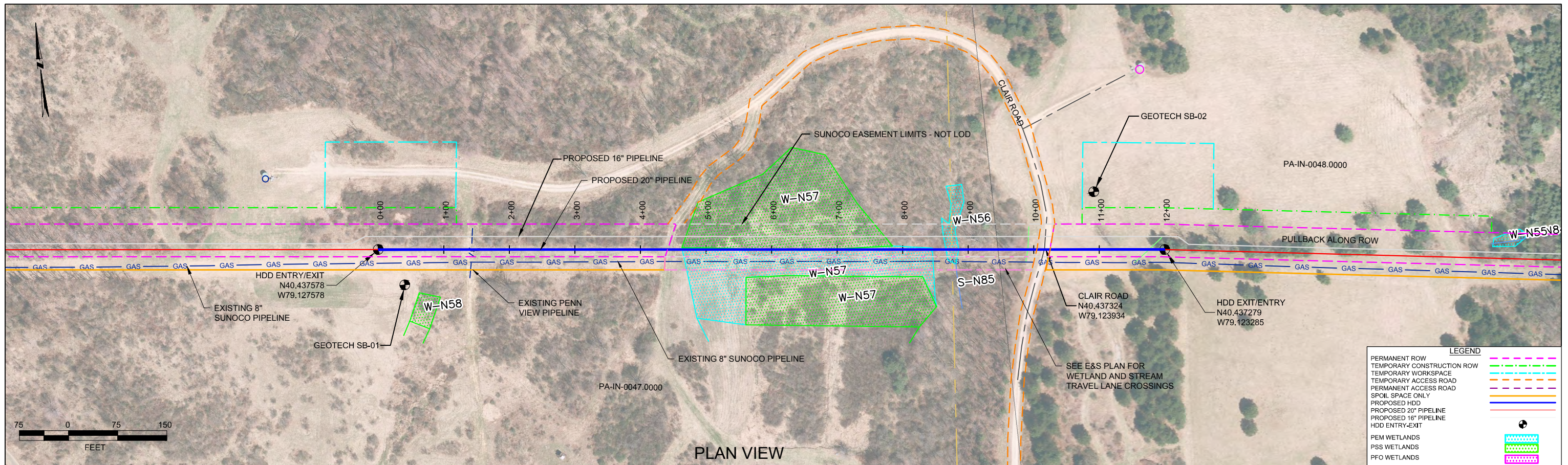


HDD PA-IN-0048.0000-RD (W-N57 and W-N56)

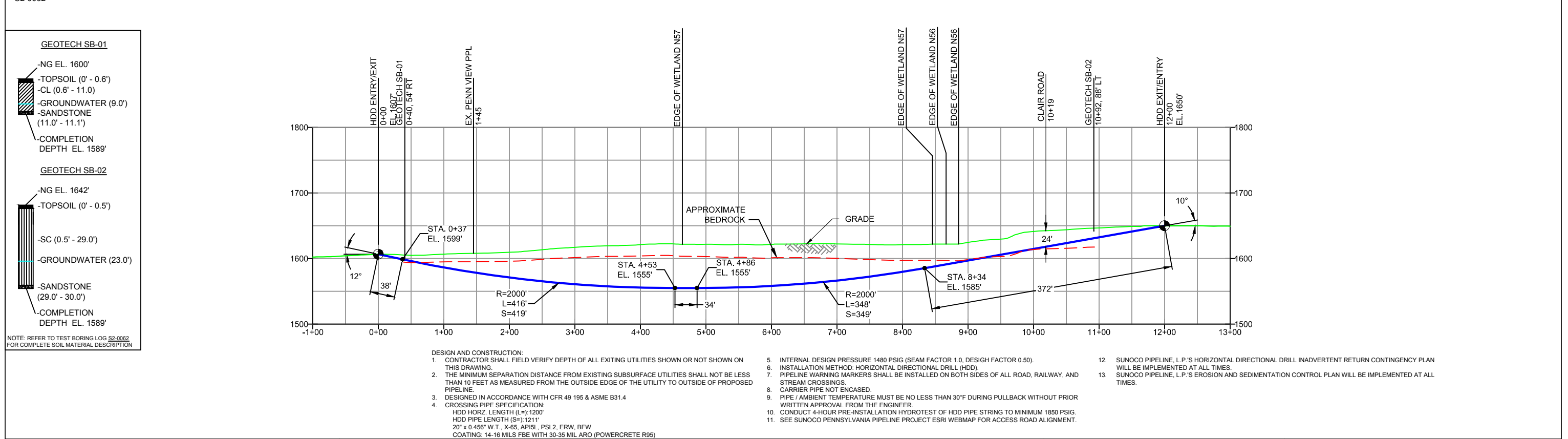
Given the design, the threat of inadvertent return has been reduced to the maximum extent practicable and in this case that threat is considered to be low. Implementing this design, along with adherence to the Pennsylvania Pipeline Project Inadvertent Return Contingency Plan will ensure inadvertent impacts, if they were to occur, are also minimized to the maximum extent.

