

Koltun, G.F.,2019, Flood-frequency estimates for Ohio streamgages based on data through water year 2015 and techniques for estimating flood-frequency characteristics of rural, unregulated Ohio streams: U.S. Geological Survey Scientific Investigations Report 2019–5018, 25 p. (https://dx.doi.org/10.3133/sir20195018)

Annual Flow Statistics

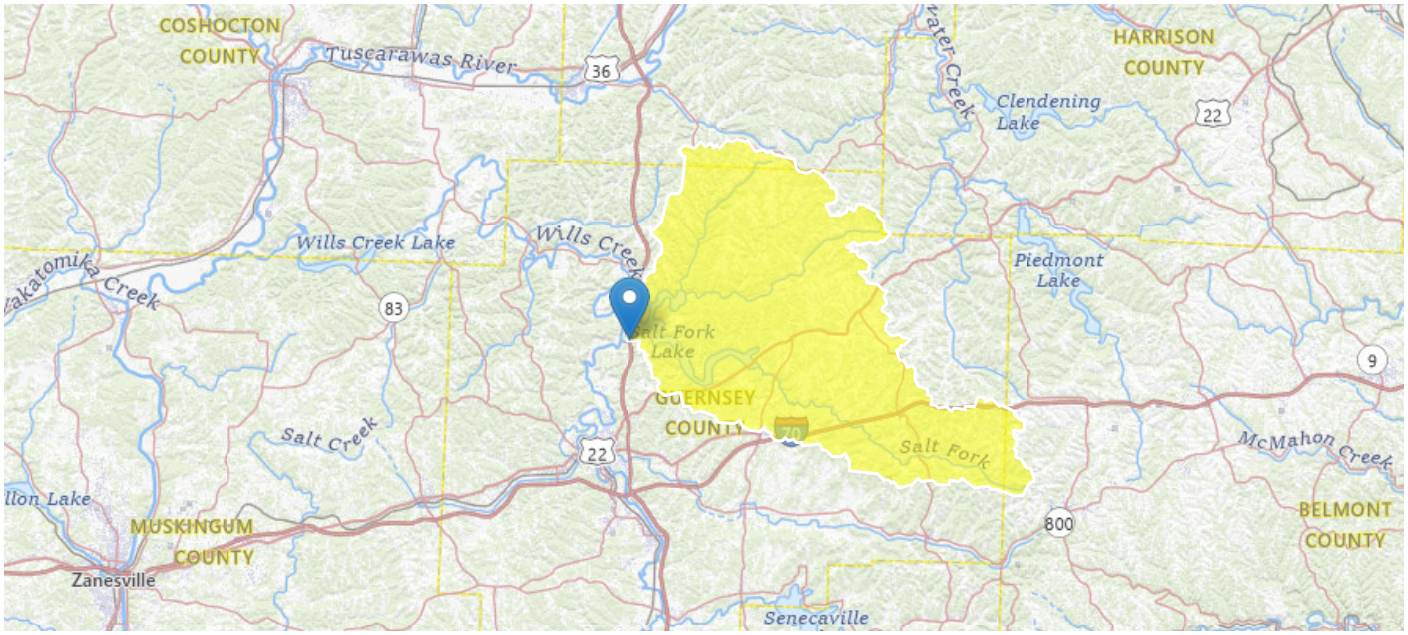
Annual Flow Statistics Parameters [Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.19	square miles	0.12	7422
LAT_CENT	Latitude of Basin Centroid	40.1034	decimal degrees	38.68	41.2
PRECIPCENT	Mean Annual Precip at Basin Centroid	38.9	inches	34	43.2

Full drainage area used for mean monthly flow for October.

StreamStats Report

Region ID: OH
Workspace ID: OH20250826115021465000
Clicked Point (Latitude, Longitude): 40.10082, -81.56173
Time: 2025-08-26 07:50:43 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CSL1085LFP	Change in elevation divided by length between points 10 and 85 percent of distance along the longest flow path to the basin divide, LFP from 2D grid	3.37	feet per mi
DRNAREA	Area that drains to a point on a stream	158	square miles
FOREST	Percentage of area covered by forest	63	percent
LAT_CENT	Latitude of Basin Centroid	40.1098	decimal degrees
LC92STOR	Percentage of water bodies and wetlands determined from the NLCD	4.05	percent
LONG_OUT	Longitude of Basin Outlet	-81.561746	degrees
OH_SVI2024	Mapped Ohio Streamflow Variability Index as defined in SIR 2024-5075	0.56	Log base 10
OHREGA	Ohio Region A Indicator	1	dimensionless
OHREGC	Ohio Region C Indicator	0	dimensionless
PRECIPCENT	Mean Annual Precip at Basin Centroid	39.8	inches
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.66	dimensionless

