

TETLP OPEN PROJECT STREAM SUMMARY

STA. 1665100

OPEN Facility: 30" 36" MP: Compressor Station

Observers: J. Graw-U J. Mulford. Date: 5/1/13

Town: WAYNE County: Jefferson

Crossing Name/ID: B13-58-51 (Cross creek) Recent Rain Event (date/amount): 4/29 - 4/29.

Flow Characteristics

Bank Full Width (average): 60' Flow Conditions: Flowing Subsurface Moist Channel Dry

Flow Type	Flow Velocity	Comments:
<input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential <input type="checkbox"/> Mod/Slow	
<input type="checkbox"/> Interstitial <input type="checkbox"/> Ephemeral	<input checked="" type="checkbox"/> Fast <input type="checkbox"/> Eddies	

Max Pool Depth: > 40 cm/15.8 in < 40 cm/15.8 in Max Pool Depth: 48"

Max Run Depth: 12"

Riffle and Pool Width: Same Wider Pool Wider Riffle

Channel and Bank Characteristics

Channel Substrate %:	Origin	Quality	Bank Height
<input type="checkbox"/> BLDR Slab	<input type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	<u>5</u> ft
<input type="checkbox"/> Boulder	<input type="checkbox"/> Tills	<input type="checkbox"/> High	Bank Erosion
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Wetlands	<input checked="" type="checkbox"/> Moderate	L R
<u>20</u> Cobble x	<input type="checkbox"/> Hardpan	<input type="checkbox"/> Normal	<input type="checkbox"/> <input type="checkbox"/> None- Some
<u>40</u> Gravel x	<input checked="" type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input type="checkbox"/> <input checked="" type="checkbox"/> Moderate
<input type="checkbox"/> Sand	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input checked="" type="checkbox"/> <input type="checkbox"/> High-Severe
<u>30</u> Silt Mud x	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<input type="checkbox"/> Clay Hardpan	<input type="checkbox"/> Shale	<input checked="" type="checkbox"/> Moderate	
<input type="checkbox"/> Peat-Muck	<input type="checkbox"/> Coal Fines	<input type="checkbox"/> Normal	
<input type="checkbox"/> Artificial		<input type="checkbox"/> None	
<u>10</u> Woody/Leaf Debris			
<input type="checkbox"/> Fine Detritus			

Embedded Riffle/Run: Yes

Stream Cover

Instream Cover (presence 0-3 [ranges 0, 1-33%, 33-66%, 66-100%])	Instream Total Cover	Canopy Cover
<u>0</u> Undercut Bank	<u>0</u> Boulders	<input type="checkbox"/> Extensive 25-75% <input type="checkbox"/> 90-100% Closed
<u>0</u> Overhanging Veg.	<u>0</u> Backwater	<input checked="" type="checkbox"/> High 25-75% <input type="checkbox"/> 70-90%
<u>0</u> Shallows (slow moving)	<u>2</u> Aquatic Macrophytes	<input type="checkbox"/> Mod. 5-25% <input type="checkbox"/> 45-70%
<u>0</u> Rootmats	<u>1</u> Logs or Woody Debris	<input type="checkbox"/> Low <5% <input type="checkbox"/> 10-45%
<u>1</u> Rootwads		<input checked="" type="checkbox"/> 0-10% Open