The drill will enter/exit 460 feet from the edge of the western most boundary of the wetland N57. The drill will pass 67 feet under the western most boundary of wetland N57 and 30 feet under the eastern most boundary of N57. Using the results of the geotechnical investigation, as well as several other data points, the entry/exit, angles, and depths have been configured to pass through the best substrates while maintaining pipe integrity (e.g., no large bends). The majority of the substrate that will be passed through is estimated to be silty clay and sandstone beneath the wetland.

The drill will enter/exit 860 feet from the edge of the western most boundary of the wetland N56. The drill will pass 30 feet under the western most boundary of wetland N56 and 25 feet under the eastern most boundary of N56. Using the results of the geotechnical investigation, as well as several other data points, the entry/exit, angles, and depths have been configured to pass through the best substrates while maintaining pipe integrity (e.g., no large bends). The majority of the substrate that will be passed through is estimated to be silty clay and sandstone beneath the wetland.



INDIANA COUNTY, PENNSYLVANIA - WEST WHEATFIELD TOWNSHIP S2-0062



| NOTES | | REF. DRAWING | | REVISIONS | | SUNOCO PIPELINE, L.P. | |
|---|----------|--------------|----------|-------------------------|-----|--|--|
| 1. ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83 | ES-2.31 | TO | ES-2.32 | EROSION & SEDIMENT PLAN | EP2 | REVISED PER PADEP COMMENTS RECEIVED 09-06-16 | MRS 09/30/16 RMB 09/30/16 AAW 09/30/16 |
| 2. STATIONING IS BASED ON HORIZONTAL DISTANCES | SHEET 20 | TO | SHEET 21 | AERIAL SITE PLAN | EP1 | REVISED PER PADEP COMMENTS | JTW 05/18/16 RMB 05/18/16 AAW 05/18/16 |
| 3. ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, LP. FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN. | | | | | EP | | DLM 03/15/16 RMB 03/15/16 AAW 03/15/16 |
| 4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING. | | | | | C | ADDED GEOTECH INFO | MRS 09/09/15 RMB 09/09/15 AAW 09/09/15 |
| 5. SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440. | | | | | B | ISSUED FOR BID | MRS 07/31/15 RMB 07/31/15 AAW 07/31/15 |
| | | | | | A | ISSUED FOR REVIEW | RTT 3/19/15 RMB 3/19/15 AAW 3/19/15 |
| | DWG NO | | DWG NO | DESCRIPTION | NO. | DESCRIPTION | BY DATE CHK DATE APP DATE |

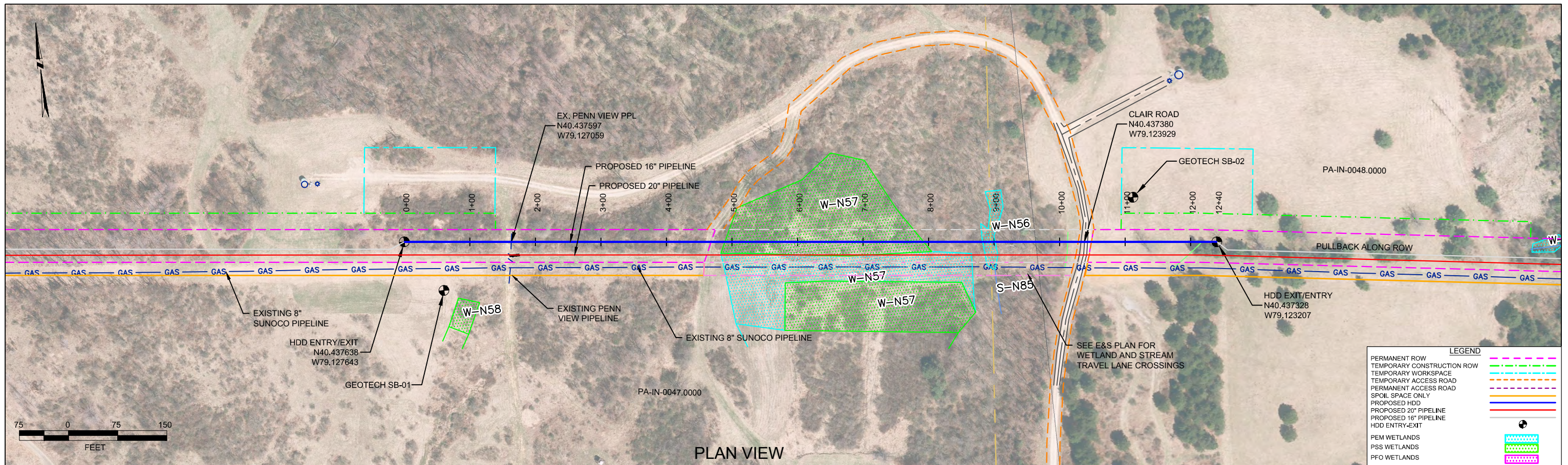
Sunoco Logistics Partners L.P.