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Full Model Reg A SIR2019 5018]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CSL1085LFP	Stream Slope 10 and 85 Longest Flow Path	3.37	feet per mi	1.53	516
DRNAREA	Drainage Area	158	square miles	0.04	5989
LC92STOR	Percent Storage from NLCD1992	4.05	percent	0	25.35
OHREGA	Ohio Region A Indicator 1 if in A else 0	1	dimensionless	0	1
OHREGC	Ohio Region C Indicator 1 if in C else 0	0	dimensionless	0	1

Peak-Flow Statistics Flow Report [Peak Flow Full Model Reg A SIR2019 5018]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	3210	ft^3/s	1700	6060	40.1
20-percent AEP flood	4580	ft^3/s	2540	8260	37.2
10-percent AEP flood	5550	ft^3/s	3060	10100	37.6
4-percent AEP flood	6870	ft^3/s	3760	12500	38.1
2-percent AEP flood	7900	ft^3/s	4280	14600	37.8
1-percent AEP flood	8980	ft^3/s	4820	16700	39.6
0.2-percent AEP flood	11700	ft^3/s	6220	22000	40.3

Peak-Flow Statistics Citations

Koltun, G.F.,2019, Flood-frequency estimates for Ohio streamgages based on data through water year 2015 and techniques for estimating flood-frequency characteristics of rural, unregulated Ohio streams: U.S. Geological Survey Scientific Investigations Report 2019–5018, 25 p. (https://dx.doi.org/10.3133/sir20195018)

Annual Flow Statistics

Annual Flow Statistics Parameters [Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	158	square miles	0.12	7422
LAT_CENT	Latitude of Basin Centroid	40.1098	decimal degrees	38.68	41.2
PRECIPCENT	Mean Annual Precip at Basin Centroid	39.8	inches	34	43.2

Annual Flow Statistics Flow Report [Low Flow LatLE 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
Mean Annual Flow	184	ft^3/s	11.4	11.4

Annual Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (https://pubs.er.usgs.gov/publication/wri024068)

Monthly Flow Statistics

Monthly Flow Statistics Parameters [Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	158	square miles	0.12	7422
FOREST	Percent Forest	63	percent	0	99.1
LAT_CENT	Latitude of Basin Centroid	40.1098	decimal degrees	38.68	41.2
LC92STOR	Percent Storage from NLCD1992	4.05	percent	0	19
PRECIPCENT	Mean Annual Precip at Basin Centroid	39.8	inches	34	43.2
STREAM_VARG	Streamflow Variability Index from Grid	0.66	dimensionless	0.25	1.13

Monthly Flow Statistics Flow Report [Low Flow LatLE 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
January Mean Flow	286	ft^3/s	16.6	16.6
February Mean Flow	296	ft^3/s	11.9	11.9
March Mean Flow	356	ft^3/s	14	14
April Mean Flow	303	ft^3/s	11.2	11.2
May Mean Flow	202	ft^3/s	19.5	19.5
June Mean Flow	116	ft^3/s	27	27
July Mean Flow	62.8	ft^3/s	28.2	28.2
August Mean Flow	52.4	ft^3/s	36.8	36.8
September Mean Flow	39.5	ft^3/s	43.6	43.6
October Mean Flow	32.8	ft^3/s	50.8	50.8
November Mean Flow	94.4	ft^3/s	37.5	37.5
December Mean Flow	190	ft^3/s	21.8	21.8

Monthly Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (https://pubs.er.usgs.gov/publication/wri024068)

Seasonal Flow Statistics

Seasonal Flow Statistics Parameters [Statewide May to November one day ten year low flow with SVI less than or

Greenwald, Tracy

From: Banachowski, Keith
Sent: Wednesday, April 2, 2025 4:07 PM
To: Greenwald, Tracy
Subject: Salt Fork Reservoir Dam
Attachments: 0014-001.rpt.2022.Abridged.pdf

Tracy-
I have attached portions of our recent inspection report that are useful in understanding how the dam functions.
For the 100-year flood event (approximation; pool starting at spillway inlet and no gate operation), the maximum discharge from the dam would be about 1405 cfs.
For no flow over the spillway and all gates operated, the discharge would be about 754 cfs.