Stream Morphology and Riparian Zone

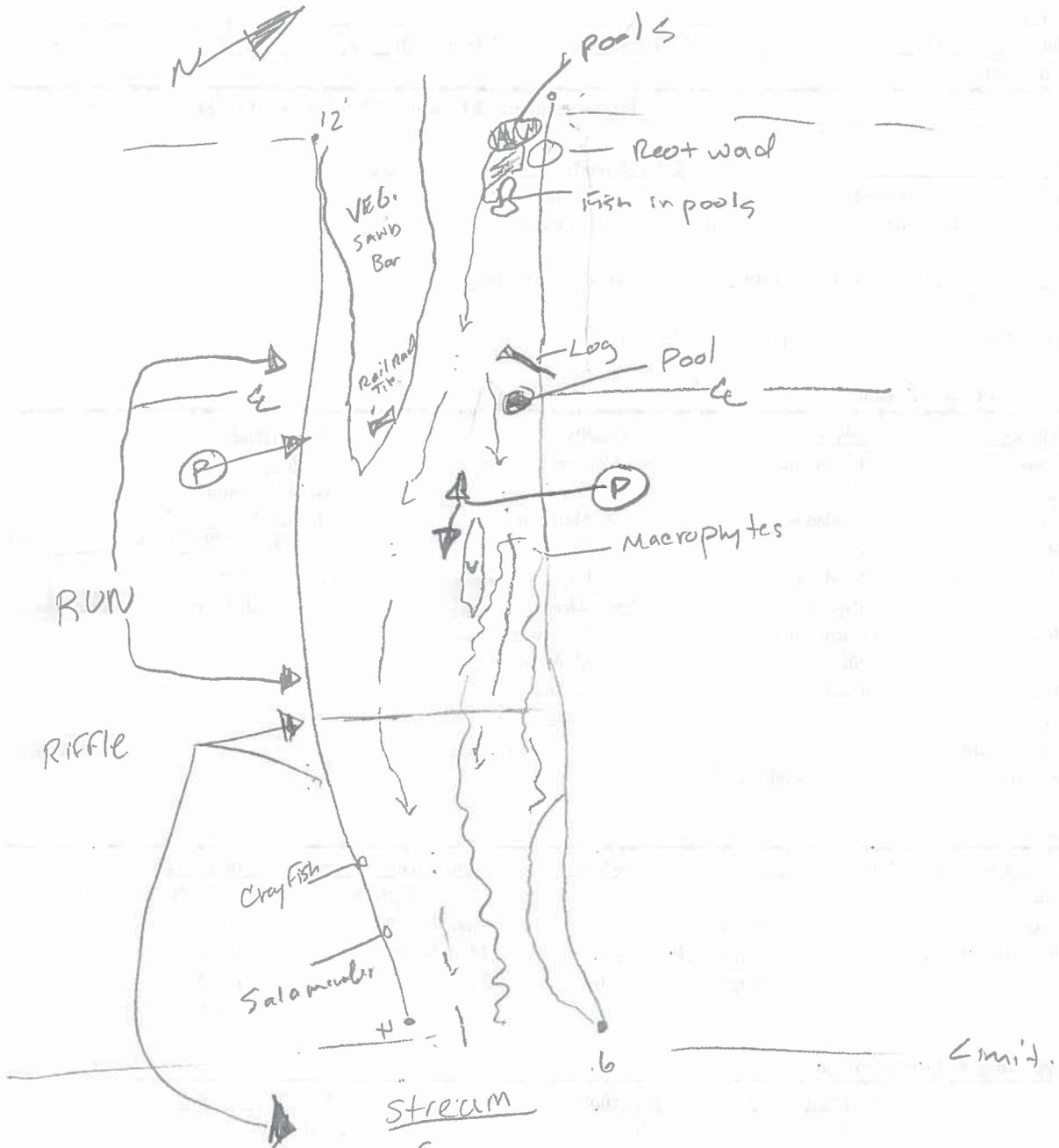
Sinuosity	Gradient (estimate)	Riparian Zone (Left/Right)	Flood Plain Quality
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	L R	<input checked="" type="checkbox"/> Forested R
<input type="checkbox"/> Mod	<input checked="" type="checkbox"/> Mod Flat	<input type="checkbox"/> <input checked="" type="checkbox"/> Wide >50 m	<input type="checkbox"/> Shrub or old field
<input type="checkbox"/> Low	<input type="checkbox"/> Mod (2/100 ft)	<input type="checkbox"/> <input type="checkbox"/> Mod 10-50 m	<input checked="" type="checkbox"/> Hay field
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mod Severe	<input checked="" type="checkbox"/> <input type="checkbox"/> Narrow 5-10 m	<input type="checkbox"/> Active Pasture
	<input type="checkbox"/> Severe (10/100 ft)	<input type="checkbox"/> <input type="checkbox"/> Very Narrow <5	<input type="checkbox"/> Row crops
# of Bends <u>0</u>			<input type="checkbox"/> Development

Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):

WATER boatman, water striders, trout, darter, crayfish and multi burrows.
"yellow mottled sal."