TETRA TECH ROONEY
(303) 792-5911

SUNOCO PIPELINE, L.P.

20-INCH HORIZONTAL DIRECTIONAL DRILL CLAIR ROAD PENNSYLVANIA PIPELINE PROJECT

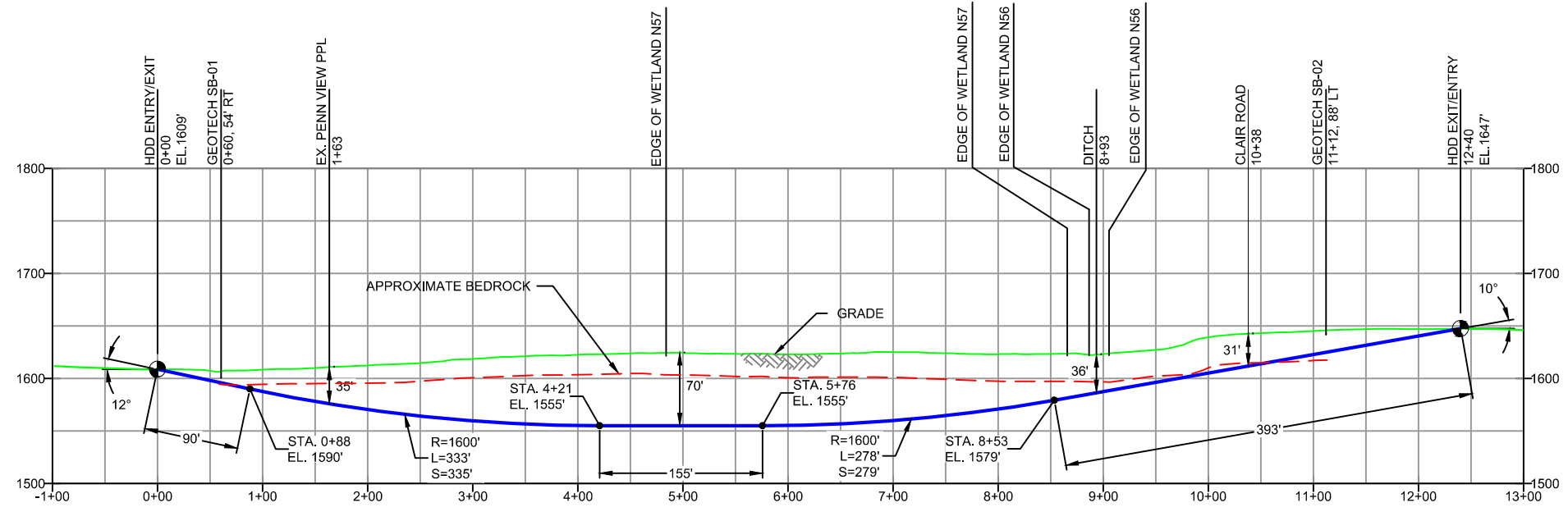
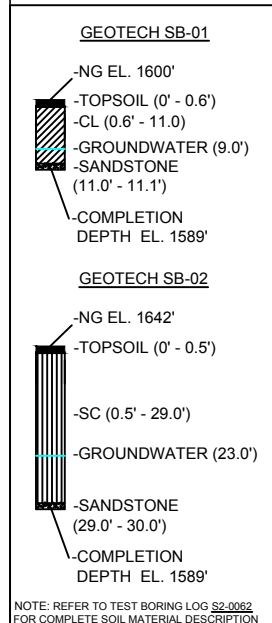
SCALE: 1"=150' DWG. NO: PA-IN-0048.0000-RD