Please call or email if you would like to discuss further.

Keith Banachowski, P.E., Project Manager
Dam Safety Program – Division of Water Resources
Ohio Department of Natural Resources
2045 Morse Rd., Bldg B-3
Columbus, OH 43229
Office Number: 614/265-6735
24 Hour Dam Emergency Number: 614/799-9538
www.Ohiodnr.gov

GUE-77-14.80 (SFN 3003302, PID 123901) Tunnel Liner Notes (4-01-2025)



Project Alignment

Project Overview:

- Originally built in 1968, 442’ long, 15’ diameter structural steel plate.
- Rehabbed in 1998 with a paved field invert and constructed a 5’ diameter steel bypass pipe 10’ north of the existing pipe.
- The current scope is to evaluate the use of a steel pipe, structural pipe or plastic liner.

Schedule:

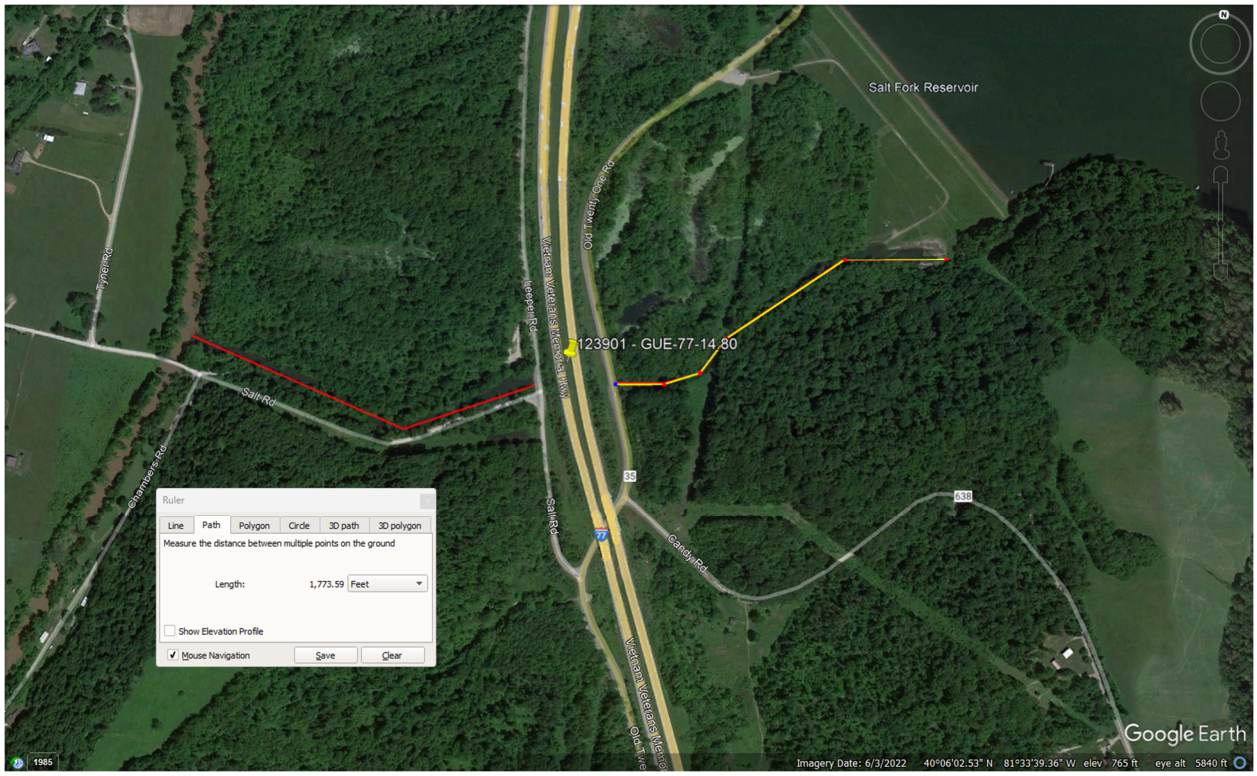
- Files 10-01-2025
- Construction Summer of 2026

Hydraulic's:

