TETLP OPEN PROJECT
STREAM SUMMARY

STA 2878+15

OPEN Facility: ☐ 30" ☒ 36" MP: 1.82 ☐ Compressor Station

Observers: J Boldur M Wierbonics Date: 8/4/12

Town: Richland, TWP County: Belmont

Crossing Name/ID: A12-93-51 Recent Rain Event (date/amount):

Flow Characteristics

Bank Full Width (average): 10' Flow Conditions: ☒ Flowing ☐ Subsurface ☐ Moist Channel ☐ Dry

Flow Type		Flow Velocity		Comments:
☒ Perennial	☐ Intermittent	☐ Torrential	☒ Mod/Slow	Water + soil within channel are orange
☐ Interstitial	☐ Ephemeral	☐ Fast	☐ Eddies	

Max Pool Depth: ☐ > 40 cm/15.8 in ☒ < 40 cm/15.8 in Max Pool Depth: ~8"

Max Run Depth: ~3"

Riffle and Pool Width: ☐ Same ☒ Wider Pool ☐ Wider Riffle

Channel and Bank Characteristics

Channel Substrate %:	Origin	Quality	Bank Height
___ BLDR Slab	☒ Limestone	*Silted Stream Channel*	15" ~~ft~~
___ Boulder	☐ Tills	☐ High	**Bank Erosion**
___ Bedrock	☐ Wetlands	☐ Moderate	**L R**
55 Cobble ✓	☐ Hardpan	☒ Normal	☐ ☐ None- Some
35 Gravel ✓	☐ Sandstone	☐ Free	☒ ☒ Moderate
___ Sand	☐ Rip/Rap	*Embeddedness*	☐ ☐ High-Severe
10 Silt Mud ✓	☐ Lacustrine	☐ Extensive	
___ Clay Hardpan	☐ Shale	☐ Moderate	
___ Peat-Muck	☐ Coal Fines	☒ Normal	
___ Artificial		☐ None	
___ Woody/Leaf Debris			
___ Fine Detritus			

Embedded Riffle/Run: None

Stream Cover

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

Stream Morphology and Riparian Zone

Sinuosity	Gradient (estimate)	Riparian Zone (Right/Left)	Flood Plain Quality
☐ High	☐ Flat (0.5/100 ft)	☐ ☐ Wide >50 m	☐ Forested
☐ Mod	☒ Mod Flat	☐ ☐ Mod 10-50 m	☐ Shrub or old field
☐ Low	☐ Mod (2/100 ft)	☐ ☐ Narrow 5-10 m	☐ Hay field
☒ None	☐ Mod Severe	☒ ☒ Very Narrow <5	☐ Active Pasture
# of Bends 2	☐ Severe (10/100 ft)	Mowed lawns/houses Driveway	☐ Row crops
			☒ Development

