JB TONKIN COMPRESSOR STATION
EROSION AND SEDIMENT CONTOL PLAN

DOMINION TRANSMISSION, INC
CLARKSBURG, WEST VIRGINIA

MARCH 2017

Contains Critical Energy Infrastructure Information - Filed Separately

DRAWING INDEX

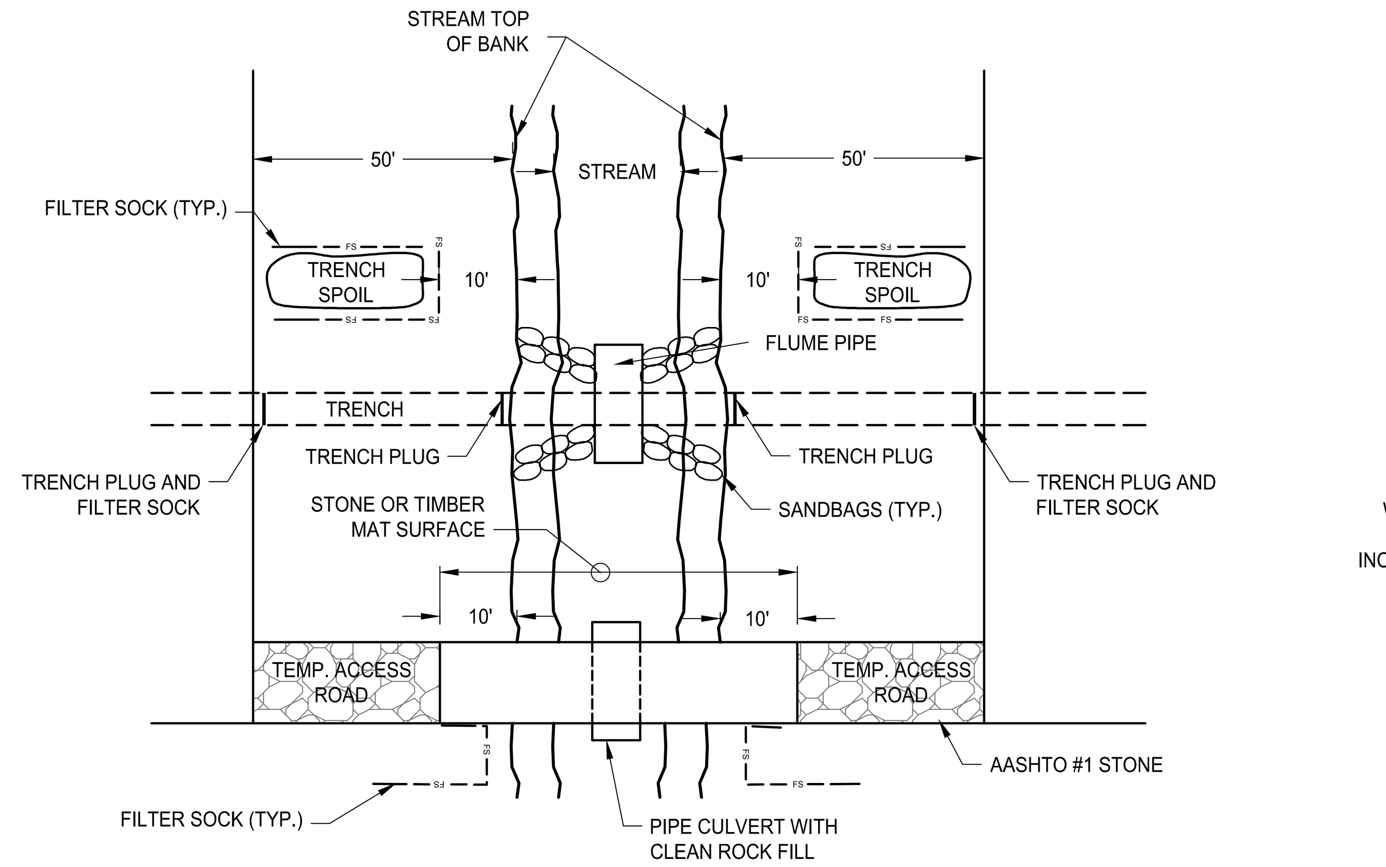
PREPARED FOR
DOMINION TRANSMISSION, INC

PREPARED BY

ERM

ERM CONSULTING & ENGINEERING, INC.

Hartford Office 860-466-8500

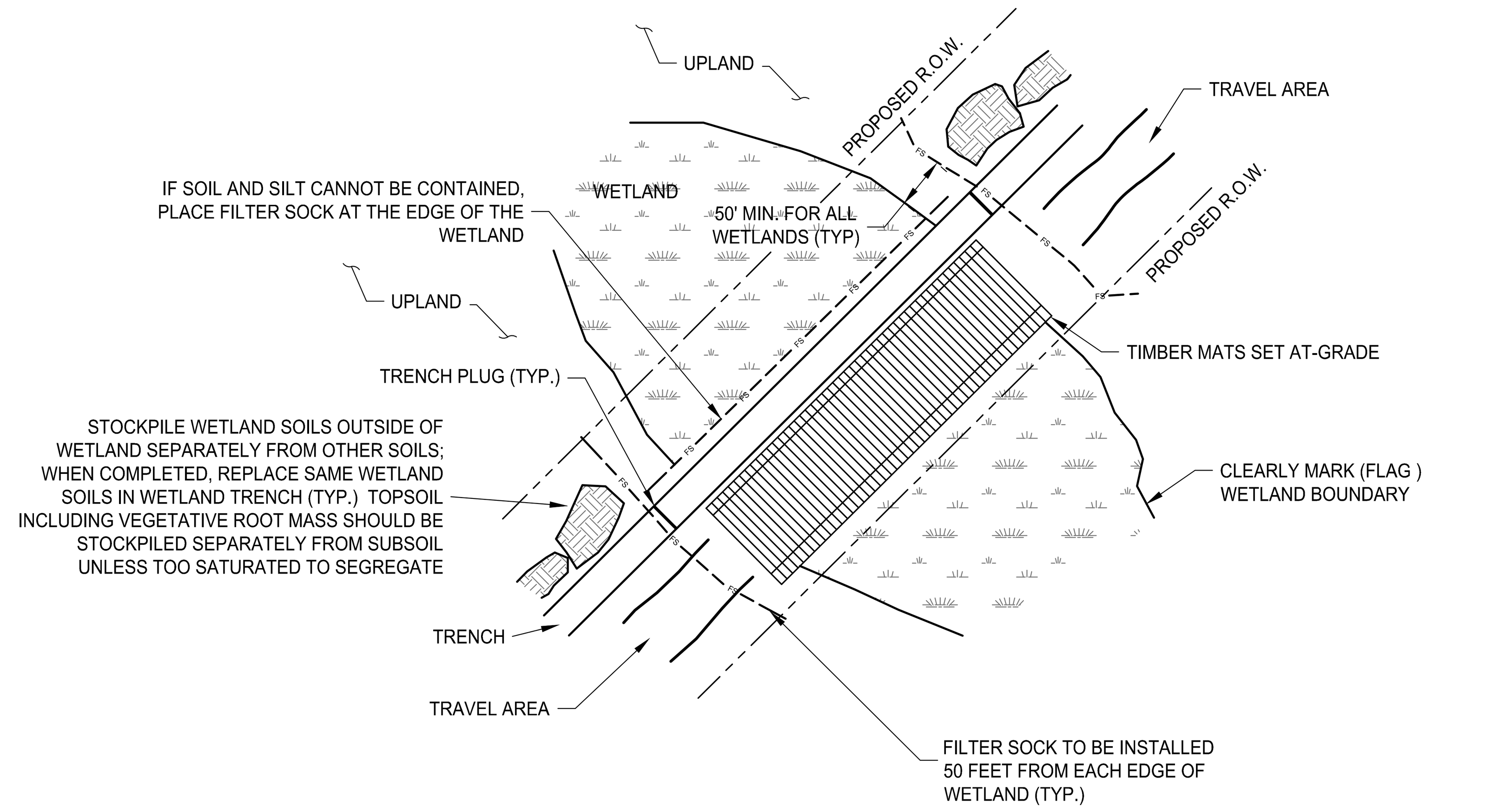


NOTES:
1. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FT OF TOP OF BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE THE CROSSINGS ARE ON SITE AND PIPE IS READY FOR INSTALLATION.
2. PIPE CULVERT FOR FLUME AND ACCESS ROAD MAY BE ONE CONTINUOUS PIPE..
3. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG PRIOR TO DISCHARGING INTO SURFACE WATER.
4. ALL EXCESS MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
5. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS, UNLESS OTHERWISE AUTHORIZED.

STREAM CROSSING RESTORATION:
1. ONCE THE SOIL EROSION AND SEDIMENT CONTROL MEASURES AND THE REQUIRED WATER FLOW CONTROL MEASURES ARE IN PLACE, CONTRACTOR CAN PROCEED WITH TRENCH EXCAVATION.
2. ALL EXCAVATED MATERIALS THAT WILL BE USED AS BACKFILL SHALL BE PLACED IN A TEMPORARY STOCKPILE LOCATED OUTSIDE THE CHANNEL. CHANNEL BED MATERIAL SHALL BE SEGREGATED FOR LATER USE. A SEDIMENT BARRIER SHALL BE INSTALLED BETWEEN THE STOCKPILE AND STREAM CHANNEL.
3. COMPLETE TRENCH EXCAVATION FOR PIPELINE CONSTRUCTION, PLACE PIPELINE AND BACKFILL.
4. STREAM BANKS SHALL BE RESTORED TO PRE-CONSTRUCTION CONFIGURATIONS, AS MUCH AS POSSIBLE, AND STABILIZED.
5. RE-SEED RESTORED STREAM BANKS USING SEED MIXTURES AS SPECIFIED HEREIN.
6. RESTORED STREAM BANKS AND ADJACENT DISTURBED AREAS TO BE STABILIZED WITH APPROVED EROSION CONTROL BLANKET USING MANUFACTURER RECOMMENDED STAPLES AND PATTERNS.
7. PLACE SALVAGED BED MATERIAL ON THE CHANNEL BED IN THE DISTURBED AREA.

FLUMED STREAM CROSSING DETAIL

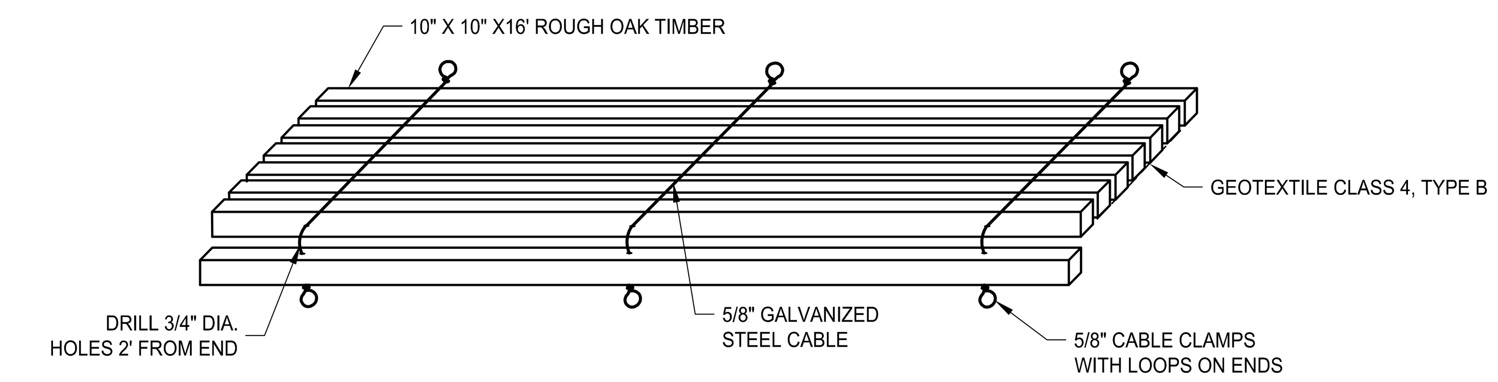
N.T.S.



NOTES:
1. REQUIREMENTS DO NOT APPLY TO ACTIVE, CULTIVATED OR ROTATED CROPLANDS.
2. ALL CONTROLS WILL BE INSTALLED AFTER INITIAL GROUND DISTURBANCE AND MAINTAINED UNTIL ADJACENT UPLANDS ARE STABILIZED.
3. RESEED DISTURBED WETLAND WITH ANNUAL RYEGRASS AT THE RATE OF 40 LBS./ACRE TO AREAS WITH NO STANDING WATER. STRAW MULCH SHOULD BE USED AT THE RATE OF 3 TONS/ACRE. NO LIME OR FERTILIZER SHOULD BE APPLIED.
4. ASSEMBLE PIPE IN UPLAND AREA UNLESS WETLAND IS DRY ENOUGH TO ADEQUATELY SUPPORT GAS LINE.
5. VEHICLE TRAFFIC ACROSS WETLAND SHOULD BE MINIMIZED.
6. FILTER SOCK MUST BE PLACED AT THE EDGE OF ALL WETLANDS THAT ARE CROSSED.