PLAN VIEW

INDIANA COUNTY, PENNSYLVANIA - WEST WHEATFIELD TOWNSHIP
S2-0062-16

PROFILE VIEW



- DESIGN AND CONSTRUCTION:
- CONTRACTOR SHALL FIELD VERIFY DEPTH OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THIS DRAWING.
 - THE MINIMUM SEPARATION DISTANCE FROM EXISTING SUBSURFACE UTILITIES SHALL NOT BE LESS THAN 10 FEET AS MEASURED FROM THE OUTSIDE EDGE OF THE UTILITY TO OUTSIDE OF PROPOSED PIPELINE.
 - DESIGNED IN ACCORDANCE WITH CFR 49 195 & ASME B31.4
 - CROSSING PIPE SPECIFICATION:
HDD HORZ. LENGTH (L-): 1240'
HDD PIPE LENGTH (S-): 1252'
16" x 0.438" W.T., X-70, API5L, PSL2, ERW, BFW
COATING: 14-16 MILS FBE WITH 30-35 MIL ARO (POWERCRETE OR ENGINEER APPROVED EQUAL)
 - INTERNAL DESIGN PRESSURE 1480 PSIG (SEAM FACTOR 1.0, DESIGN FACTOR 0.50).
 - INSTALLATION METHOD: HORIZONTAL DIRECTIONAL DRILL (HDD).
 - PIPELINE WARNING MARKERS SHALL BE INSTALLED ON BOTH SIDES OF ALL ROAD, RAILWAY, AND STREAM CROSSINGS.
 - CARRIER PIPE NOT ENCASED
 - PIPE / AMBIENT TEMPERATURE MUST BE NO LESS THAN 30°F DURING PULLBACK WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER
 - CONDUCT 4-HOUR PRE-INSTALLATION HYDROTEST OF HDD PIPE STRING TO MINIMUM 1850 PSIG.
 - SEE SUNOCO PENNSYLVANIA PIPELINE PROJECT ESRI WEBMAP FOR ACCESS ROAD ALIGNMENT.
 - SUNOCO PIPELINE, L.P.'S HORIZONTAL DIRECTIONAL DRILL INADVERTENT RETURN CONTINGENCY PLAN WILL BE IMPLEMENTED AT ALL TIMES.
 - SUNOCO PIPELINE, L.P.'S EROSION AND SEDIMENTATION CONTROL PLAN WILL BE IMPLEMENTED AT ALL TIMES.

NOTES

- ALL COORDINATES SHOWN ARE IN LATITUDE AND LONGITUDE. ALL MSL ELEVATIONS ARE NAD83
- STATIONING IS BASED ON HORIZONTAL DISTANCES
- ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, L.P. ARE NOT RESPONSIBLE FOR LOCATION OF FOREIGN UTILITIES SHOWN IN PLOT PLAN OR PROFILE. THE INFORMATION SHOWN HEREON IS FURNISHED WITHOUT LIABILITY ON THE PART OF ROONEY ENGINEERING, INC. AND SUNOCO PIPELINE, L.P. FOR ANY DAMAGES RESULTING FROM ERRORS OR OMISSIONS THEREIN.
- CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. CONTACT ONE CALL AT 811 PRIOR TO DIGGING.
- SUNOCO EMERGENCY HOTLINE NUMBER IS #1-800-786-7440.

| REF. DRAWING | NO. | DESCRIPTION | NO. | DESCRIPTION |
|----------------------|-----|-------------------------|-----|--|
| ES-2.31 TO ES-2.32 | | EROSION & SEDIMENT PLAN | | |
| SHEET 20 TO SHEET 21 | | AERIAL SITE PLAN | EP2 | REVISED PER PADEP COMMENTS RECEIVED 09-06-16 |
| | | | EP1 | REVISED PER PADEP COMMENTS |
| | | | EP | |
| | | | B | ADDED GEOTECH INFO |
| | | | A | ISSUED FOR BID |