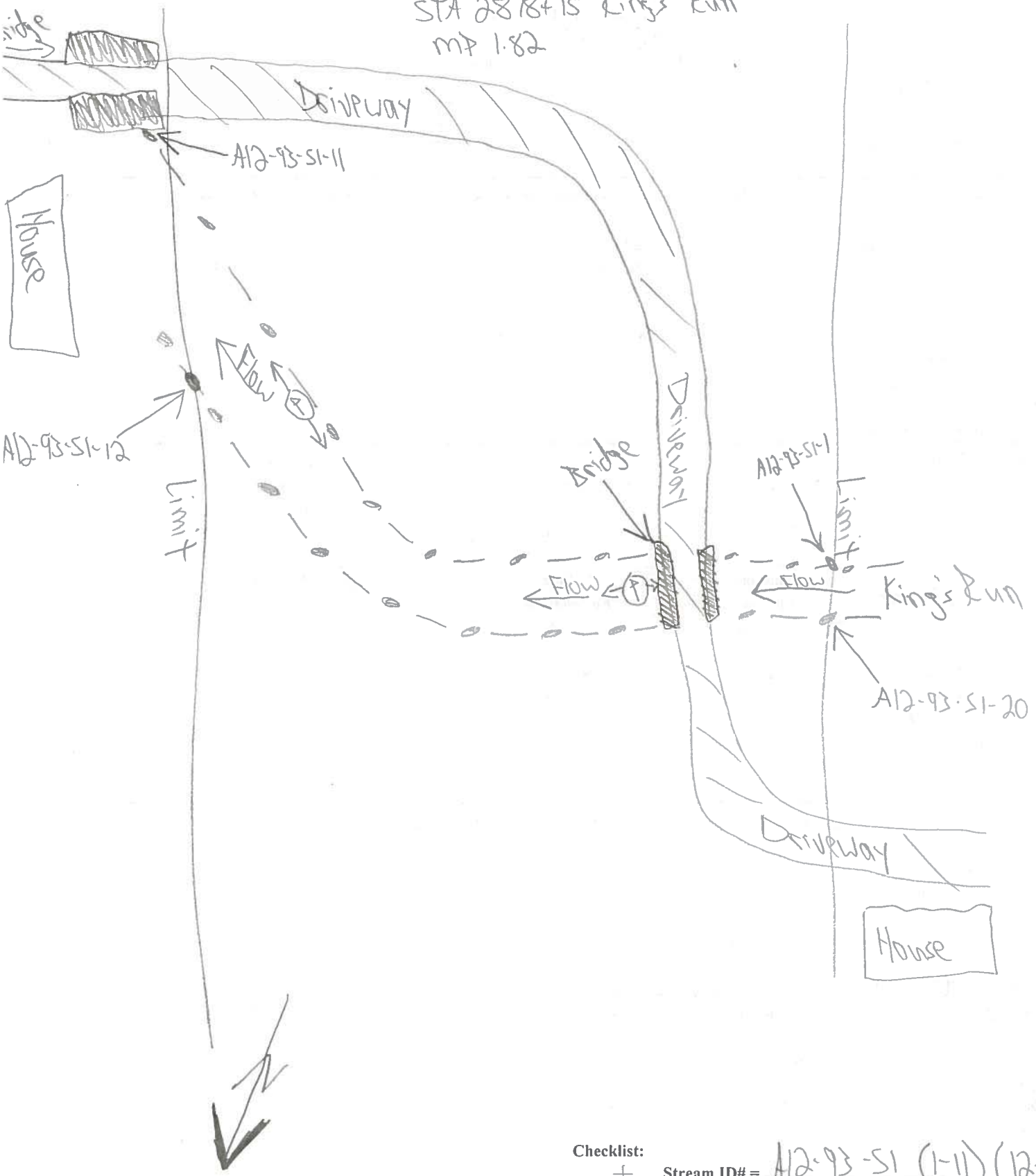
Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):

Water striders observed.

Notes: King's Run drains a Superfund site. There is a warning sign not to touch water and soils due to presence of hazardous chemicals.

STREAM SKETCH

STA 2878+15 King's Run
MP 1.82



Checklist:

- **Stream ID# =** A12-93-51 (1-11) (12-20)
- 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.

A12-93-S1 Kings Run

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 65

Stream & Location: A12-93-S1 Kings Run **RM:** _ _ _._ **Date:** 8/04/12

Scorers Full Name & Affiliation: Jim Bolduc, Mike Weirbonics - TRC

River Code: 006-512-000 **STORET #:** _ _ _ _ _ _ **Lat./Long.:** (NAD 83 - decimal °) 40.0399 /80.8383 **Office verified location** ☐

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES		POOL	RIFFLE
☐	☐ BLDR /SLABS [10]		
☐	☐ BOULDER [9]		
☑	☐ COBBLE [8]		55
☐	☑ GRAVEL [7]		35
☐	☐ SAND [6]		
☐	☐ BEDROCK [5]		

OTHER TYPES		POOL	RIFFLE
☐	☐ HARDPAN [4]		
☐	☐ DETRITUS [3]		
☐	☐ MUCK [2]		
☐	☐ SILT [2]		10
☐	☐ ARTIFICIAL [0]		

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ■ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☑ LIMESTONE [1]
- ☐ TILLS [1]
- ☐ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☐ HEAVY [-2]
- ☐ MODERATE [-1]
- ☑ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☐ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☑ NORMAL [0]
- ☐ NONE [1]