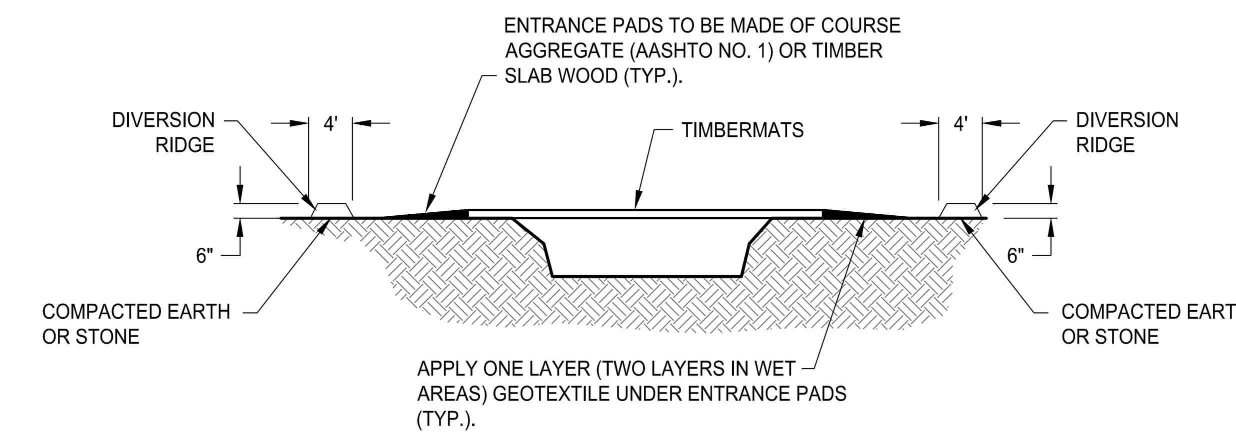
OPEN TRENCH WETLAND CROSSING DETAIL

N.T.S.



TIMBERMAT TEMPORARY WETLAND CROSSING DETAIL

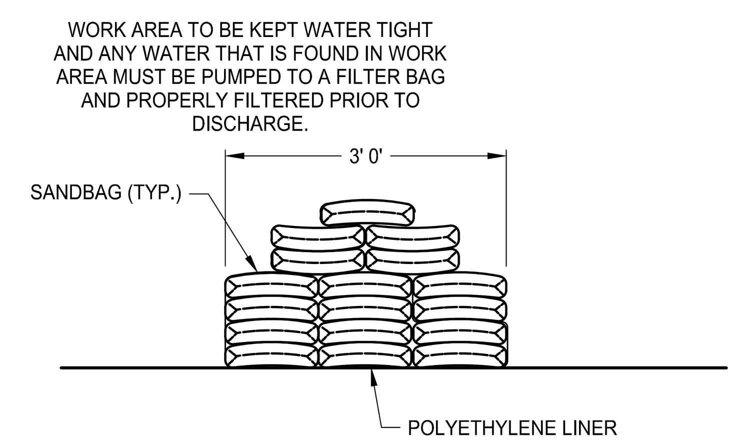
N.T.S.



NOTES:
1. INSTALL 12" FILTER SOCK ACROSS THE DISTURBED AREA OF THE RIGHT OF WAY.
2. APPLY GEOTEXTILE UNDER ENTRANCE PADS.
3. EXCESS MUD IS TO BE REMOVED FROM THE ENTRANCE PADS AND MATS DURING CONSTRUCTION.
4. DURING FINAL CLEAN UP WHEN MATS, CULVERTS, CLEAN ROCK FILL, ETC. ARE REMOVED, INSTALL FILTER SOCK ACROSS THE ENTIRE RIGHT OF WAY ON BOTH SIDES OF STREAM.

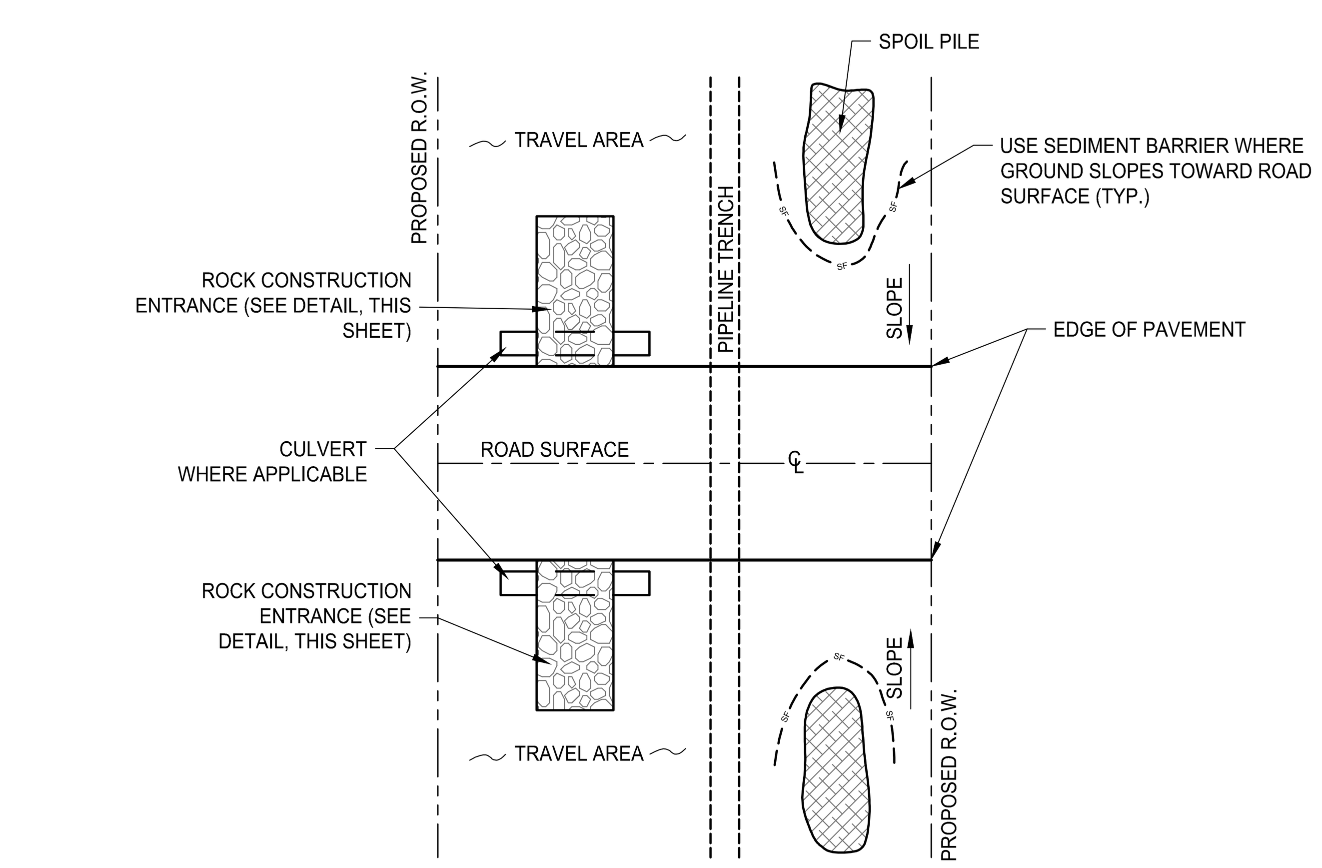
BRIDGE TEMPORARY STREAM CROSSING DETAIL

N.T.S.



SANDBAG DAM TEMPORARY STREAM DIVERSION DETAIL

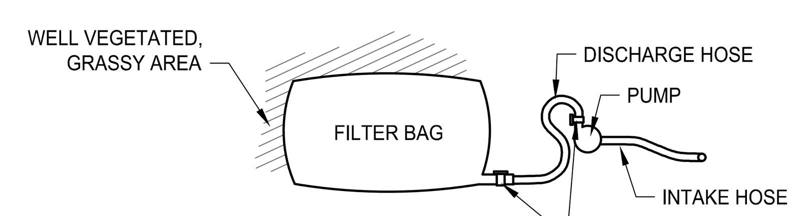
N.T.S.



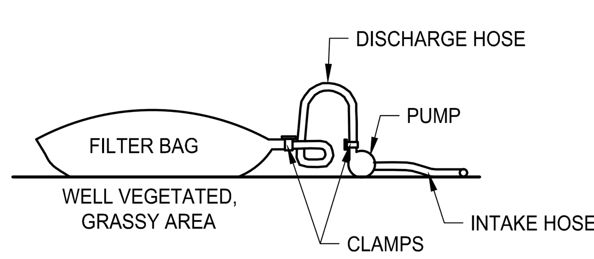
NOTES:
1. A PENNDOT HIGHWAY OCCUPANCY PERMIT IS REQUIRED FOR STATE ROUTE CROSSINGS. A TOWNSHIP ROAD OCCUPANCY/DRIVEWAY PERMIT IS REQUIRED FOR A DRIVEWAY OR CONSTRUCTION ENTRANCE ONTO A TOWNSHIP ROAD. A FLAGMAN SHALL BE UTILIZED WHERE SIGHT DISTANCE IS MINIMAL.
2. THE CROSSING SHALL BE CONSTRUCTED WHEN THE ROAD DRAINAGE SYSTEM IS DRY. THE CROSSING TRENCH SHALL BE BACKFILLED AND STABILIZED THE SAME DAY.
3. UPSLOPE RUNOFF SHALL BE DIVERTED AROUND WORK AREA USING WATERBARS.
4. SEDIMENT BARRIERS SHALL BE LOCATED DOWNSLOPE OF SPOIL PILES. SPOIL PILES SHALL NOT BE PLACED IN A ROADWAY, SWALE, OR DITCH.
5. IF RUNOFF IS PRESENT IN THE ROAD DRAINAGE SYSTEM, A CULVERT OR FLUME SHALL BE USED TO CONVEY DISCHARGES FROM EXISTING CULVERTS, STORM SEWERS, SWALES, AND DITCHES PAST THE TRENCH UNTIL IT IS BACKFILLED AND STABILIZED.
6. INLET PROTECTION SHALL BE APPLIED TO INLETS RECEIVING RUNOFF FROM DISTURBED AREAS.

ROAD CROSSING - TRENCHING METHOD DETAIL

N.T.S.