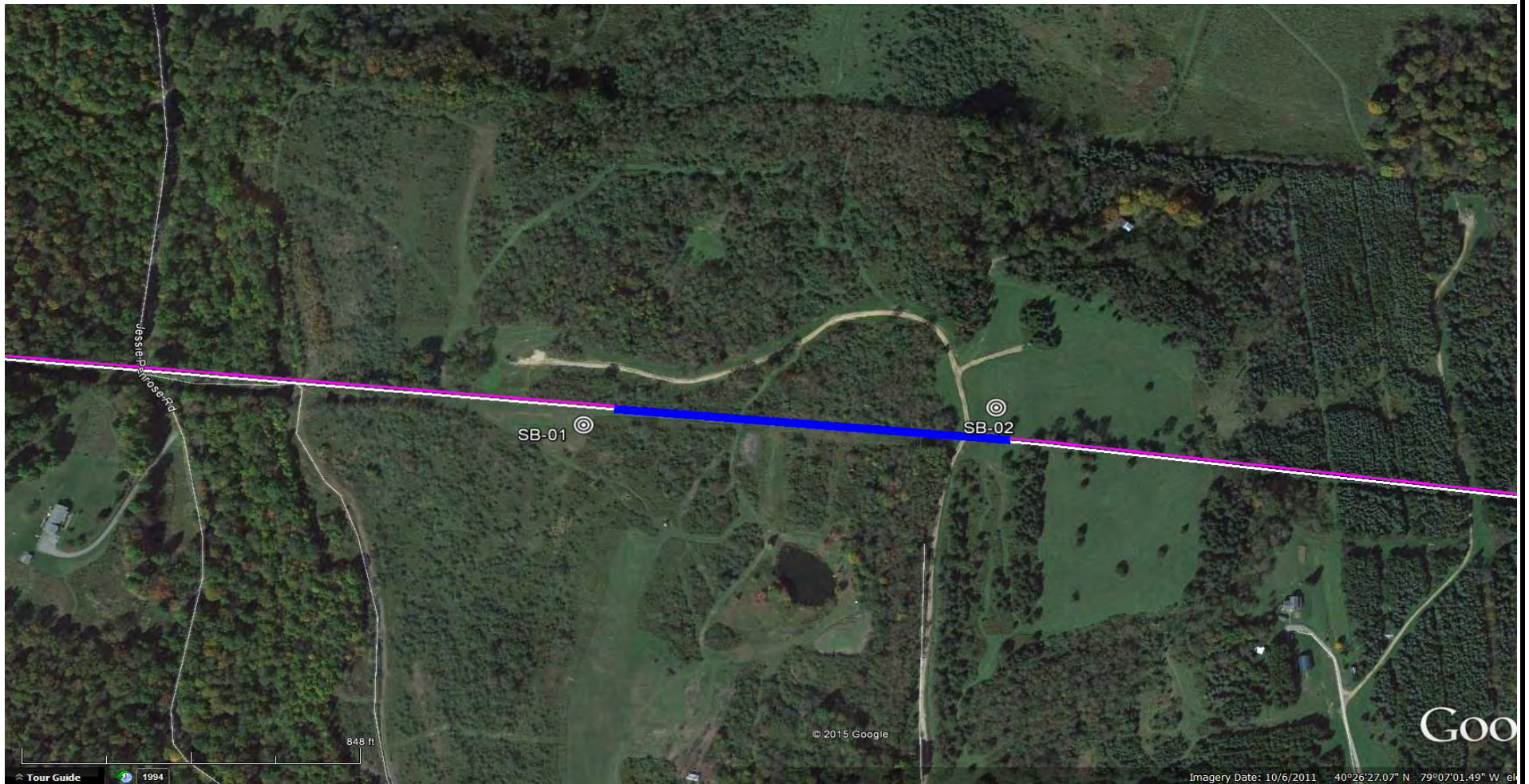
REVISIONS

| BY | DATE | CHK | DATE | APP | DATE |
|-----|----------|-----|----------|-----|----------|
| DLM | 10/07/16 | RMB | 10/07/16 | AAW | 10/07/16 |
| JTW | 05/06/16 | RMB | 05/06/16 | AAW | 05/06/16 |
| DLM | 03/15/16 | RMB | 03/15/16 | AAW | 03/15/16 |
| MRS | 09/09/15 | RMB | 09/09/15 | AAW | 09/09/15 |
| MRS | 08/31/15 | RMB | 08/31/15 | AAW | 08/31/15 |


SUNOCO PIPELINE, L.P.

16-INCH HORIZONTAL DIRECTIONAL DRILL
CLAIR ROAD
PENNSYLVANIA PIPELINE PROJECT

SCALE: 1"=150' DWG. NO: PA-IN-0048.0000-RD-16



LEGEND:

 Geotechnical Soil Boring (SB) Locations



GEOTECHNICAL BORING LOCATIONS
HDD S2-0062
INDIANA COUNTY, WEST WHEATFIELD TOWNSHIP, PA
SUNOCO PENNSYLVANIA PIPELINE PROJECT



TETRA TECH

240 Continental Drive, Suite 200
 Newark, Delaware 19713
 302.738.7551
 fax: 302.454.5988

TEST BORING LOG

| | | | | | |
|--|--|-----------------------------------|------------------------|------------------------|------------------|
| Project Name: SUNOCO PENNSYLVANIA PIPELINE PROJECT | | | Project No.: 103IP3406 | | |
| Project Location: WEST OF PA 259, NEW FLORENCE, PA | | | Page 1 of 1 | | |
| HDD No.: S2-0062 | | Dates(s) Drilled: 04-12-15 | | Inspector: E. WATT | |
| Boring No.: SB-01 | | Drilling Method: SPT - ASTM D1586 | | Driller: S. HOFFER | |
| Drilling Contractor: HAD DRILLING | | Groundwater Depth (ft): 9.0 | | Total Depth (ft): 12.0 | |
| Boring Location Coordinates: | | | 40° 26' 14.713" N | | 79° 7' 38.824" W |