Substrate 16 *Maximum 20*

Comments

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 (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

- 1 UNDERCUT BANKS [1]
- 2 OVERHANGING VEGETATION [1]
- ___ SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]
- ___ POOLS > 70cm [2]
- 1 ROOTWADS [1]
- ___ BOULDERS [1]
- ___ OXBOWS, BACKWATERS [1]
- ___ AQUATIC MACROPHYTES [1]
- ___ LOGS OR WOODY DEBRIS [1]

AMOUNT

Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☑ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover 10 *Maximum 20*

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]

Comments

pool is fair, glide is excellent, run is good, riffle is good.

Channel 15 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION

L	R	
☐	☐	NONE / LITTLE [3]
☑	☑	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH

L	R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☑	☑	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY

L	R	
☑	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☑	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☐	☐	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

limited riparian width due to residential lawns/driveways. primarily residential area on right bank for 100 m

Riparian 10 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☑ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- ☑ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☑ MODERATE [1]
- ☑ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 5 *Maximum 12*

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]

Comments

Riffle / Run 5 *Maximum 8*

6] GRADIENT

(152 ft/mi)
- ☑ VERY LOW - LOW [2-4]
- ☐ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.07 mi²)

%POOL: 25 %GLIDE: 15
%RUN: 15 %RIFFLE: 45

Gradient 4 *Maximum 10*

gradient score was above "very high", defaulted to score of 4

A] SAMPLED REACH

Check ALL that apply

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass- 2nd

- [ ] HIGH [ ]
- [ ] UP [ ]
- [x] NORMAL [ ]
- [ ] LOW [ ]
- [ ] DRY [ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

62.5 meters

CLARITY

1st --sample pass-- 2nd

- [x] < 20 cm [ ]
- [ ] 20-<40 cm [ ]
- [ ] 40-70 cm [ ]
- [ ] > 70 cm/ CTB [ ]
- [ ] SECCHI DEPTH [ ]

1st 10 cm

2nd _____ cm

CANOPY

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [x] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

water striders observed

Kings Run drains a superfund site, warning signs advise not touching the water or soils due to presence of hazardous chemicals.

Soil and water orange/red color - low clarity

B] AESTHETICS

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

C] RECREATION

POOL: AREA [ ] >100ft² DEPTH [ ] >3ft

D] MAINTENANCE

Circle some & *COMMENT*

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

E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

x̄ width	3.04 m
x̄ depth	
max. depth	20.3
x̄ bankfull width	
bankfull x̄ depth	
W/D ratio	
bankfull max. depth	
floodprone x^2 width	
entrench. ratio	

Legacy Tree:

Stream Drawing:

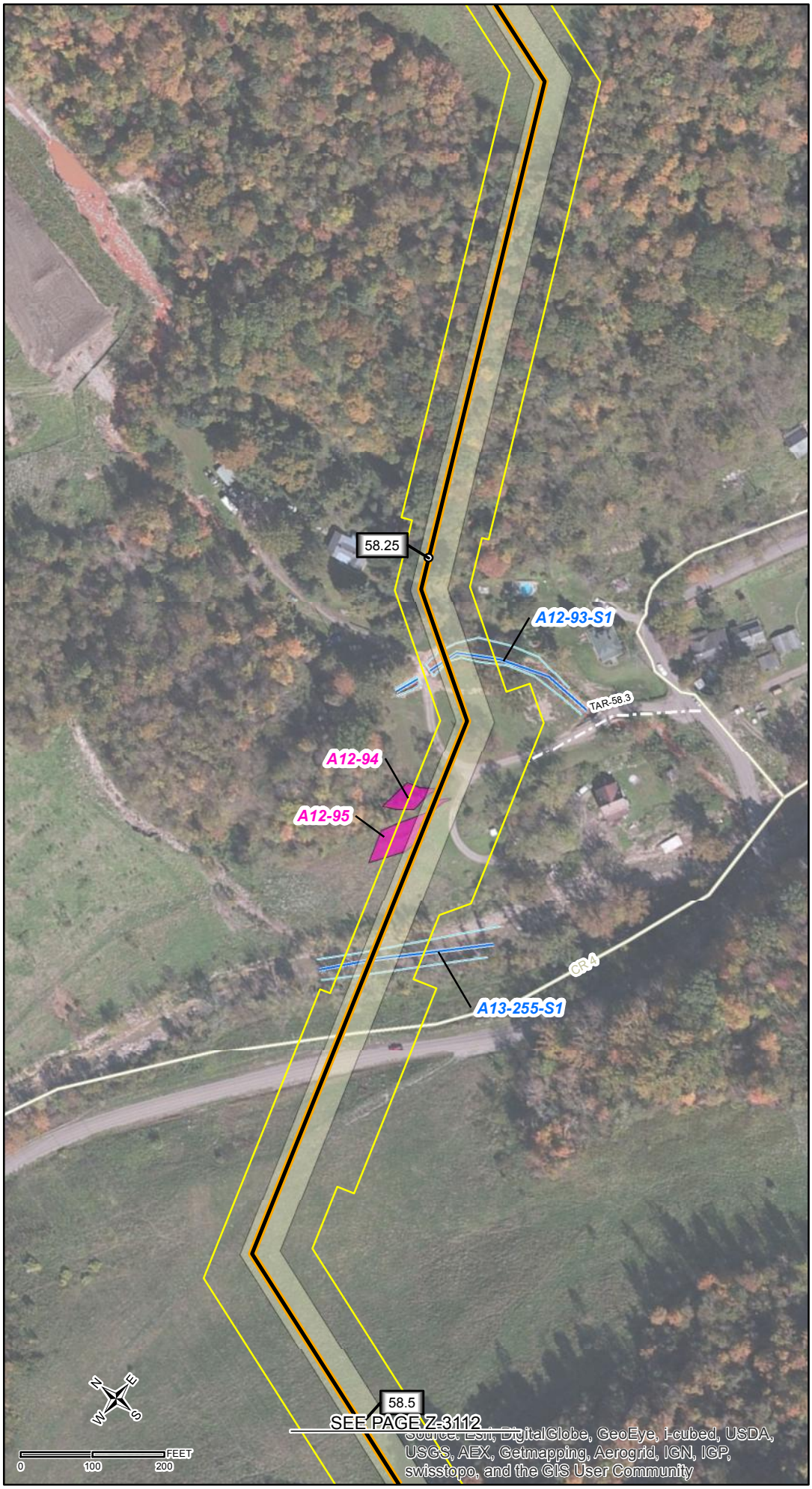
See data form and project mapping for stream characteristics and depictions for waterbody crossing

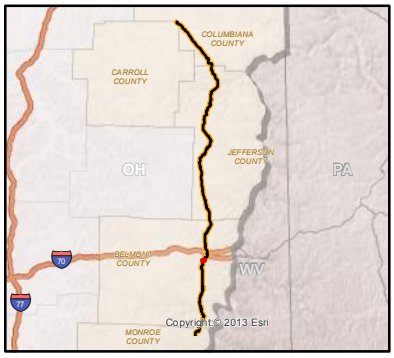
OPEN 30” Mainline Waterbody Photographs
Belmont County, Ohio

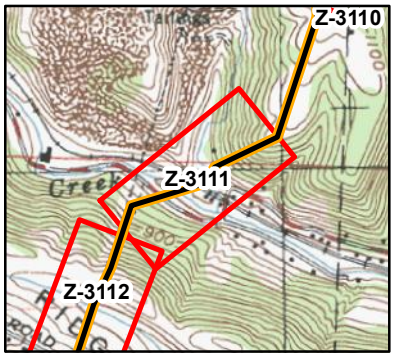
Richland Township MP 58.28
A12-93-S1

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

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







LEGEND

- 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
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