PLAN VIEW

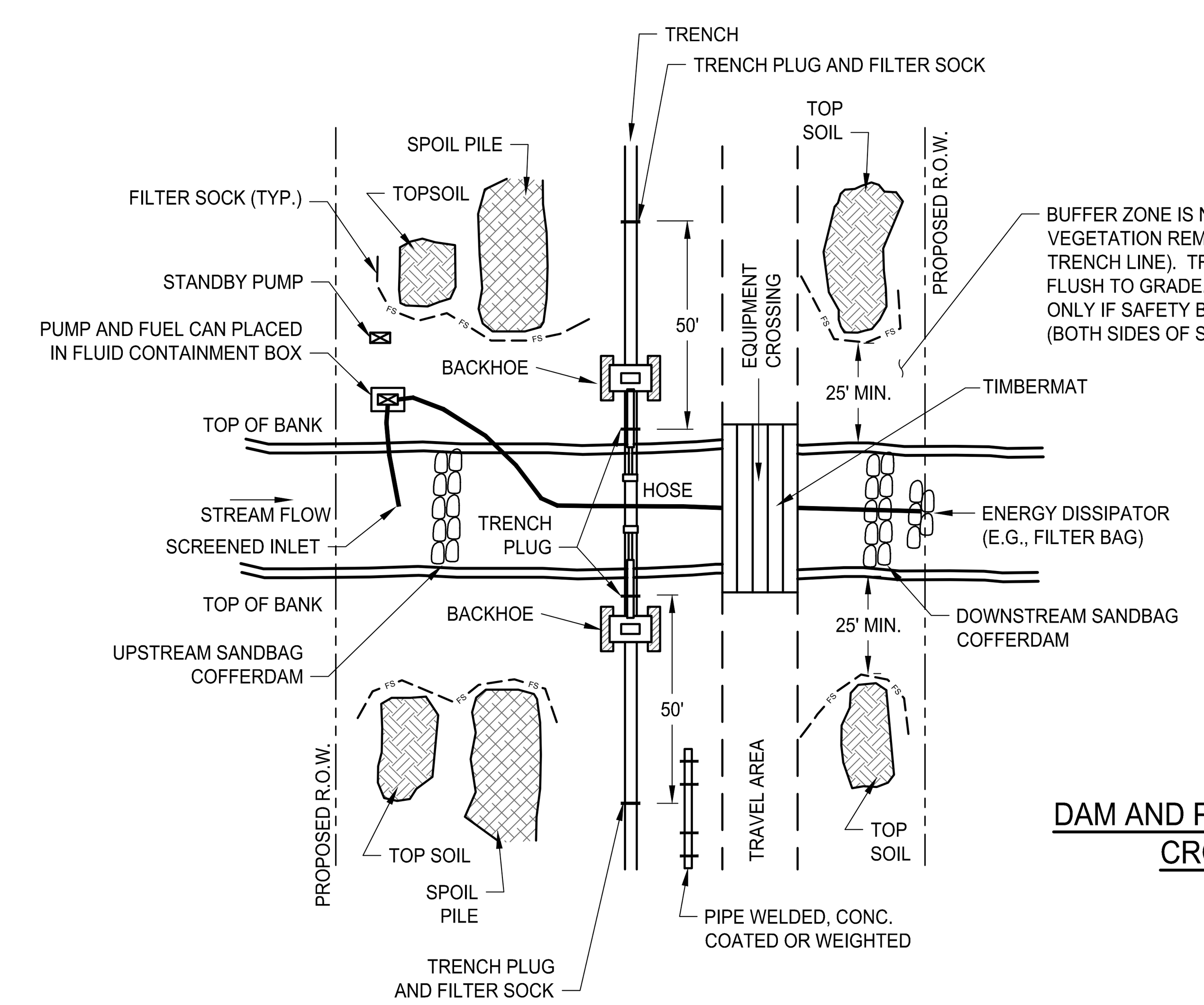


ELEVATION VIEW

CONSTRUCTION NOTES:
1. FILTER BAGS MAY BE USED TO FILTER WATER PUMPED FROM DISTURBED AREAS PRIOR TO DISCHARGING TO WATERS OF THE COMMONWEALTH. THEY MAY ALSO BE USED TO FILTER WATER PUMPED FROM THE SEDIMENT STORAGE AREAS OF SEDIMENT BASINS.
2. FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
3. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
4. BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREAS AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
5. COMPOST FILTER SOCK SHALL BE INSTALLED DOWNSLOPE OF BAGS LOCATED IN HQ WATERSHEDS, WITHIN 50 FEET OR ANY RECEIVING SURFACE WATER, OR WHERE GRASSY AREA IS NOT AVAILABLE.
6. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
7. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.

FILTER BAGS

N.T.S.



DAM AND PUMP SYSTEM STREAM CROSSING DETAIL

N.T.S.

NOTES:
1. USE DAM AND PUMP METHOD ON NARROW WATERCOURSES WITH LIMITED STREAM FLOW TO PREVENT SEDIMENTATION AND INTERRUPTION OF STREAM FLOW DURING CROSSING CONSTRUCTION. IF FISH PASSAGE IS A CONCERN, THIS METHOD IS NOT APPROPRIATE.
2. SCHEDULE CONSTRUCTION DURING PERIOD OF LOW STREAM FLOW.
3. SET UP PUMP AND HOSE AS SHOWN, OR USE OTHER PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW. HAVE STANDBY PUMP ON SITE.
4. INSTALL UPSTREAM DAM COMPOSED OF SANDBAGS OR CLEAN GRAVEL WITH PLASTIC UNDERNEATH. INSTALL DOWNSTREAM DAM IF REQUIRED TO KEEP STREAMBED DRY.
5. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP OF BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS, UNLESS OTHERWISE AUTHORIZED.
6. EXCAVATE TRENCH AND INSTALL PIPE BY LOWERING IN UNDER HOSE. MOVE HOSE AS REQUIRED OR DISCONNECT IF TEMPORARY FLOW BLOCKAGE IS ACCEPTABLE. BACKFILL TRENCH.
7. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM. KEEP PUMP RUNNING TO MAINTAIN FLOW.
8. MONITOR DAM AND PUMP FOR PROPER OPERATION THROUGHOUT THE CROSSING INSTALLATION.
9. ENSURE DISTURBED AREAS ARE SEEDED AND MULCHED USING SEED MIXTURES AS SPECIFIED HEREIN.

STREAM CROSSING RESTORATION:
1. ONCE THE SOIL EROSION AND SEDIMENT CONTROL MEASURES AND THE REQUIRED WATER FLOW CONTROL MEASURES ARE IN PLACE, CONTRACTOR CAN PROCEED WITH TRENCH EXCAVATION.
2. ALL EXCAVATED MATERIALS THAT WILL BE USED AS BACKFILL SHALL BE PLACED IN A TEMPORARY STOCKPILE LOCATED OUTSIDE THE CHANNEL. CHANNEL BED MATERIAL SHALL BE SEGREGATED FOR LATER USE. A SEDIMENT BARRIER SHALL BE INSTALLED BETWEEN THE STOCKPILE AND STREAM CHANNEL.
3. COMPLETE TRENCH EXCAVATION FOR PIPELINE CONSTRUCTION, PLACE PIPELINE AND BACKFILL.
4. STREAM BANKS SHALL BE RESTORED TO PRE-CONSTRUCTION CONFIGURATIONS, AS MUCH AS POSSIBLE, AND STABILIZED.
5. RE-SEED RESTORED STREAM BANKS USING SEED MIXTURES AS SPECIFIED HEREIN.
6. RESTORED STREAM BANKS AND ADJACENT DISTURBED AREAS TO BE STABILIZED WITH APPROVED EROSION CONTROL BLANKET USING MANUFACTURER RECOMMENDED STAPLES AND PATTERNS.
7. PLACE SALVAGED BED MATERIAL ON THE CHANNEL BED IN THE DISTURBED AREA.

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION

REVISIONS

03.31.2017

ERM

DETAILS

MURRYSVILLE BOROUGH, WESTMORELAND COUNTY, PENNSYLVANIA

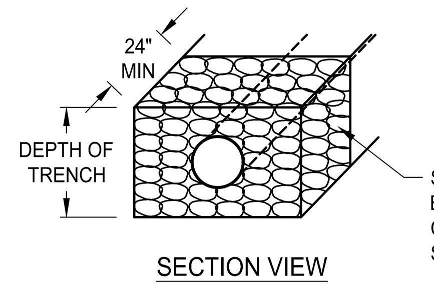
DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WV 26301

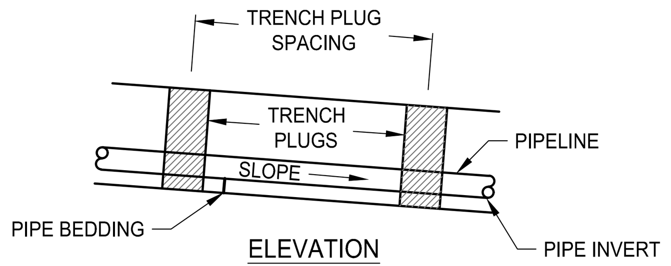
SCALE:	NTS
DATE:	8/28/15
DRAWN:	.
CHECKED:	.
APPROVED:	.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO.	
.	
TASK NO.	SUB TASK NO.
.	.
GROUP ID	DRAWING NO.
.	
SHEET 1 OF 4	

3/31/2017 12:31 PM

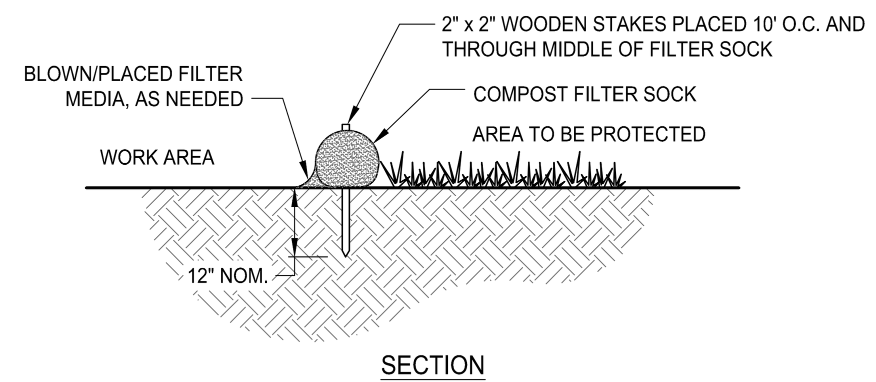


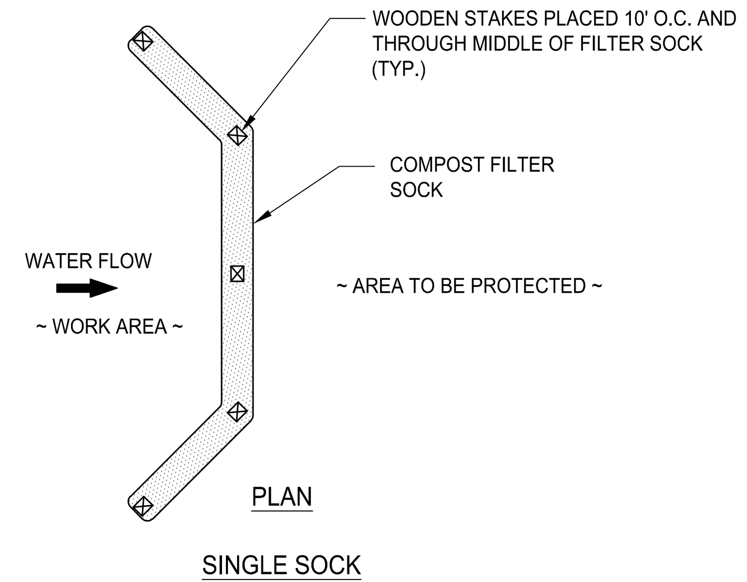


REQUIRED SPACING AND MATERIALS FOR TRENCH PLUGS		
TRENCH SLOPE (%)	SPACING (FT)	PLUG MATERIAL
<5	1,000	CLAY, BENTONITE, OR CONCRETE FILLED SACKS
5-15	500	CLAY, BENTONITE, OR CONCRETE FILLED SACKS
15-25	300	CLAY, BENTONITE, OR CONCRETE FILLED SACKS
25-35	200	CLAY, BENTONITE, OR CONCRETE FILLED SACKS
35-100	100	CLAY, BENTONITE, OR CONCRETE FILLED SACKS
>100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

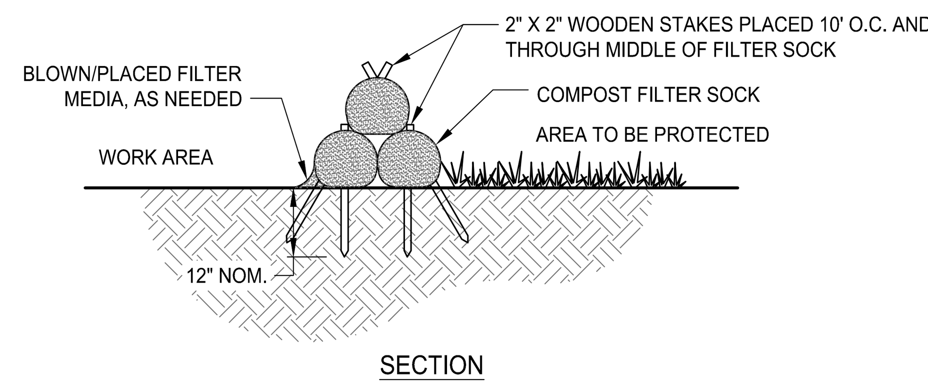
CONSTRUCTION NOTES:
1. IMPERVIOUS TRENCH PLUGS ARE REQUIRED AT ALL STREAM, RIVER, WETLAND, OR OTHER WATER BODY CROSSINGS REGARDLESS OF TRENCH SLOPE.
2. TOPSOIL MAY NOT BE USED TO FILL SACKS.

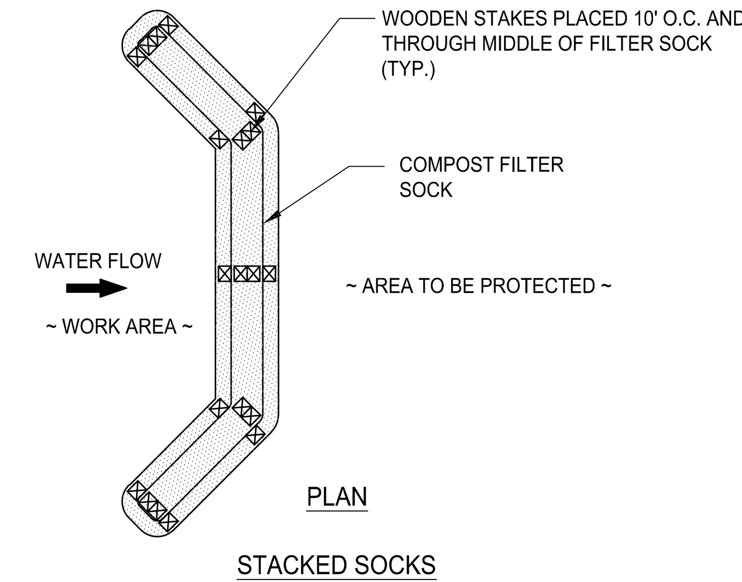
TRENCH PLUG DETAIL
N.T.S.