STREAM SKETCH

STA: 1665+00
5/11/13



Braided stream.

Highly eroded b/w Flag 1-6.

(1-6)
(7-12)

Checklist:

- Stream ID# = B13-58-51
- North arrow.
- Detailed sketch of stream (Riffle, Run, Pool).
- Natural and man-made features – roads, culverts, outcrops, structures, etc.
- Photo locations.
- Location of important wildlife sign.



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 56

Stream & Location: B13-58-S1 Cross Creek

RM: Date: 5/01/13

Scorers Full Name & Affiliation: Jon Gravel, Jason Mulford - TRC

River Code: 006-200-000 STORET #: Lat./Long.: (NAD 83 - decimal) 40.3606 180.8203 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Check ONE (Or 2 & average). BEST TYPES: BLDR /SLABS [10], BOULDER [9], COBBLE [8], GRAVEL [7], SAND [6], BEDROCK [5]. OTHER TYPES: HARDPAN [4], DETRITUS [3], MUCK [2], SILT [2], ARTIFICIAL [0]. ORIGIN: LIMESTONE [1], TILLS [1], WETLANDS [0], HARDPAN [0], SANDSTONE [0], RIP/RAP [0], LACUSTURINE [0], SHALE [-1], COAL FINES [-2]. QUALITY: HEAVY [-2], MODERATE [-1], NORMAL [0], FREE [1], EXTENSIVE [-2], MODERATE [-1], NORMAL [0], NONE [1].

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts. AMOUNT: EXTENSIVE >75% [11], MODERATE 25-75% [7], SPARSE 5-<25% [3], NEARLY ABSENT <5% [1].

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). SINUOSITY: HIGH [4], MODERATE [3], LOW [2], NONE [1]. DEVELOPMENT: EXCELLENT [7], GOOD [5], FAIR [3], POOR [1]. CHANNELIZATION: NONE [6], RECOVERED [4], RECOVERING [3], RECENT OR NO RECOVERY [1]. STABILITY: HIGH [3], MODERATE [2], LOW [1].

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). RIPARIAN ZONE: EROSION: NONE / LITTLE [3], MODERATE [2], HEAVY / SEVERE [1]. RIPARIAN WIDTH: WIDE > 50m [4], MODERATE 10-50m [3], NARROW 5-10m [2], VERY NARROW < 5m [1], NONE [0]. FLOOD PLAIN QUALITY: FOREST, SWAMP [3], SHRUB OR OLD FIELD [2], RESIDENTIAL, PARK, NEW FIELD [1], FENCED PASTURE [1], OPEN PASTURE, ROWCROP [0]. CONSERVATION TILLAGE [1], URBAN OR INDUSTRIAL [0], MINING / CONSTRUCTION [0].

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH: > 1m [6], 0.7-<1m [4], 0.4-<0.7m [2], 0.2-<0.4m [1], < 0.2m [0]. CHANNEL WIDTH: POOL WIDTH > RIFFLE WIDTH [2], POOL WIDTH = RIFFLE WIDTH [1], POOL WIDTH < RIFFLE WIDTH [0]. CURRENT VELOCITY: TORRENTIAL [-1], VERY FAST [1], FAST [1], MODERATE [1], SLOW [1], INTERSTITIAL [-1], INTERMITTENT [-2], EDDIES [1].

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). NO RIFFLE [metric=0]. RIFFLE DEPTH: BEST AREAS > 10cm [2], BEST AREAS 5-10cm [1], BEST AREAS < 5cm [metric=0]. RUN DEPTH: MAXIMUM > 50cm [2], MAXIMUM < 50cm [1]. RIFFLE / RUN SUBSTRATE: STABLE (e.g., Cobble, Boulder) [2], MOD. STABLE (e.g., Large Gravel) [1], UNSTABLE (e.g., Fine Gravel, Sand) [0]. RIFFLE / RUN EMBEDDEDNESS: NONE [2], LOW [1], MODERATE [0], EXTENSIVE [-1].