| Sample No. | Sample Depth (ft) | | Strata Depth (ft) | | Recov. (ft) | Strata (USCS) | Description of Materials | 6" Increment Blows * | | | | N | |
|------------|-------------------|------|-------------------|------|-------------|---------------|--|----------------------|---|----|----|-----|--|
| | From | To | From | To | | | | | | | | | |
| | | | 0.0 | 0.6 | | | TOPSOIL (7") | | | | | | |
| 1 | 3.0 | 5.0 | 0.6 | | 13 | CL | MOTTLED BROWN AND GRAY (W/BLACK NODULES) SILTY CLAY WITH SOME SILTY CLAY, TRACE FINE GRAVEL. (USCS: CL). | 2 | 8 | 8 | 10 | 16 | |
| 2 | 8.0 | 10.0 | | | 24 | | LIGHT BROWN AND AND LIGHT GRAY SILTY CLAY, TRACE FINE GRAVEL. | 3 | 5 | 17 | 17 | 22 | |
| | | | | 11.0 | | | | | | | | | |
| 3 | 11.0 | 11.1 | 11.0 | 11.1 | <1 | | GRAY PARTIALLY WEATHERED SANDSTONE | 50/0.5" | | | | >50 | |
| | | | | | | | | | | | | | |
| | | | | | | | AUGER REFUSAL AT 11'. OFF-SET BORING 12' NORTH AND CONTINUOUSLY AUGERED TO REFUSAL AT 12'. OFF-SET AGAIN AND CONTINUOUSLY AUGERED TO REFUSAL AT 11.5'. | | | | | | |
| | | | | | | | WET ON SPOON AT 11'. | | | | | | |
| | | | | | | | WATER LEVEL THROUGH AUGERS AT 9'. | | | | | | |
| | | | | | | | CAVED AT 11'. | | | | | | |
| | | | | | | | WATER LEVEL ON CAVE AT 9'. | | | | | | |

Notes/Comments:
Pocket Pentrometer Testing
 S1: > 4 TSF

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.
 N: Number of blows to drive spoon from 6" to 18" interval.



TETRA TECH

240 Continental Drive, Suite 200
 Newark, Delaware 19713
 302.738.7551
 fax: 302.454.5988

TEST BORING LOG

| | | | | | |
|--|--|------------------------------------|------------------------|------------------------|------------------|
| Project Name: SUNOCO PENNSYLVANIA PIPELINE PROJECT | | | Project No.: 103IP3406 | | |
| Project Location: WEST OF PA 259, NEW FLORENCE, PA | | | Page 1 of 1 | | |
| HDD No.: S2-0062 | | Dates(s) Drilled: 04-12-15 | | Inspector: E. WATT | |
| Boring No.: SB-02 | | Drilling Method: SPT - ASTM D1586 | | Driller: S. HOFFER | |
| Drilling Contractor: HAD DRILLING | | Groundwater Depth (ft): SEE BELOW. | | Total Depth (ft): 30.0 | |
| Boring Location Coordinates: | | | 40° 26' 15.167" N | | 79° 7' 25.114" W |

| Sample No. | Sample Depth (ft) | | Strata Depth (ft) | | Recov. (ft) | Strata (USCS) | Description of Materials | 6" Increment Blows * | | | | N | |
|------------|-------------------|------|-------------------|-----|-------------|---|---|----------------------|---|---|---|----|-----|
| | From | To | From | To | | | | | | | | | |
| | | | 0.0 | 0.5 | | | TOPSOIL (6") | | | | | | |
| 1 | 3.0 | 5.0 | 0.5 | | 12 | SC | LIGHT BROWN FINE SAND AND SILTY CLAY, WITH TRACE FINE TO COARSE GRAVEL. | 4 | 9 | 9 | 9 | 18 | |
| 2 | 8.0 | 10.0 | | | 17 | | BROWN AND GRAY FINE TO COARSE SAND WITH SOME SILTY CLAY, SOME FINE TO COARSE GRAVEL. | 1 | 4 | 6 | 5 | 10 | |
| 3 | 13.0 | 15.0 | | | 11 | | MOTTLED BROWNS FINE TO COARSE SAND AND SILTY CLAY, WITH A LITTLE FINE GRAVEL. (USCS: SC). | 1 | 1 | 1 | 1 | 2 | |
| 4 | 18.0 | 20.0 | | | 13 | | MOTTLED BROWN AND GRAY CLAYEY FINE TO COARSE SAND, WITH A LITTLE FINE GRAVEL. | 1 | 1 | 3 | 3 | 4 | |
| 5 | 23.0 | 25.0 | | | 24 | | MOTTLED BROWN AND GRAY CLAYEY FINE TO COARSE SAND, WITH A LITTLE FINE GRAVEL. (USCS: SC). | 2 | 4 | 3 | 4 | 7 | |
| 6 | 28.0 | 28.3 | | | 2 | | CALCEROUS GRAY SANDSTONE. | 50/3" | | | | | >50 |
| | | | | | | | AUGERED TO 30'. | | | | | | |
| | | | | | | | WET ON SPOON AT 8'. | | | | | | |
| | | | | | | WATER LEVEL THROUGH AUGERS AT 7' | | | | | | | |
| | | | | | | CAVED AT 29'. WATER LEVEL ON CAVE AT 23'. | | | | | | | |

Notes/Comments:
Pocket Pentrometer Testing
 S3: 1.25 TSF
 S4: 0.75 TSF
 S5: 1.75 TSF

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.
 N: Number of blows to drive spoon from 6" to 18" interval.