SINGLE SOCK



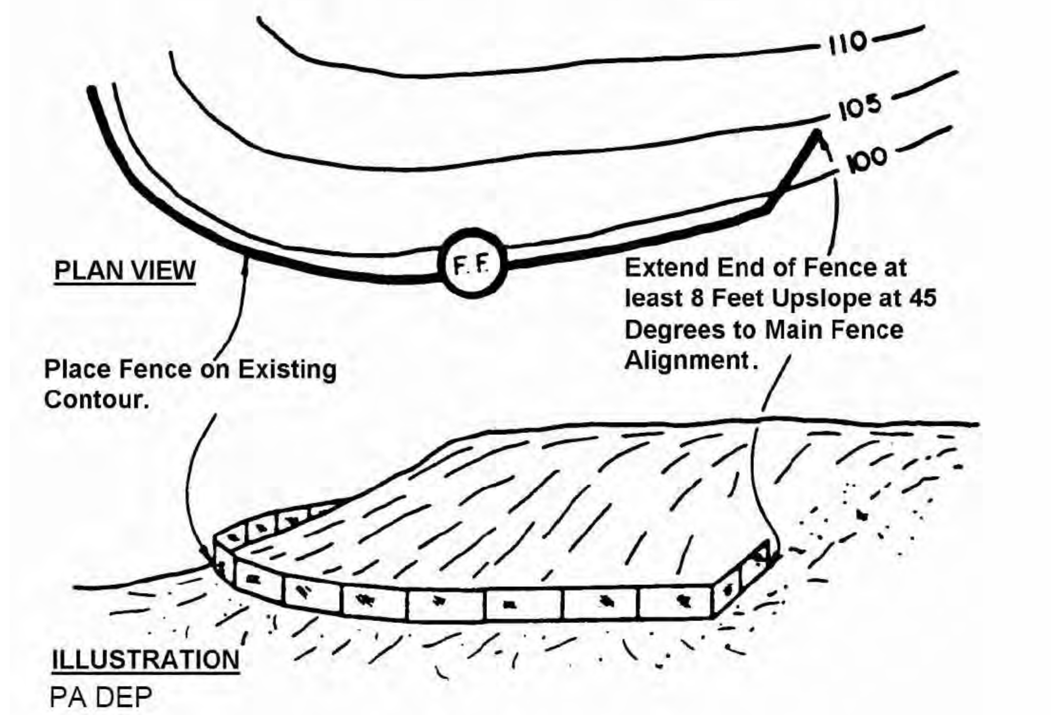


STACKED SOCKS

NOTES:
1. FILTER SOCK TO BE FABRIC MUST MEET THE MINIMUM SPECIFICATIONS IN TABLE 4.1 OF THE PENNSYLVANIA EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (2012). FILTER MEDIA INSIDE AND, AS NECESSARY UP-SLOPE OF FILTER SOCK, MUST MEET THE COMPOST STANDARDS IN TABLE 4.2 OF THE SAME MANUAL.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FILTER SOCK.
3. WHEN LARGE DIAMETER SOCKS ARE NEEDED TO MEET SLOPE LENGTH REQUIREMENTS, SOCKS MAY BE STACKED IN PYRAMID FASHION TO REACH EQUIVALENT SOCK HEIGHTS.
4. THREE 12" SOCKS = ONE 18" SOCK. THREE 18" SOCKS = ONE 24" SOCK. THREE 24" SOCKS = ONE 32' SOCK.

COMPOST FILTER SOCK DETAIL
N.T.S.

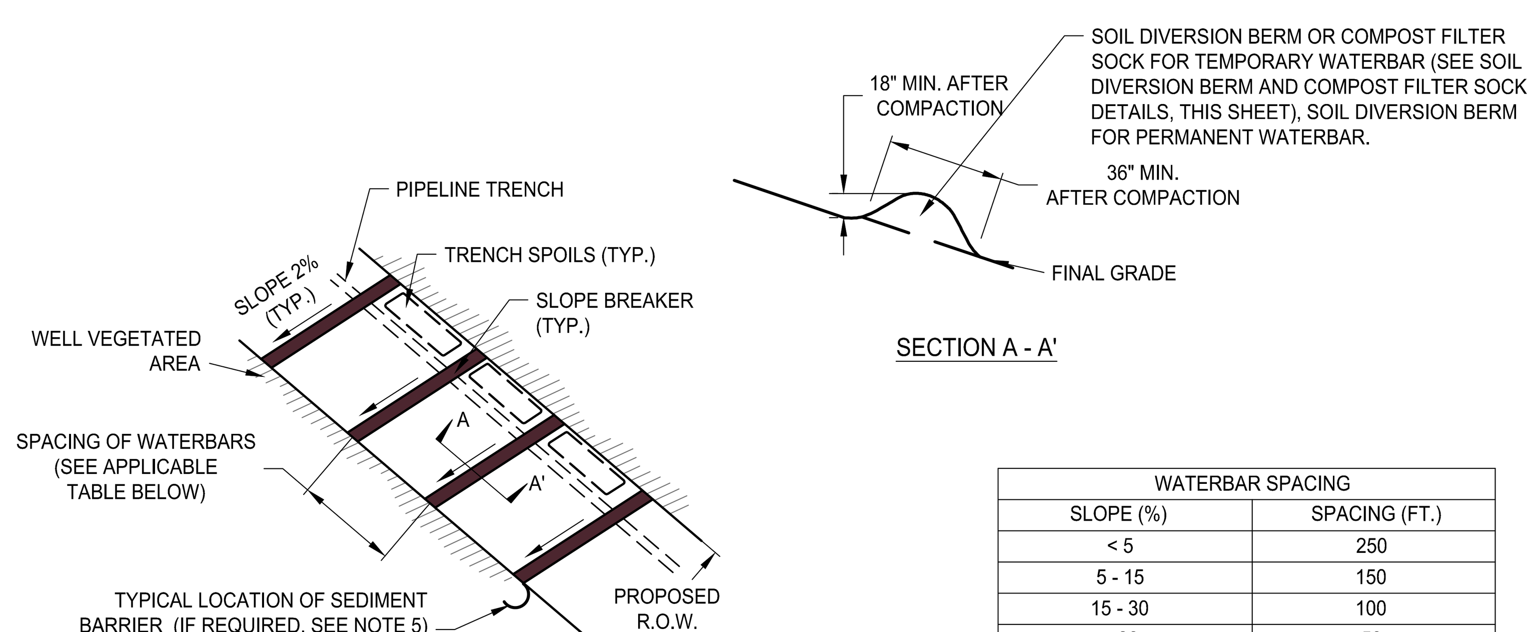
FIGURE 4.1
Sediment Barrier Alignment



PA DEP

NOTES:
1. SEDIMENT BARRIERS SHOULD BE INSTALLED ON EXISTING LEVEL GRADE TO BE EFFECTIVE.
2. THE ENDS OF SEDIMENT BARRIERS SHOULD BE TURNED UPSLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT FOR A DISTANCE SUFFICIENT TO ELEVATE THE BOTTOM OF THE BARRIER ENDS TO THE ELEVATION OF THE TOP OF THE BARRIER AT THE LOWEST POINT.

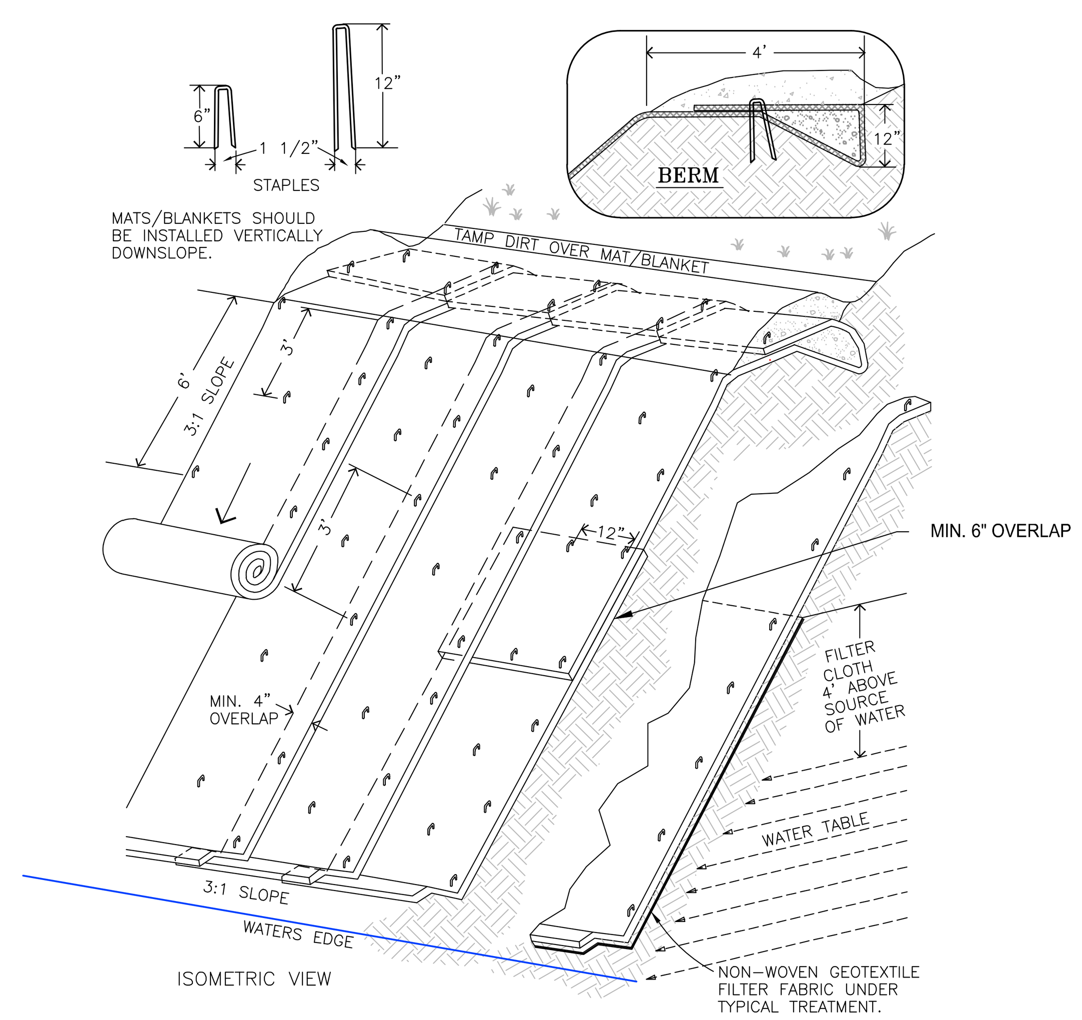
SEDIMENT BARRIER ALIGNMENT DETAIL
N.T.S.