6] GRADIENT (91 ft/mi) DRAINAGE AREA (35.7 mi^2) VERY LOW - LOW [2-4], MODERATE [6-10], HIGH - VERY HIGH [10-6]. %POOL: 10, %GLIDE: 5, %RUN: 40, %RIFFLE: 45. Gradient Maximum 10.

AJ SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Con long tail salamander, water boatman, water striders, trout, darter, crayfish and many burrows

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

STAGE

- 1st -sample pass- 2nd
- HIGH
 - UP
 - NORMAL
 - LOW
 - DRY

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

62.5 meters

CLARITY

- 1st --sample pass-- 2nd
- < 20 cm
 - 20-<40 cm
 - 40-70 cm
 - > 70 cm/ CTB
 - SECCHI DEPTH

1st 121.9 cm
2nd _____ cm

CANOPY

- > 85%- OPEN
- 55%-<85%
- 30%-<55%
- 10%-<30%
- <10%- CLOSED

CJ RECREATION

AREA DEPTH
POOL: >100ft² >3ft

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMOURED / SLUMPS
- ISLANDS / SCOURED
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

- WWTP / CSO / NPDES / IN
- HARDENED / URBAN / DIRT
- CONTAMINATED / LAND
- BMPs-CONSTRUCTION-SE
- LOGGING / IRRIGATION / C
- BANK / EROSION / SUR
- FALSE BANK / MANURE / L
- WASH H₂O / TILE / H₂O T
- ACID / MINE / QUARRY /
- NATURAL / WETLAND / ST
- PARK / GOLF / LAWN / H
- ATMOSPHERE / DATA PA

Stream Drawing:

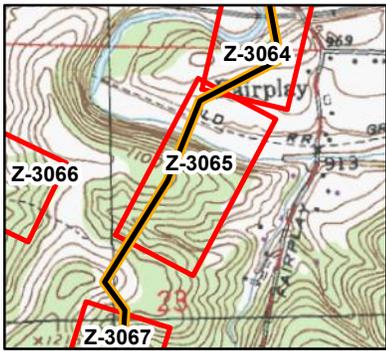
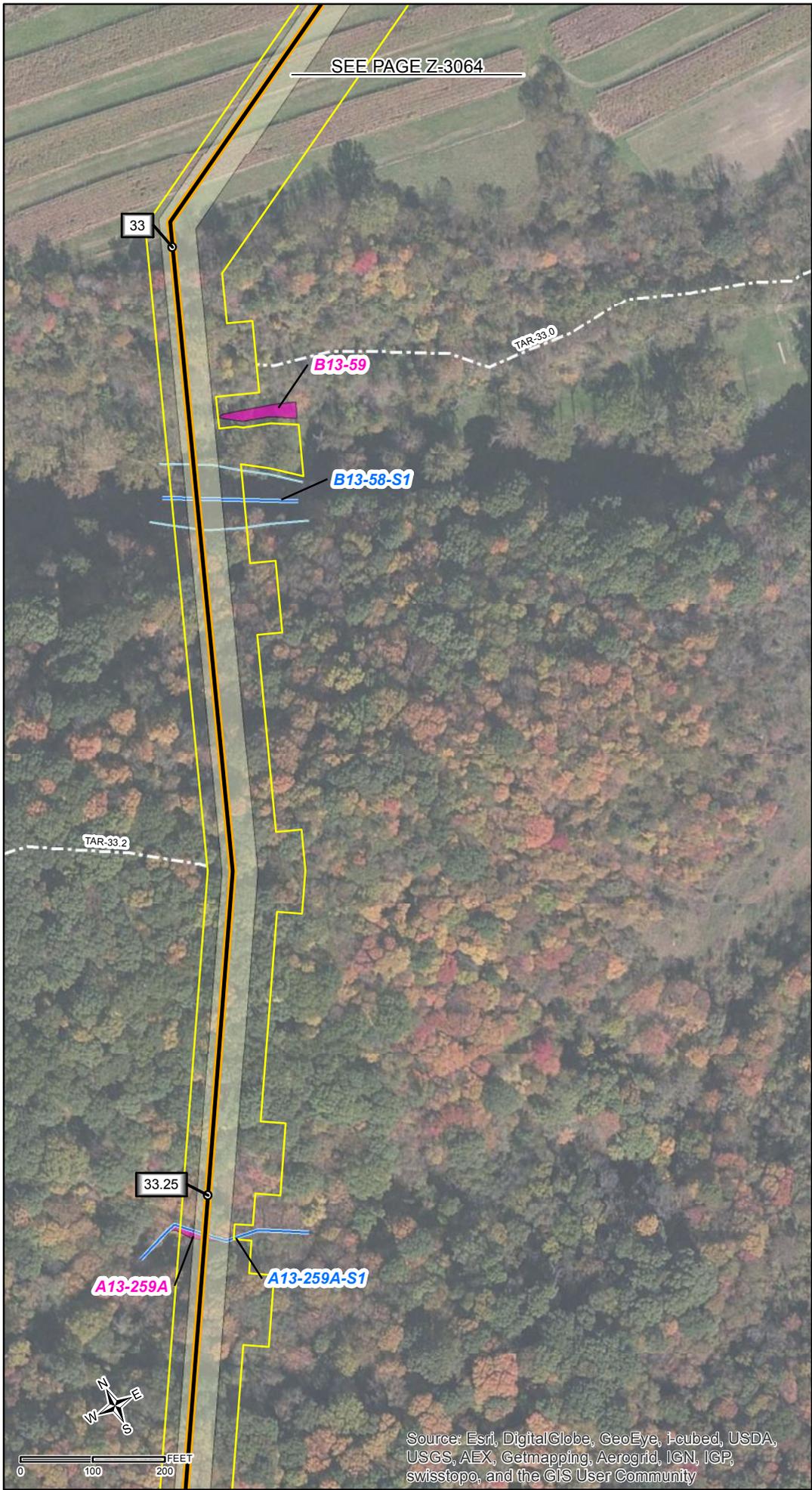
See data form and project mapping for stream characteristics and depictions for waterbody crossing

