

**TETLP OPEN PROJECT
STREAM SUMMARY**

28+00

OPEN Facility: 30" 36" MP: Compressor Station
 Observers: AF KC Date: 4/17/13
 Town: East Township County: Carroll
 Crossing Name/ID: B13-4-91 Recent Rain Event (date/amount): 4/16/13 1/4"

Flow Characteristics

Bank Full Width (average): 3' Flow Conditions: Flowing Subsurface Moist Channel Dry

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

Max Pool Depth: > 40 cm/15.8 in < 40 cm/15.8 in Max Pool Depth: N/A
 Max Run Depth: 1/2'
 Riffle and Pool Width: Same Wider Pool Wider Riffle

Channel and Bank Characteristics

<u>Channel Substrate %:</u>	<u>Origin</u>	<u>Quality</u>	<u>Bank Height</u>
<input type="checkbox"/> BLDR Slab	<input type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	<u>2</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 type="checkbox"/> Moderate	L R
<input type="checkbox"/> Cobble	<input type="checkbox"/> Hardpan	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> None- Some
<input type="checkbox"/> Gravel	<input type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input checked="" type="checkbox"/> Moderate
<input type="checkbox"/> Sand	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input type="checkbox"/> High-Severe
<u>50</u> <input checked="" type="checkbox"/> Silt Mud	<input checked="" type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<u>50</u> <input checked="" type="checkbox"/> Clay Hardpan	<input type="checkbox"/> Shale	<input type="checkbox"/> Moderate	
<input type="checkbox"/> Peat-Muck	<input type="checkbox"/> Coal Fines	<input checked="" type="checkbox"/> Normal	
<input type="checkbox"/> Artificial		<input type="checkbox"/> None	
<input type="checkbox"/> Woody/Leaf Debris			
<input type="checkbox"/> Fine Detritus			

Embedded Riffle/Run: N/A

Stream Cover

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

Stream Morphology and Riparian Zone

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

Corn field to east (approx 40')

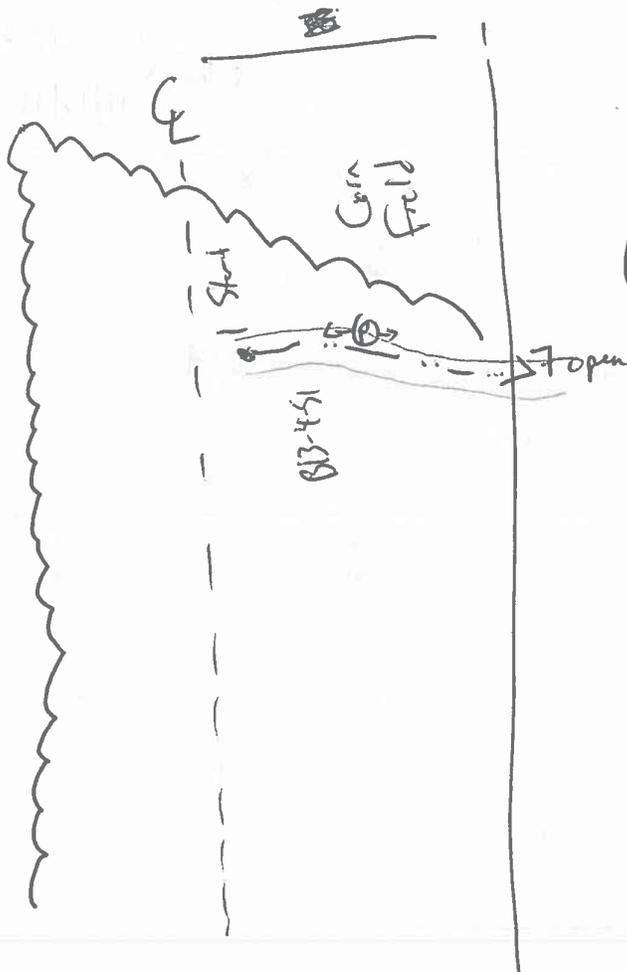
STREAM SKETCH

28+00

B13-4-81



Transmission line



SL
(1-7)

Checklist:



Stream ID# = B13-4-81

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.

JG 5/15/13



Primary Headwater Habitat Evaluation Form

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

10

SITE NAME/LOCATION TETLP's OPEN Project
 SITE NUMBER B13-4-S1 RIVER BASIN Little Beaver Creek DRAINAGE AREA (mi²) 0.01
 LENGTH OF STREAM REACH (ft) 35 LAT. 40.7267 LONG. -80.9196 RIVER CODE _____ RIVER MILE _____
 DATE 4/17/13 SCORER A. Finamore, K Caron COMMENTS 100 ft of stream reach was surveyed.