WATERBAR SPACING	
SLOPE (%)	SPACING (FT.)
< 5	250
5 - 15	150
15 - 30	100
> 30	50

NOTES:
1. TEMPORARY SLOPE BREAKERS SHALL BE INSTALLED UPON INITIAL DISTURBANCE OF THE SOIL. PERMANENT WATERBARS SHALL BE INSTALLED AFTER THE TRENCH HAS BEEN BACKFILLED.
2. WATERBARS SHALL NOT DISCHARGE TO THE OPEN TRENCH AND SHOULD BE ALIGNED SO THAT DISCHARGES DO NOT FLOW BACK ONTO THE RIGHT-OF-WAY. RUNOFF SHALL BE DIRECTED TO THE DOWNSLOPE SIDE OF THE DISTURBED AREA.
3. SLOPES GREATER THAN 30% MAY REQUIRE THE INSTALLATION OF A PARALLEL COLLECTION DITCH AND SEDIMENT TRAP AT THE BOTTOM OF THE SLOPE IN PLACE OF WATERBARS.
4. WATERBARS MUST BE INSTALLED AT ALL PUBLIC ROADWAY AND RAILROAD CUT SLOPES.
5. IF A SUITABLE VEGETATIVE FILTER STRIP DOES NOT EXIST AT THE POINT OF DISCHARGE FOR ANY WATERBAR, A SEDIMENT BARRIER SHALL BE PROVIDED (E.G., FILTER SOCK OR SOIL DIVERSION BERM, SEE DETAILS, THIS SHEET)

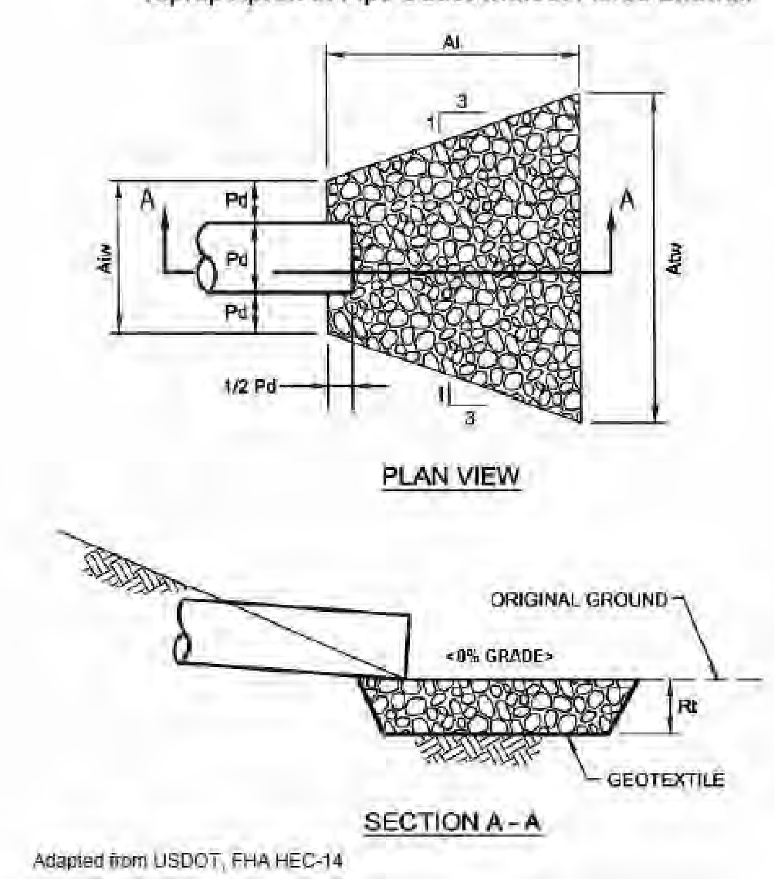
TYPICAL WATERBAR AND TEMPORARY SLOPE BREAKER DETAIL
N.T.S.



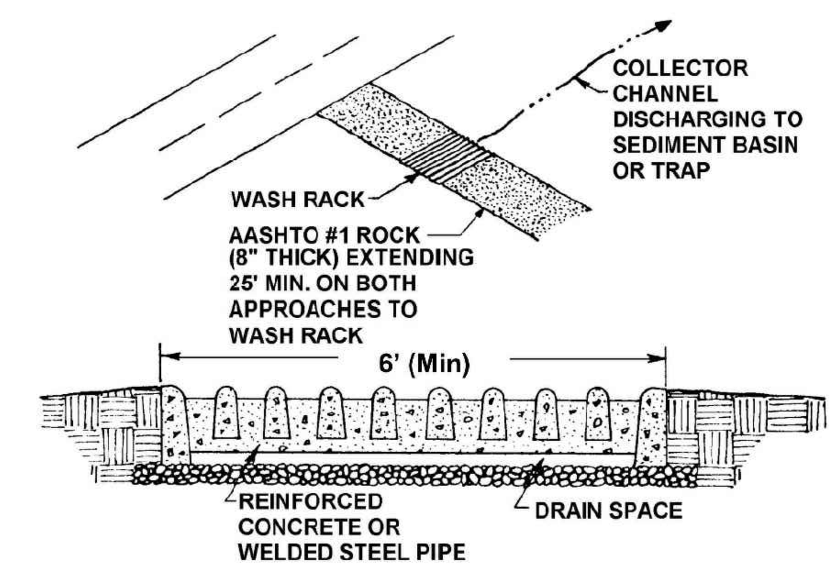
NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS, MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
3. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
4. EROSION CONTROL MATTING SHALL BE INSTALLED OVER ALL SEEDED AREAS WITHIN 100 FEET OF A SPECIAL PROTECTION WATER AND WITHIN 50 FEET OF ALL OTHER SURFACE WATERS.

TYPICAL SLOPE EROSION PROTECTION DETAIL
N.T.S.

STANDARD CONSTRUCTION DETAIL # 9-2
Riprap Apron at Pipe Outlet without Flared Endwall

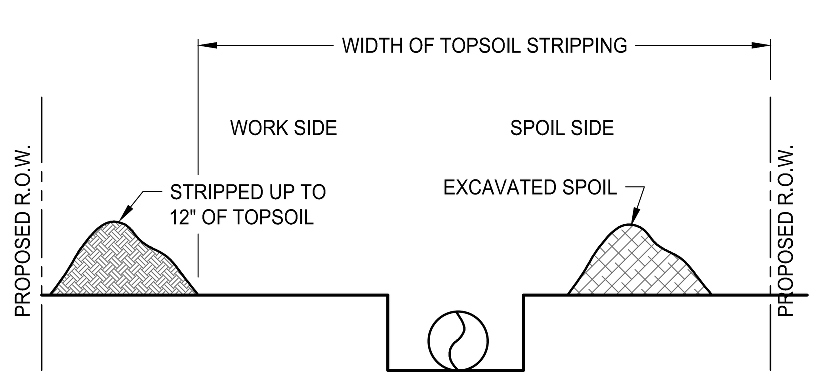


RIPRAP APRON DETAIL
N.T.S.



NOTES:
1. WASHRACK SHALL BE 20 FT. (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.
2. WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.
3. A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIC DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

ROCK CONSTRUCTION ENTRANCE WASH RACK DETAIL
N.T.S.



NOTES:
1. STRIP AND STOCKPILE TOPSOIL AS SHOWN ON DETAIL.
2. EXCAVATE TRENCH AS SHOWN ON DETAIL.
3. INSTALL GAS PIPELINE.
4. BACKFILL/COMPACT TRENCH.
5. PLACE/GRADE TOPSOIL WITHIN R.O.W. (DO NOT OVERCOMPACT)

DITCH PLUS SPOIL SIDE SEGREGATION DETAIL
N.T.S.

REVISIONS

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION

03.31.2017

ERM

DETAILS
MURRYSVILLE BOROUGH, WESTMORELAND COUNTY, PENNSYLVANIA

DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WV 26301

SCALE:	NTS
DATE:	8/28/15
DRAWN:	.
CHECKED:	.
APPROVED:	.

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO.	
.	
TASK NO.	SUB TASK NO.
.	.
GROUP ID	DRAWING NO.
.	
SHEET 2 OF 4	

3/31/2017 12:31 PM

\\pasendo01\data\Annapolis\Projects\0295620 Dominion PR\SHP\Pennsylvania\PA Alignment Sheets\CAD\DETAILS.dwg-SHT1 (2) -- ARCH full bleed D (24.00 x 36.00 Inches) -- 3/31/2017 -- yvonne.lockett

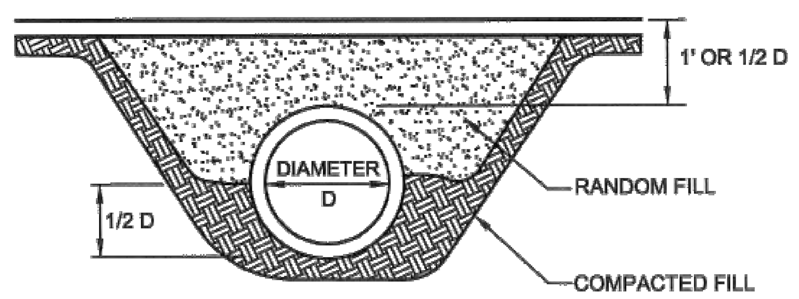
Recommended Maximum Spacing of Ditch Relief Culverts (18" dia. CMP)
For Permanent Access Roads

Road Grade Percent	Gravels, Sandy Gravels, Aggregate Surfacing	Silty Gravels, Clayey Gravels	Plastic and Nonplastic Inorganic Clays	Inorganic Silts, Silty or Clayey Sands	Sands, Silty Sands, and Gravelly Sands
	Soil Type in Ditch				
	Culvert Spacing Feet*				
2	390	315	245	170	95
4	335	275	210	145	85
6	285	230	180	125	75
8	240	195	150	105	65
10	200	160	125	90	55
12	160	130	105	75	45
14	135	110	85	60	35

Adapted from USDA Forest Service

***Culvert spacing may be adjusted slightly to take advantage of natural drainage courses.**

STANDARD CONSTRUCTION DETAIL #3-10
Ditch Relief Culvert



USDA Forest Service

Minimum diameter for any culvert is 12"; otherwise culvert shall be sized for anticipated peak flow. Place culvert so bottom is at same level as bottom of ditch or adjoining slope. Culverts shall be placed with a slope of 2 to 4%. Lower end shall be at least 2" below upper end.

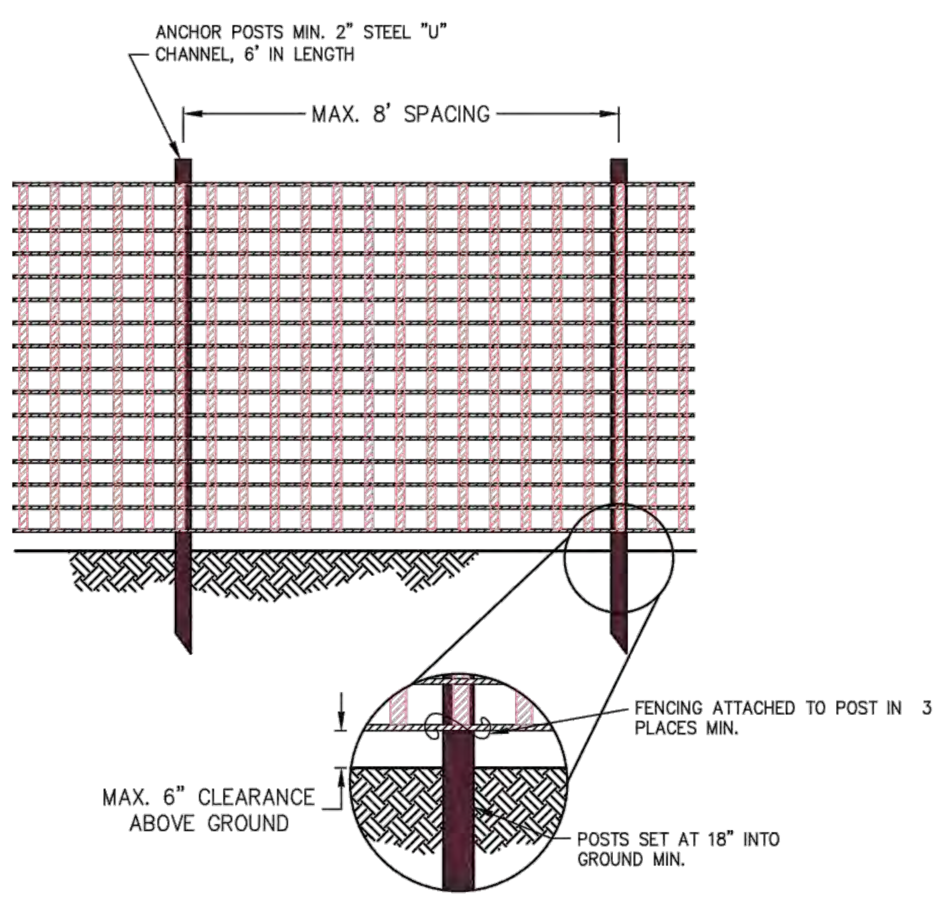
Extend culvert 12" beyond base of road fill on both sides. Firmly pack fill around culvert, especially the bottom half.

Provide suitable outlet protection* and, where appropriate, inlet protection.

Inspect culvert weekly: remove any flow obstructions and make necessary repairs immediately.