**GEOTECHNICAL LABORATORY TESTING SUMMARY
SUNOCO PENNSYLVANIA PIPELINE PROJECT
HDD S2-0062**

| HDD No. | Test Boring No. | Sample No. | Depth of Sample (ft.) | | Water Content, % (ASTM D2216) | Percent Silts/Clays, % (ASTM D1140) | Atterburg Limits (ASTM D4318) | | | USCS Classif. (ASTM D2487) |
|---------|-----------------|------------|-----------------------|------|----------------------------------|--|-------------------------------|------------------|---------------------|-------------------------------|
| | | | From | To | | | Liquid Limit, % | Plastic Limit, % | Plasticity Index, % | |
| S2-0062 | SB-01 | 1 | 3.0 | 5.0 | 13.3 | 74.3 | 35 | 21 | 14 | CL |
| | | 2 | 8.0 | 10.0 | 6.9 | 96.8 | - | - | - | - |
| | SB-02 | 1 | 3.0 | 5.0 | 12.9 | 43.3 | - | - | - | - |
| | | 2 | 8.0 | 10.0 | 9.4 | 25.8 | - | - | - | - |
| | | 3 | 13.0 | 15.0 | 15.8 | 39.2 | 33 | 19 | 14 | SC |
| | | 4 | 18.0 | 20.0 | 17.0 | 48.7 | - | - | - | - |
| | | 5 | 23.0 | 25.0 | 12.8 | 39.8 | 30 | 18 | 12 | SC |
| | | 6 | 28.0 | 28.3 | 4.9 | 35.0 | - | - | - | - |

Notes:

- 1) Sample depths based on feet below grade at time of exploration.

**REGIONAL GEOLOGY SUMMARY
SUNOCO PENNSYLVANIA PIPELINE PROJECT
HDD S2-0062**

| HDD No. | NAME | BORING NO. | REGIONAL GEOLOGY DESCRIPTION | GENERAL TOPOGRAPHIC SETTING | BEDROCK FORMATION | GENERAL ROCK TYPE | APPROX MAX FM THICKNESS (FT) | DEPTH TO ROCK (Ft bgs) based on nearby well drilling logs | NOTES / COMMENTS |
|---------|-------|------------|--|--------------------------------|-------------------|---|------------------------------|---|------------------------------|
| S2-0062 | Clair | SB-01 | Allegheny Formation - composed primarily of cyclic sequences of clay shale, claystone, siltstone, sandstone, limestone, and coal. | Rolling hills, moderate relief | Allegheny Fm. | Shale-sandstone with limestone-clastic-coal | 270-330 | 12-46 | Yields range frm 2 to 20 gpm |
| | | SB-02 | | | | | | | |

Note : Source of well log data - <http://www.dcnr.state.pa.us/topogeo/groundwater/pagwis/records/index.htm>. All other sources as referenced in comments section.

FIELD DESCRIPTION AND LOGGING SYSTEM FOR SOIL EXPLORATION

GRANULAR SOILS

(Sand, Gravel & Combinations)

| <u>Density</u> | <u>N (blows)*</u> |
|----------------|-------------------|
| Very Loose | 5 or less |
| Loose | 6 to 10 |
| Medium Dense | 11 to 30 |
| Dense | 31 to 50 |
| Very Dense | 51 or more |

Particle Size Identification

| | |
|-----------|---|
| Boulders | 8 in. diameter or more |
| Cobbles | 3 to 8 in. diameter |
| Gravel | Coarse (C) 3 in. to ¾ in. sieve |
| | Fine (F) ¾ in. to No. 4 sieve |
| Sand | Coarse (C) No. 4 to No. 10 sieve (4.75mm-2.00mm) |
| | Medium No. 10 to No. 40 sieve (M) (2.00mm – 0.425mm) |
| | Fine (F) No. 40 to No. 200 sieve (0.425 – 0.074mm) |
| Silt/Clay | Less Than a No. 200 sieve (<0.074mm) |