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 (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	50
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 3 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: _____ TOTAL NUMBER OF SUBSTRATE TYPES: _____

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) 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 type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS Moist channel no pools in stream 1 cm of wa MAXIMUM POOL DEPTH (centimeters): 0

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 Moderate erosion both sides of stream. AVERAGE BANKFULL WIDTH (meters) 0.9

HHEI Metric Points

Substrate Max = 40

5

A + B

Pool Depth Max = 30

0

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☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conservation Tillage		Urban or Industrial	
Open Pasture, Row Crop		Mining or Construction	

COMMENTS _____

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

<input checked="" type="checkbox"/> Stream Flowing	<input 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 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input 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 (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input checked="" type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - Yes No QHEI Score N/A (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: Trib to Brush Creek Distance from Evaluated Stream _____
 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: Kensington, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Columbiana Township / City: Hanover

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 04/16/13 Quantity: 1/4"

Photograph Information: See Attached photo document

Elevated Turbidity? (Y/N): N Canopy (% open): 10-45

Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A

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/A If not, please explain: N/A

Additional comments/description of pollution impacts: potential pollution from row crops located to northeast.

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 Salamanders 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: None

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

FLOW 

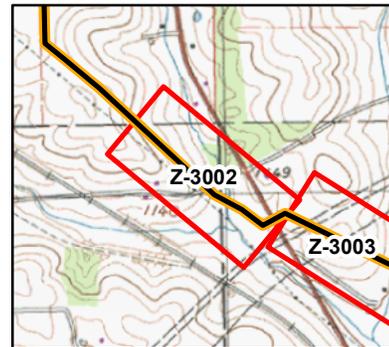
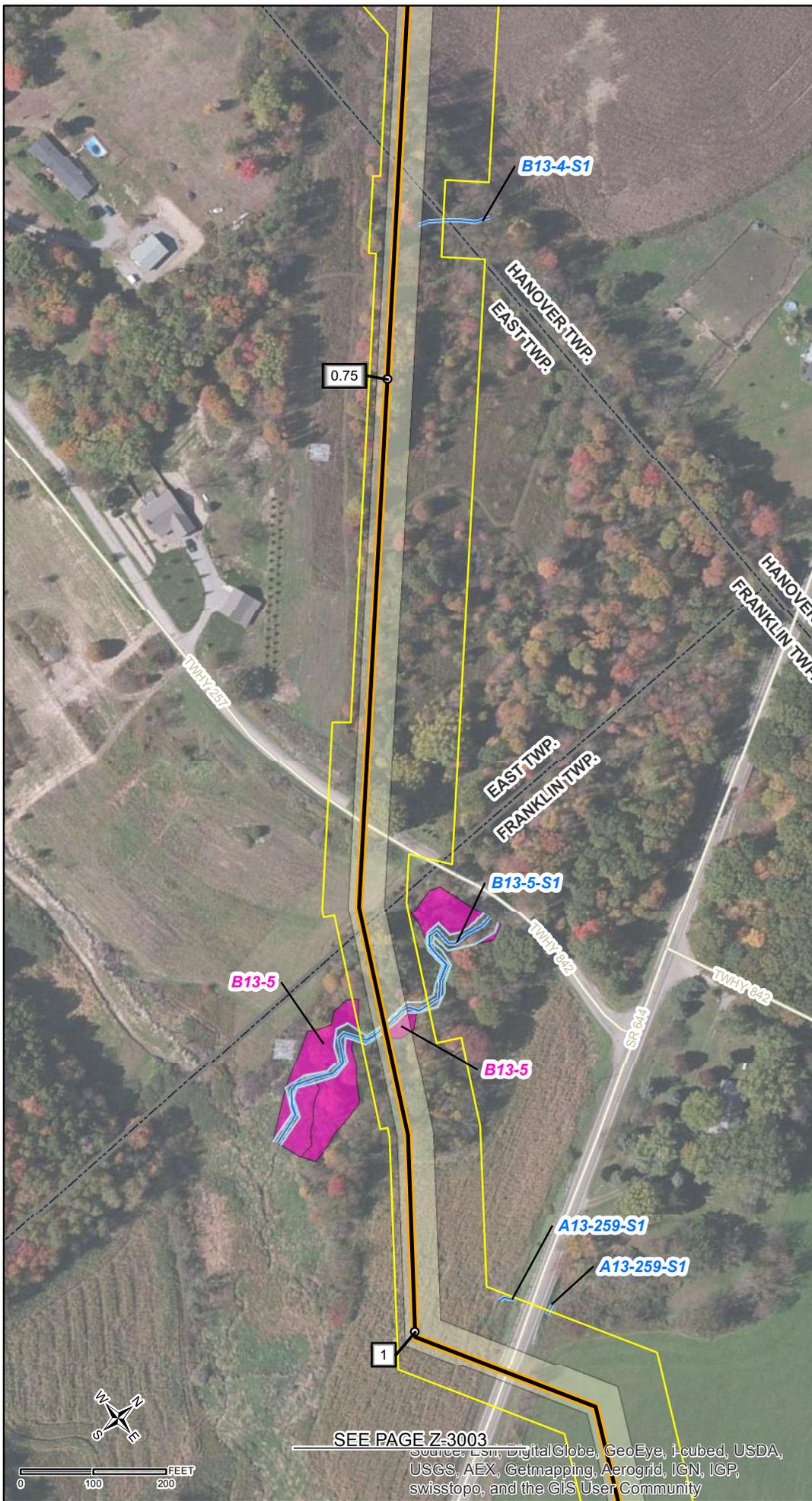
See attached stream summary form for other stream information.