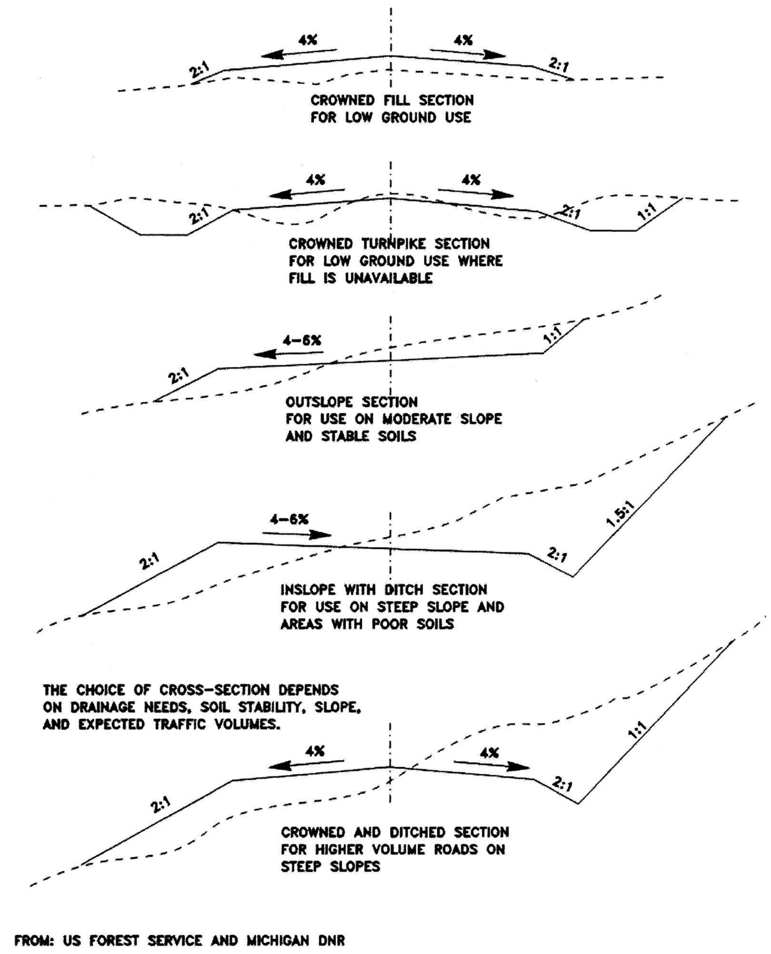
NOTE: This detail may be used for ditch relief culverts and for crossings of roadside ditches. It is not appropriate for stream crossings.

*** For steep slope (≥ 2H:1V) outfalls, a minimum 20 foot long R- 5 apron is recommended for temporary access roads where the recommended culvert spacing is used. For permanent access roads, a minimum R-6 rock size is recommended.**

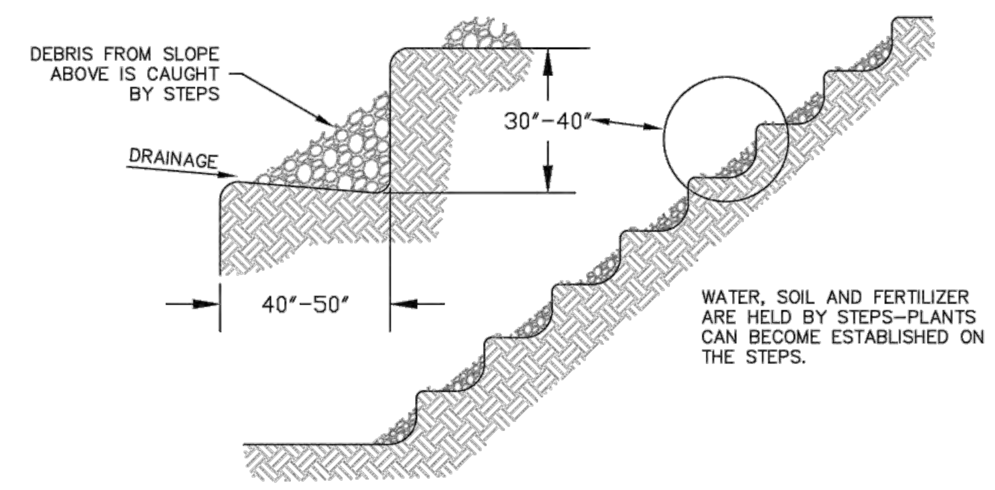


NOTES:
1. PROTECTION BARRIER SHALL BE 4' HIGH, CONSTRUCTED OF DURABLE AND HIGHLY VISIBLE MATERIAL (PLASTIC ORANGE CONSTRUCTION FENCE AND SNOW FENCE MAY BE USED).
2. PROTECTION BARRIERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE WORK AT THE SITE.
3. ADDITIONAL WARNING SIGNS SHOULD ALSO BE PLACED ON THE FENCING AND IN APPROPRIATE AREAS NEAR THE WORK ZONE.

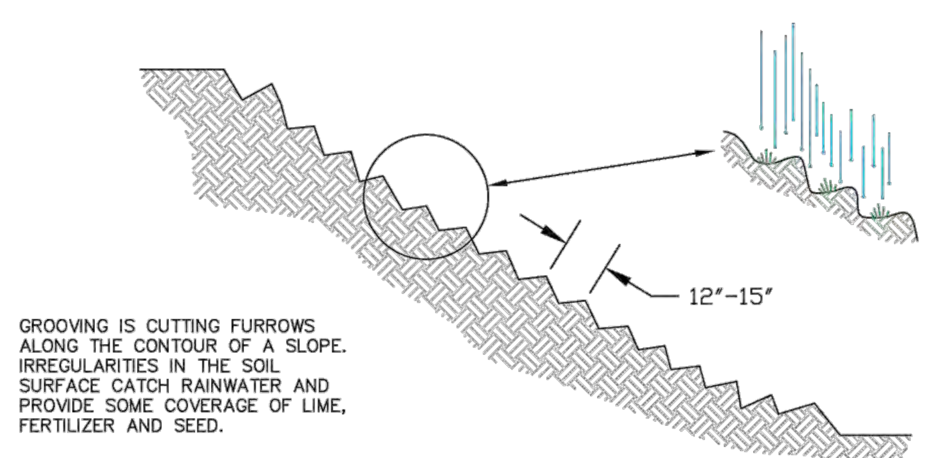
CONSTRUCTION SAFETY FENCE DETAIL
N.T.S.



TYPES OF ROAD CROSS-SECTIONS
N.T.S.

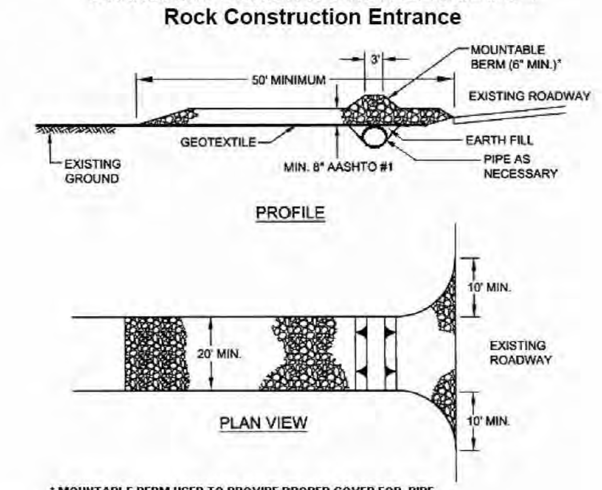


STAIR STEPPING CUT SLOPES



GROOVING SLOPES

STANDARD CONSTRUCTION DETAIL # 3-1
Rock Construction Entrance

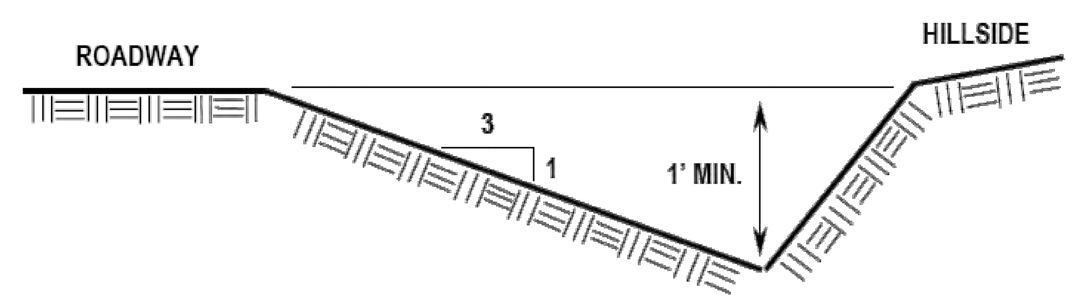


NOTES:
1. ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON-SITE FOR THIS PURPOSE.
2. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.
3. TYPE 1 GEOTEXTILE SHALL CONFORM TO REQUIREMENTS IN AASHTO M-288 FOR SEPARATION FABRICS AND CLASS 3 REQUIREMENTS.
4. A PENNDOT HIGHWAY OCCUPANCY PERMIT IS REQUIRED FOR STATE ROUTE CROSSINGS. A TOWNSHIP ROAD OCCUPANCY/DRIVEWAY PERMIT IS REQUIRED FOR A DRIVEWAY OR CONSTRUCTION ENTRANCE ONTO A TOWNSHIP ROAD. A FLAGMAN SHALL BE UTILIZED WHERE SIGHT DISTANCE IS MINIMAL.

ROCK CONSTRUCTION ENTRANCE DETAIL
N.T.S.

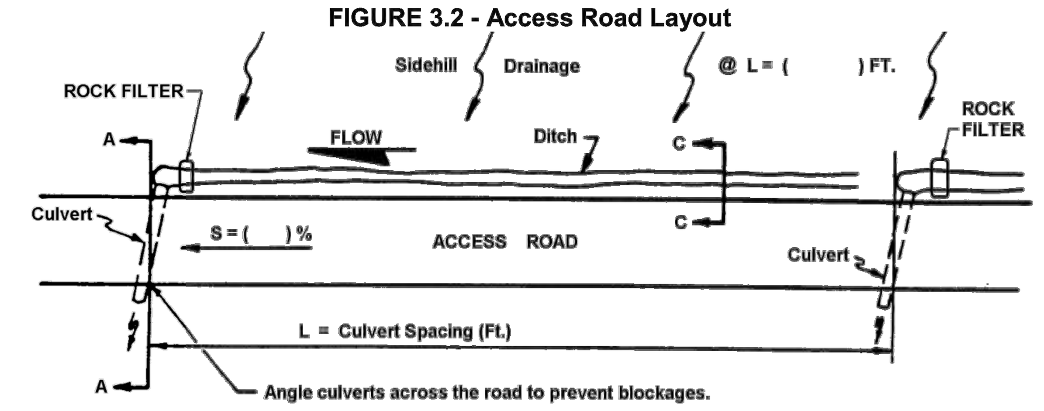
ROADSIDE DITCH - **Sediment Removal Efficiency: VERY LOW. This device is not an ABACT for special protection watersheds, but may be used to make other BMPs that are ABACT work more effectively.** In most cases, the ditches paralleling temporary access roads and haul roads need not be lined if sufficient ditch relief culverts are provided, erosion resistant soils are present, and flow velocities are less than 2 feet per second (fps). However, protective liners are required for roadside ditches discharging to special protection waters, where discharging directly to surface waters, or where necessary to prevent the erosion of the channel itself. A typical cross-section for a roadside ditch is shown in Figure 3.1.

FIGURE 3.1 - Typical Roadside Ditch Section



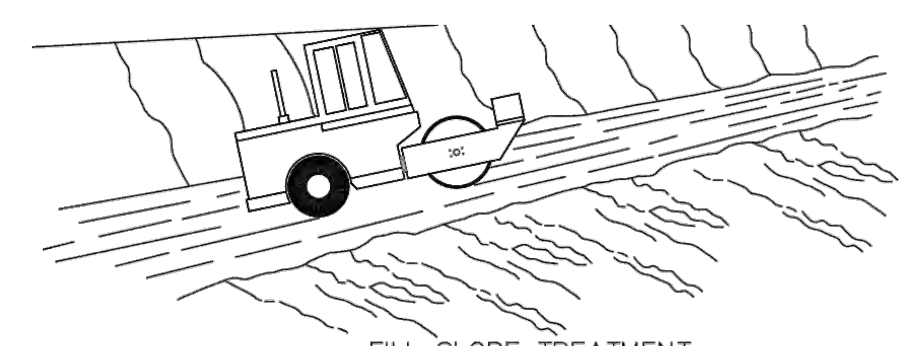
USDA Forest Service

FIGURE 3.2 - Access Road Layout



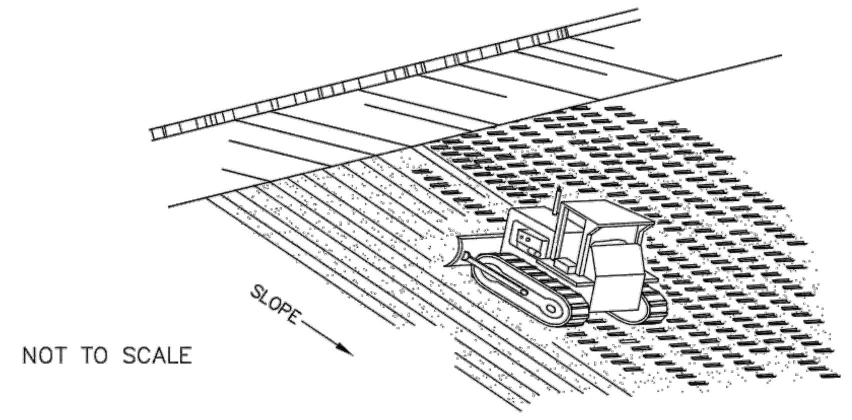
USDA Forest Service

Sizing and spacing of ditch relief culverts should be according to Table 3.3. Rock filters are not required where roadway surface is stabilized, ditches are provided with protective liners, and cut banks are stabilized. Suitable outlet protection should be provided at each culvert outfall.