Relative Proportions

| <u>Description Term</u> | <u>Percent</u> |
|-------------------------|----------------|
| Trace | 1 - 10 |
| Little | 11 - 20 |
| Some | 21 - 35 |
| And | 36 - 50 |

COHESIVE SOILS

(Silt, Clay & Combinations)

| <u>Consistency</u> | <u>N (blows)*</u> |
|--------------------|-------------------|
| Very Soft | 3 or less |
| Soft | 4 to 5 |
| Medium Stiff | 6 to 10 |
| Stiff | 11 to 15 |
| Very Stiff | 16 to 30 |
| Hard | 31 or more |

Plasticity

| <u>Degree of Plasticity</u> | <u>Plasticity Index</u> |
|-----------------------------|-------------------------|
| None to Slight | 0 - 4 |
| Slight | 5 - 7 |
| Medium | 8 - 22 |
| High to Very High | > 22 |

ROCK

(Rock Cores)

| <u>Rock Quality Designation (RQD), %</u> | <u>Rock Quality Description</u> |
|--|---------------------------------|
| 0-25 | Very Poor |
| 25-50 | Poor |
| 50-75 | Fair |
| 75-90 | Good |
| 90-100 | Excellent |

***N - Standard Penetration Resistance.** Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 18 inches into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. The number of hammer blows to drive the sampler through each 6 inch interval is recorded; the number of blows required to drive the sampler through the final 12 inch interval is termed the Standard Penetration Resistance (SPR) N-value. For example, blow counts of 6/8/9 (through three 6-inch intervals) results in an SPR N-value of 17 (8+9).

Groundwater observations were made at the times indicated. Groundwater elevations fluctuate throughout a given year, depending on actual field porosity and variations in seasonal and annual precipitation.

UNIFIED SOIL CLASSIFICATION SYSTEM [Casagrande (1948)]

| Major Divisions | | Group Symbols | Typical Descriptions | Laboratory Classifications | | | |
|---|--|---|---|---|--|---|--|
| Coarse Grained Soils (More than half of material is larger than No. 200 sieve) | Gravels More than half of coarse fraction is larger than No. 4 sieve size | Clean gravel (Little or no fines) | GW | Well-graded gravels, gravel-sand mixtures, little or no fines | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting C_u or C_c requirements for GW | | |
| | | | GP | Poorly graded gravels, gravel-sand mixtures, little or no fines | | | |
| | | Gravel with fines (Appreciable amount of fines) | GM | Silty gravels, gravel-sand-silt mixtures | Atterberg limits below A Line or I_p less than 4 Atterberg limits above A line with I_p greater than 7 Limits plotting in hatched zone with I_p between 4 and 7 are borderline cases requiring use of dual symbols | | |
| | | | GC | Clayey gravels, gravel-sand-clay mixtures | | | |
| | Sands (More than half of coarse fraction is smaller than No. 4 Sieve) | Clean sands (Little or no fines) | SW | Well graded sands, gravelly sands, little or no fines | $C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3 Not meeting C_u or C_c requirements for SW | | |
| | | | SP | Poorly graded sands, gravelly sands, little or no fines | | | |
| | | Sands with fines (Appreciable amount of fines) | SM | Silty sands, sand-silt mixtures | Atterberg limits below A Line or I_p less than 4 Atterberg limits above A line with I_p greater than 7 Limits Plotting in hatched zone with I_p between 4 and 7 are borderline cases requiring use of dual symbols | | |
| | | | SC | Clayey sands, sand-clay mixtures | | | |
| | | Determine Percentage of sand and gravel from grain size curve. Depending on Percentage of fines (fraction smaller than No. 200 sieve), coarse-grained soils are classified as follows: Less than 5 percent GW, GP, SW, SP More than 12 percent GM, GC, SM, SC 5 to 12 percent Borderline cases requiring dual symbols ⁽¹⁾ | | | | | |
| | | Major Divisions | | Group Symbols | Typical Descriptions | For soils plotting nearly on A line use dual symbols i.e., $I_p = 29.5$, $w_L = 60$ gives CH-MH. When w_L is near 50 use CL-CH or ML-MH. Take near as ± 2 percent. | |
| Fine-grained soils (More than half of material is smaller than No. 200 sieve) | Silt and clays (Liquid limit less than 50) | ML | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity | | | | |
| | | CL | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays | | | | |
| | | OL | Organic silts and organic silty clays of low plasticity | | | | |
| | Silt and Clays (Liquid limit greater than 50) | MH | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts | MH or OH | | | |
| | | CH | Inorganic clays of high plasticity, fat clays | | | | |
| | | OH | Organic clays of medium to high plasticity, organic silts | | | | |
| | Highly organic soils | Pt | Peat and other highly organic soils | | | | |

(1) Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC. well-graded gravel-sand mixture with clay binder.