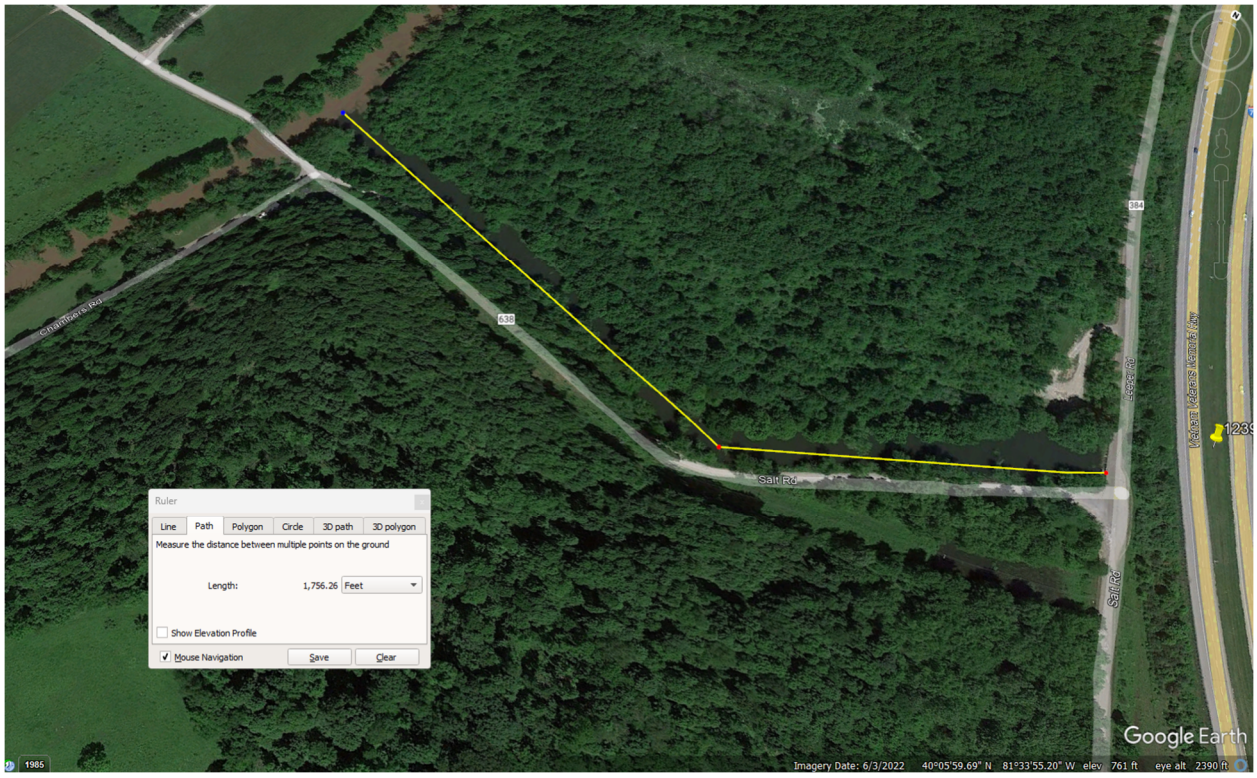
- Talked to Jeff Syar on 4-2-2025 and we only need to do a 1-D analysis of the stream. Survey will only be required for 500 feet downstream and upstream. The model will 1st modeled with the existing 15' diameter pipe; this will be our base flood elevations. 2nd will be with an additional 5 foot diameter pipe and the 3rd will be with the three alternate pipe liners. From these options, we will determine which liner pipe to use and if an additional pipe will need to be bored and jacked.

ROW:

- Right-O-Way may need to be required in order to install the liner pipe. Luke is currently looking into the existing R/W that we have and owners of surrounding properties.



Upstream Measurement



Downstream Measurement

SALT FORK LAKE DAM

File Number: 0014-001
Class: I
Owner: ODNR, Division of Parks & Watercraft
Type of Owner: PUBLIC, STATE
County: GUERNSEY
Type of Impoundment: DAM AND SPILLWAY
Type of Structure: EARTHFILL
Length(ft): 1500
Height(ft): 61
Normal Pool Area(acres): 3010
Top of Dam Storage Volume(ac-ft): 152900
Latitude: 40.102778
Longitude: -81.553333

Ohio Dam Locator Information



Divison of Water Resources
2045 Morse Rd
Columbus, OH 43229
614-265-6620
Water@dnr.state.oh.us
ODNR - Water Resources Website

- Class I Dams
- Class II Dams
- Class III Dams
- Other Dams

How many dams does ODNR own?

ODNR **owns and manages 177 dams statewide**. Among these, there are 56 Class I high-hazard potential dams. Through the Ohio Dam Safety Program, ODNR prioritizes state-owned dams that require comprehensive dam risk...



Reservoir Plan View



Reservoir and Emergency Overflow