**OPEN 30" Mainline Wetland and Waterbody Photographs
Columbiana and Carroll County, Ohio**

**Hanover/East Township MP 0.7
B13-4-S1**

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

Photo 1: Ephemeral stream, looking upstream to the SW
Photo 2: Ephemeral stream, looking downstream to the NE



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
5409 Weatherford Court, Houston, TX 77056-0518 713827-5000

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

Natural Resource Maps
Map Z-3002

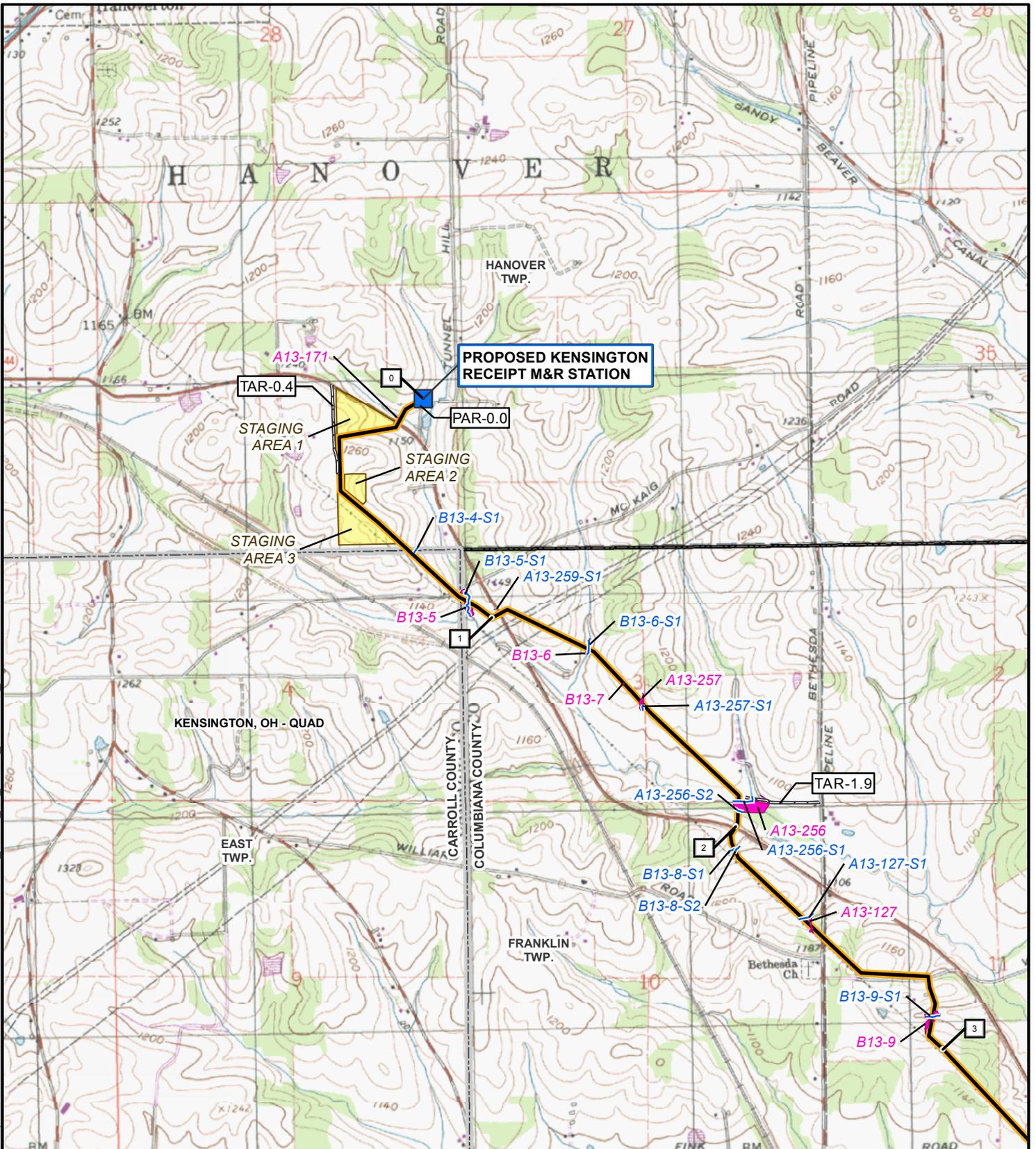
Hatch Mott MacDonald
100 Lower Woodloch Drive
Houston, TX 77056-0518
PH: 713.827.5000 Fax: 413.827.5154

Created: 02/19/2014

SEE PAGE Z-3003

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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- | | | | |
|---------------------------------|-------------------------|----------------------------|-----------------------------|
| 1 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.: COLUMBIANA & CARROLL COUNTIES, OHIO REV. 0

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

DRN. BY: HMMHOL SCALE: 1" = 2000' DWG. NO. Z-2001



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

I.G.