FILL SLOPE TREATMENT

NOTE:
EACH LIFT OF FILL IS COMPACTED, BUT THE OUTER FACE OF THE SLOPE IS ALLOWED TO REMAIN LOOSE SO THAT THE ROCKS, CLODS, ETC. REACH THE NATURAL ANGLE OF REPOSE.

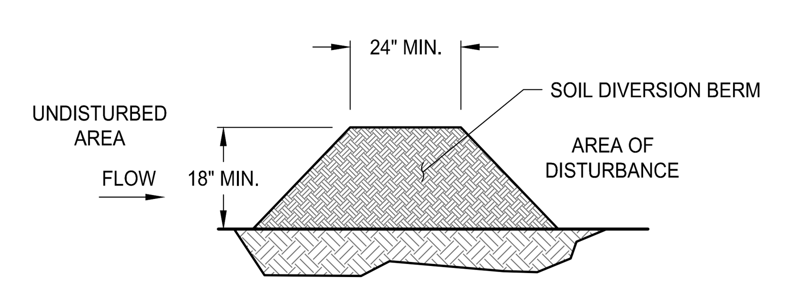


NOT TO SCALE

TRACKING

NOTE:
DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE.

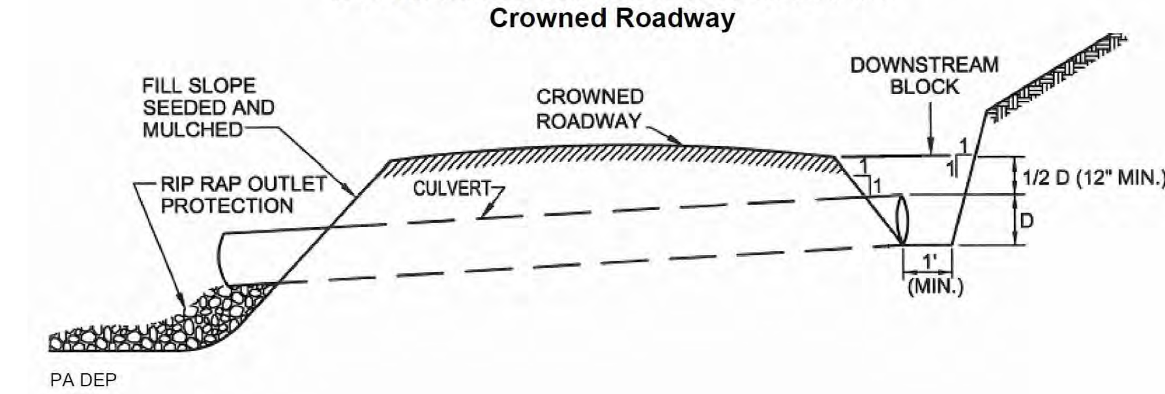
SURFACE ROUGHENING DETAIL
N.T.S.



NOTES:
1. DISCHARGE TO STABILIZED AREA.
2. INSPECT AFTER EVERY RUNOFF EVENT.
3. REPAIR/STABILIZE DOWNSTREAM AREA AS NECESSARY.

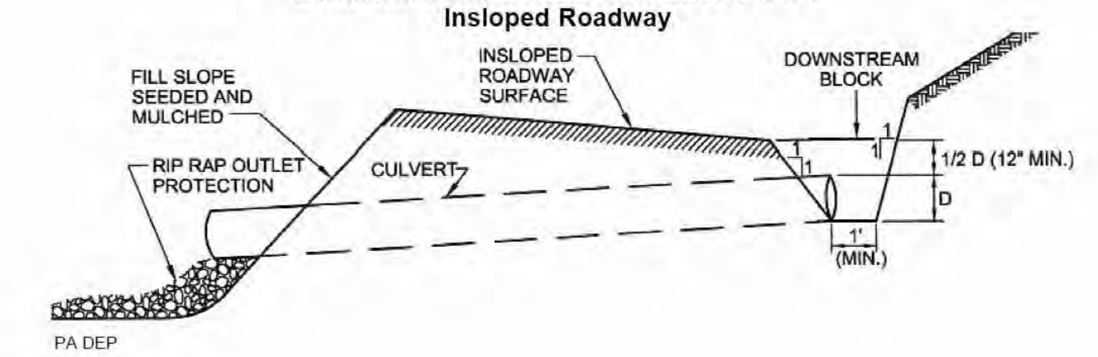
SOIL DIVERSION BERM DETAIL
N.T.S.

STANDARD CONSTRUCTION DETAIL # 3-3
Crowned Roadway



PA DEP

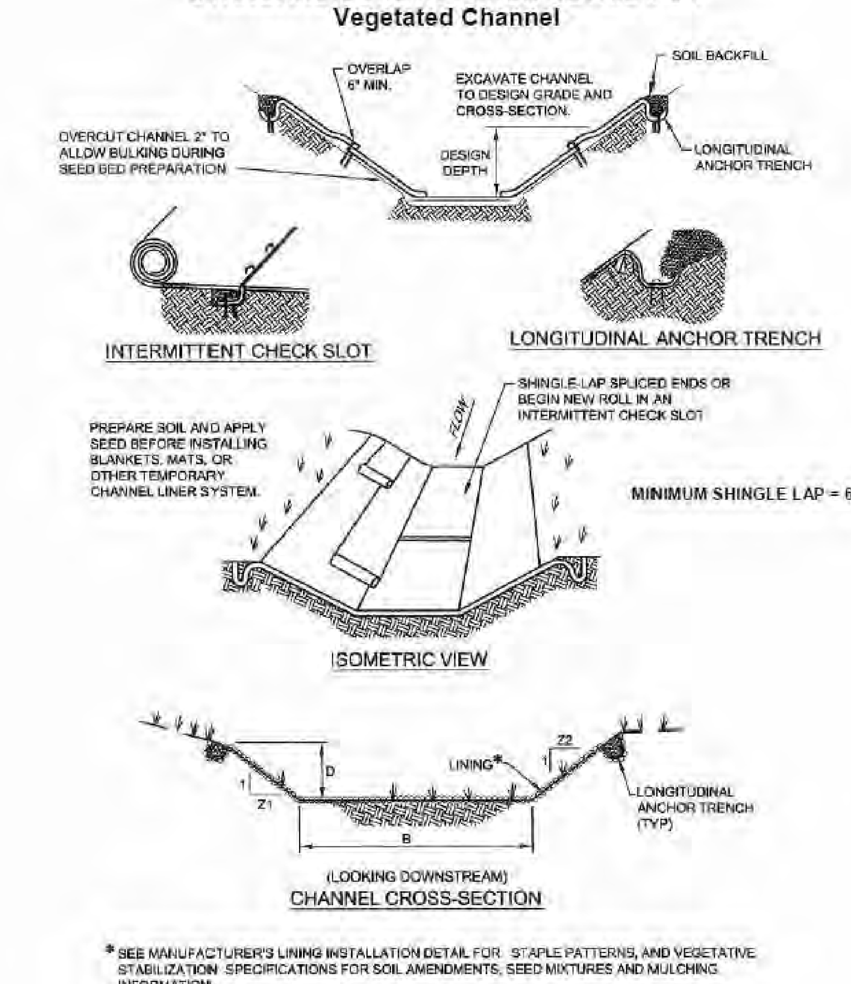
STANDARD CONSTRUCTION DETAIL # 3-4
Insloped Roadway



PA DEP

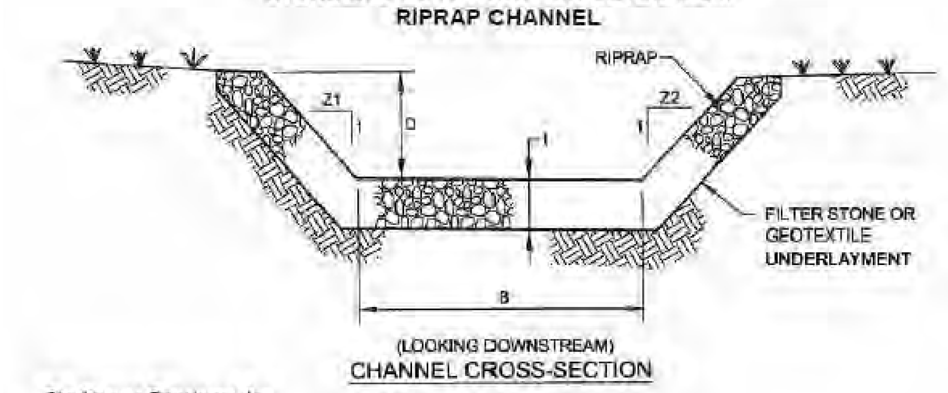
ACCESS ROAD CULVERT DETAILS
N.T.S.

STANDARD CONSTRUCTION DETAIL # 6-1
Vegetated Channel



VEGETATED CHANNEL DETAIL
N.T.S.

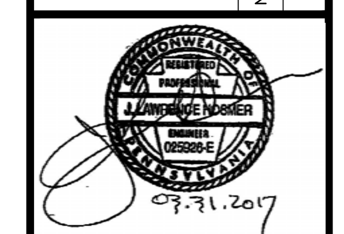
STANDARD CONSTRUCTION DETAIL # 6-3
RIPRAP CHANNEL



RIPRAP CHANNEL DETAIL
N.T.S.

REVISIONS

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION



ERM

DETAILS
MURRYSVILLE BOROUGH, WESTMORELAND COUNTY, PENNSYLVANIA
DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WV 26301

SCALE:	NTS
DATE:	8/28/15
DRAWN:	-
CHECKED:	-
APPROVED:	-

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO.
-
TASK NO. - SUB TASK NO. -
GROUP ID - DRAWING NO.
SHEET 3 OF 4

3/31/2017 12:31 PM

EROSION AND SEDIMENT CONTROL NOTES
AREA OF DISTURBANCE: 82.49 ACRES
ESCGP-1 BOUNDARY AREA: 75.49 ACRES

EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE CONSTRUCTION AND POST CONSTRUCTION PERIOD IN ORDER TO PREVENT SOIL EROSION, SEDIMENT-LADEN RUNOFF AND OTHER POLLUTANTS FROM ENTERING WATERWAYS, NEIGHBORING PROPERTY, ROADS, ETC.

THE CONTRACTOR SHALL BE REQUIRED TO INCORPORATE ALL EROSION AND SEDIMENTATION CONTROL FEATURES INTO THE PROJECT AT THE EARLIEST PRACTICABLE TIME.