**OPEN 30" Mainline Waterbody Photographs
Jefferson County, Ohio**

**Wayne Township MP 33.07
B13-58-S1**

Photo 1	Photo 2
	
Photo 3	Photo 4
N/A	N/A

Photo 1: Perennial stream, looking upstream to NW
Photo 2: Perennial stream, looking downstream to SE



LEGEND

- 1 MILE POST
- PROPOSED PIPELINE
- PROPOSED ACCESS ROAD
- DELINEATED STREAM
- DELINEATED WATERBODY EDGE
- EXISTING ROAD CENTERLINE
- DELINEATED WATERBODY
- DELINEATED WETLAND
- PROPOSED PERMANENT EASEMENT
- PROPOSED CONSTRUCTION WORKSPACE
- MUNICIPALITY BOUNDARY

Data Sources: ESRI, Spectra, TRC, Hatch Mott MacDonald

Projection: NAD83, StatePlane
Ohio NorthFIPS 3401
US Survey Feet

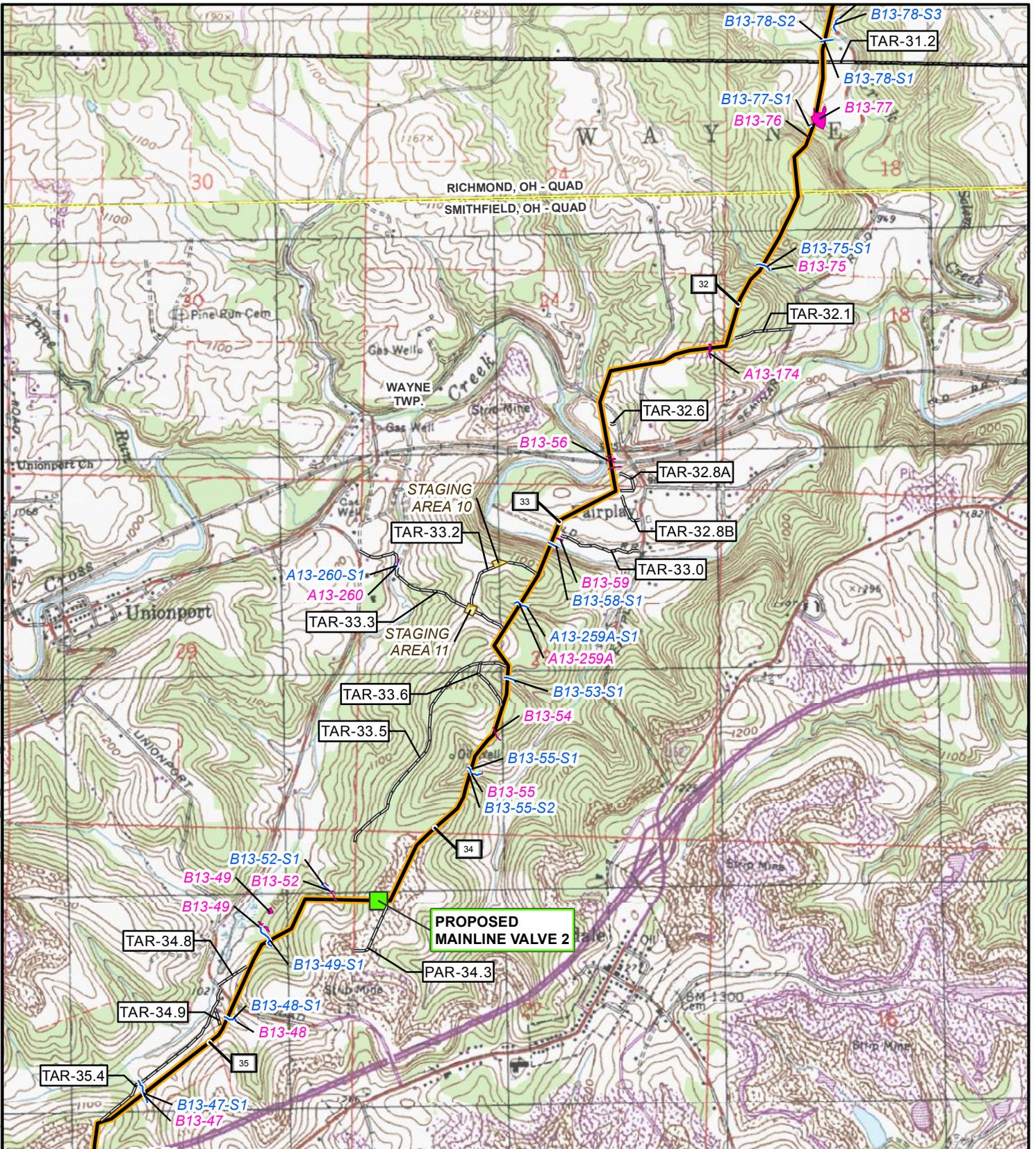
Spectra Energy Partners.
Texas Eastern Transmission, LP
5408 Westchester Court, Houston, TX 77056-6518 713.827.5000

Spectra Natural Gas Pipeline
2015 OPEN Project
Proposed 30in. Line NO. 73

Natural Resource Maps
Map Z-3065

Hatch Mott MacDonald
Created: 02/19/2014

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- | | | | |
|---------------------------------|-------------------------|----------------------------|-----------------------------|
| MILE POST | DELINEATED WETLAND | PROPOSED M&R STATION | PROPOSED COMPRESSOR STATION |
| PROPOSED PIPELINE | DELINEATED WATERBODY | PROPOSED REGULATOR STATION | MUNICIPALITY BOUNDARY |
| PROPOSED ACCESS ROAD | PROPOSED STAGING AREA | PROPOSED TAP VALVE | COUNTY BOUNDARY |
| EXISTING TEXAS EASTERN PIPELINE | PROPOSED MAINLINE VALVE | USGS QUADRANGLE BOUNDARY | |
| DELINEATED STREAM CENTERLINE | | | |



**TITLE: OPEN PROJECT
DELINEATED STREAMS & WETLANDS - USGS QUAD MAP**

LOC.: JEFFERSON COUNTY, OHIO REV. 0

CKD. BY: HMMHOL ENG. DATE: 02/2014 W.O.

DRN. BY: HMMHOL SCALE: 1" = 2000' DWG. NO. Z-2010



Texas Eastern Transmission, LP
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

I.G.