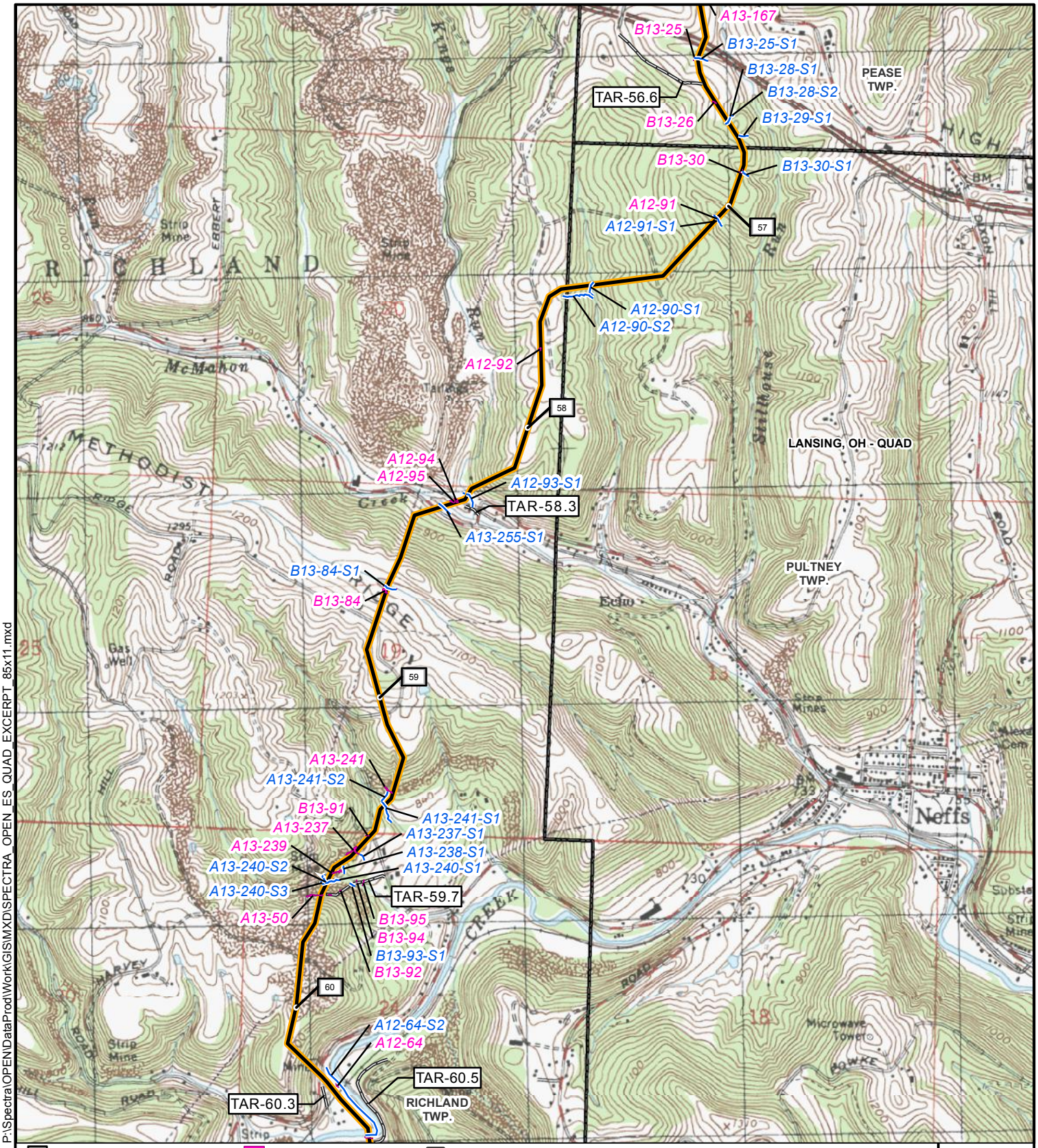
Spectra Natural Gas Pipeline
2015 OPEN Project
Proposed 30in. Line NO. 73

Natural Resource Maps

Map Z-3111

Hatch Mott MacDonald
150 Lower Westfield Rd.
Holyoke, MA 01040
Ph: (413) 536-0155 Fax: (413) 536-0136

Created:
02/19/2014



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

N W E S

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

LOC.: BELMONT COUNTY, OHIO			REV. 0
CKD. BY: HMMHOL	ENG.	DATE: 02/2014	W.O.
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO. Z-2018	

I.G.

Spectra Energy Partners

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