TEMPORARY EROSION CONTROL MEASURES

1. REVIEW AND SUBSEQUENT AUTHORIZATION BY THE WESTMORELAND COUNTY CONSERVATION DISTRICT (WCCD) SHALL BE OBTAINED PRIOR TO THE COMMENCEMENT OF ANY EARTH DISTURBANCE ACTIVITY.
2. DURING CONSTRUCTION, THE AMOUNT OF SOIL DISTURBANCE SHALL BE KEPT TO A MINIMUM AND, WHENEVER POSSIBLE, A SUITABLE VEGETATIVE BUFFER SHALL BE MAINTAINED AROUND ALL CONSTRUCTION AREAS ON SITE.
3. ALL EARTHMOVING ACTIVITIES SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE THE AMOUNT OF DISTURBED AREA.
4. RESPONSIBILITY FOR IMPLEMENTING EROSION AND SEDIMENTATION CONTROL SHALL BE DESIGNATED TO A MINIMUM OF ONE INDIVIDUAL WHO WILL BE PRESENT AT THE PROJECT SITE DAILY.
5. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.
6. WHENEVER POSSIBLE, ALL EXCAVATED MATERIAL SHALL BE PLACED UPSLOPE FROM DISTURBED AREAS. STOCKPILES SHALL BE SET PARALLEL TO GRADE TO REDUCE RUNOFF.
7. UPON GENERAL COMPLETION OF THE FINAL GRADING, TOPSOIL SHALL BE PLACED AND FINAL GRADING PASSES SHALL BE MADE PERPENDICULAR TO THE DIRECTION OF RUNOFF.
8. RE-SEED AND RE-ESTABLISH ANY BARREN AND DISTURBED AREAS WITHOUT ESTABLISHED GROUND COVER.
9. FILTER SOCK SHALL BE PLACED AT CRITICAL EROSION AREAS AS SHOWN IN THE DRAWINGS IN ORDER TO PREVENT SEDIMENT-LADEN RUNOFF FROM ENTERING INTO WATERWAYS, NEIGHBORING PROPERTIES, ROADWAYS, ETC.
10. FILTER SOCK SHALL BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S RECOMMENDATIONS.
11. WHERE DUST OR WIND EROSION IS A PROBLEM, UNSTABLE SURFACE(S) SHALL BE SPRINKLED WITH WATER OR OTHER SUITABLE DUST SUPPRESSOR; HOWEVER, WASHING OF ROADWAYS IS NOT PERMITTED.
12. ANY WATER PUMPED FROM ANY EXCAVATION, FOR ANY REASON, SHALL BE DIRECTED THROUGH A SEDIMENT FILTER BAG CONFORMING TO PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS AS SHOWN IN THE EROSION AND SEDIMENT CONTROL DETAILS.
13. THE CONTRACTOR SHALL EMPLOY MEASURES DURING CONSTRUCTION TO PREVENT SPILLS OF FUELS OR LUBRICANTS. IF A SPILL OCCURS, IT SHALL BE IMMEDIATELY CONTAINED IN ORDER TO PREVENT ITS ENTRY INTO NEARBY WATERWAYS.
14. ANY TEMPORARY EROSION CONTROL MEASURE APPLIED TO EXPOSED SOIL SURFACES SHALL REMAIN FUNCTIONAL UNTIL VEGETATED COVER IS FIRMLY ESTABLISHED (70% VEGETATED COVER BY EROSION RESISTANT PERENNIALS), UNLESS OTHERWISE STABILIZED WITH AN ACCEPTABLE PERMANENT COVER (ROCK, ETC.).
15. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE SUBJECT TO THE APPLICABLE REGULATIONS OF THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
16. SHOULD ANY ADDITIONAL EROSION OR SEDIMENTATION OCCUR DURING CONSTRUCTION OR QUESTIONS REGARDING THE MAINTENANCE CONTROL PRACTICES ARISE, CONTACT THE OWNER'S REPRESENTATIVE.
17. ALL TEMPORARY SEEDING SHALL ADHERE TO THE SEEDING SPECIFICATIONS AS PROVIDED IN THIS PLAN. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES, OTHER THAN THOSE RECEIVING AN AGGREGATE SURFACE SHALL BE STABILIZED BY APPLYING AN APPROPRIATE SEED MIXTURE FOLLOWING THE TEMPORARY SEEDING SPECIFICATIONS AS PROVIDED IN THIS PLAN IN ORDER TO ESTABLISH AN EROSION RESISTANT STAND OF VEGETATION.

PERMANENT EROSION CONTROL MEASURES

1. PERMANENT SOIL PROTECTION SHALL BE COMPLETED AS EARLY AS PRACTICABLE.
2. ALL EROSION AND SEDIMENT CONTROL BMP'S SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED. ONCE PERMANENT STABILIZATION HAS BEEN ESTABLISHED AND WITH APPROVAL OF WCCD, TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S MAY BE REMOVED. ANY AREAS DISTURBED DURING THIS REMOVAL SHALL BE IMMEDIATELY STABILIZED.
3. ALL PERMANENT SEEDING SHALL ADHERE TO THE SEEDING SPECIFICATIONS AS PROVIDED IN THIS PLAN. PERMANENT SEEDING AND MULCHING WILL BE INCORPORATED IN THE CONSTRUCTION PHASES DURING THE APPROVED PLANTING SEASON IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATIONS AS PROVIDED IN THIS PLAN.
4. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER ALL RUNOFF EVENTS.
5. THE PERMITTEE AND CO-PERMITTEE SHALL TAKE ALL REASONABLE STEPS TO MINIMIZE OR PREVENT ANY DISCHARGE IN VIOLATION OF THIS PERMIT THAT HAS A REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT.
6. APPROVED EROSION AND SEDIMENTATION CONTROL PLANS MUST BE AVAILABLE AT THE SITE OF THE CONSTRUCTION ACTIVITY AT ALL TIMES.
7. IF FUEL OR OTHER DANGEROUS CHEMICALS ARE STORED ON SITE, THEN A PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN MUST BE DEVELOPED AND KEPT ON SITE.

SITE STABILIZATION NOTES

1. UPON FINAL COMPLETION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY, THE SITE SHALL IMMEDIATELY HAVE TOPSOIL RESTORED, REPLACED, OR AMENDED, SEEDED, MULCHED, OR OTHERWISE PERMANENTLY STABILIZED AND PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.
2. EROSION AND SEDIMENT CONTROL BMP'S SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED. ONCE PERMANENT STABILIZATION HAS BEEN ESTABLISHED, THE TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S SHALL BE PERMANENTLY STABILIZED UPON COMPLETION OF THE TEMPORARY EROSION AND SEDIMENT CONTROL BMP REMOVAL ACTIVITY.
3. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY TO BE CONSIDERED PERMANENTLY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH EITHER A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION, OR AN ACCEPTABLE BMP WHICH PERMANENTLY MINIMIZES ACCELERATED EROSION AND SEDIMENTATION.
4. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.
5. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH EITHER A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION, OR AN ACCEPTABLE BMP WHICH TEMPORARILY MINIMIZES ACCELERATED EROSION AND SEDIMENTATION.

CONSTRUCTION SEQUENCE

TL-636 PIPELINE CONSTRUCTION SEQUENCE

A. PRE-CONSTRUCTION
1. ALL APPLICABLE PERMITS AND APPROVALS REQUIRED FOR THIS PROJECT SHALL BE SECURED PRIOR TO THE START OF CONSTRUCTION. COPIES OF THE PERMITS, PLANS, AND APPROVALS SHALL BE KEPT ON-SITE AT ALL TIMES.
2. INITIATE A PA ONE-CALL, LOCATE ALL UTILITIES WITHIN THE PROJECT AREA, AND PROTECT AS NECESSARY.
3. THE CONTRACTOR SHALL SUBMIT WRITTEN NOTIFICATION TO THE PADEP AT LEAST SEVEN DAYS PRIOR TO COMMENCING EARTHMOVING ACTIVITIES.
4. ALTERNATIVES TO THE STAGING OR SPECIFICATIONS GIVEN IN THIS PLAN MUST FIRST BE APPROVED BY THE PADEP PRIOR TO IMPLEMENTATION.
5. NON-DESIGNATED WASTE/BORROW AREAS MUST HAVE AN APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
6. ALL BUILDING MATERIALS MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH THE DEPARTMENTS SOLID WASTE MANAGEMENT REGULATIONS. NO BUILDING MATERIALS, WASTES, OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

B. CONSTRUCTION SEQUENCE OF BMP INSTALLATION AND REMOVAL

THE FOLLOWING CONSTRUCTION SEQUENCE PRESENTS A GENERAL OVERVIEW OF THE WORK EFFORTS TO ACCOMPLISH THE PROJECT AND INCORPORATES EROSION CONTROL MEASURES THAT SHALL BE FOLLOWED DURING THE PROJECT ACTIVITIES.
1. MOBILIZE EQUIPMENT AND INSTALL THE ROCK CONSTRUCTION ENTRANCES AND ACCESS ROADS IN ACCORDANCE WITH THE PLAN DRAWINGS AND TYPICAL DETAILS. TEMPORARY PIPES ARE REQUIRED FOR ROCK CONSTRUCTION ENTRANCES AND WHERE ROADSIDE SWALES EXIST ALONG PROJECT ROADWAYS.
2. INSTALL TEMPORARY PROTECTIVE FENCE AROUND EXISTING WETLANDS AS INDICATED ON THE PLAN AND IN ACCORDANCE WITH THE TYPICAL DETAILS.
3. CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF THE FILTER SOCK AND WATERBARS AT THE LOCATIONS SHOWN ON THE PLAN DRAWINGS AND IN ACCORDANCE WITH THE TYPICAL DETAILS.
4. INSTALL PUMPED WATER FILTER BAGS, TEMPORARY WETLAND CROSSINGS, AND TEMPORARY STREAM CROSSINGS IN ACCORDANCE WITH THE PLAN DRAWINGS AND TYPICAL DETAILS. ENSURE WETLAND TOPSOIL THAT IS EXCAVATED FOR THE TEMPORARY WETLAND CROSSINGS IS STOCKPILED SEPARATELY FOR INSTALLATION FOLLOWING CONSTRUCTION COMPLETION. ENSURE ALL TEMPORARY STOCKPILE AREAS ARE PROTECTED WITH FILTER SOCK.
5. CLEAR AND GRUB THE PROJECT AREA. INSTALL WATERBARS AND REMAINING FILTER SOCK. STRIP TOPSOIL AND STOCKPILE ON THE UPSLOPE SIDE OF THE TRENCH OR IN AN APPROVED DESIGNATED STORAGE AREA. FORTIFY WATERBARS WITH A LOG OR STEEL PIPE WHERE EQUIPMENT WILL TRAVERSE ACROSS THE WATERBAR.
6. EXCAVATE THE TRENCH FOR THE PROPOSED GATHERING. THE EXCAVATED MATERIAL SHALL BE PLACED ON THE UPSLOPE SIDE OF THE EXCAVATION WITHIN THE LIMITS OF EROSION CONTROL. EXCAVATED MATERIAL SHALL NOT BE PLACED OR STOCKPILED IN A WETLAND, STREAM, DITCH, DRAINAGE SWALE OR IN TOPSOIL STOCKPILE AREAS.
7. PUMP ANY GROUNDWATER OR STORMWATER ENCOUNTERED FROM THE TRENCH INTO A FILTER BAG IN ACCORDANCE WITH THE TYPICAL DETAILS AND MANUFACTURER SPECIFICATIONS. THE PUMPED WATER FILTER BAG SHALL BE PLACED ON A WELL-VEGETATED OR STABILIZED AREA AND SHALL DISCHARGE INTO A STABILIZED DRAINAGEWAY OR DRAINAGE SYSTEM.
8. COMPLETE THE INSTALLATION OF THE GATHERING. INSTALL TRENCH PLUGS AS INDICATED ACCORDING TO THE PLAN DRAWINGS AND TYPICAL DETAILS. BACKFILL THE TRENCH WITH DESIGNATED SIZE LIFTS AND PROPER COMPACTION.
9. INSTALL EROSION CONTROL BLANKET AS DETAILED. INSTALL FLEXTERRA™ ON ALL SLOPES 3:1 AND STEEPER.
10. REMOVE THE TEMPORARY WETLAND CROSSINGS AND TEMPORARY STREAM CROSSINGS AND TEMPORARY FILL USED FOR CONSTRUCTION ACCESS. RETURN WETLAND TOPSOIL TO THE IMPACTED WETLAND AREAS AND GRADE TO THE ORIGINAL CONFIGURATIONS, SEED WETLAND AREA WITH TEMPORARY SEEDING, AND MULCH WITH STRAW. RETURN NATIVE STREAM SUBSTRATE TO THE STREAM BED AND GRADE TO THE ORIGINAL CONFIGURATIONS. STABILIZE, SEED, AND MULCH STREAM BANKS AND SWALES IN ACCORDANCE WITH THE PLAN DRAWINGS AND TYPICAL DETAILS.
11. RECLAIM STAGING AREAS AND REMOVE ALL WASTE AND DEBRIS GENERATED DURING THE CONSTRUCTION PROCESS.
12. SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN DAYS AFTER THE PIPELINE IS INSTALLED.
13. THE SITE WILL BE CONSIDERED STABILIZED WHEN A UNIFORM 70% PERENNIAL VEGETATIVE COVER HAS BEEN ESTABLISHED FOR THE ENTIRE PROJECT SITE AND CONCURRENCE HAS BEEN RECEIVED FROM THE WCCD. ONCE THE SITE HAS BEEN STABILIZED, THE EROSION AND SEDIMENT POLLUTION CONTROL BMP'S CAN BE REMOVED. ANY AREAS DISTURBED BY THE REMOVAL OF THE BMP'S SHALL BE IMMEDIATELY SEEDED AND MULCHED.

SCHEDULE OF MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS

THE SOIL EROSION AND SEDIMENTATION CONTROLS UTILIZED IN THE DEVELOPMENT OF THIS PLAN SHALL BE MAINTAINED AND REPAIRED IN ORDER TO KEEP THEM IN EFFECTIVE CONDITION UNTIL STABILIZATION IS ACHIEVED. THE CONTRACTOR SHALL PERFORM CERTAIN PERIODIC DUTIES IN ORDER TO ASSURE PROPER CONTROL. MAINTENANCE OF THE CONTROLS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING MAINTENANCE PROCEDURES FOR UTILIZED CONTROLS:
MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION BMP'S AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS BY A QUALIFIED PERSON TRAINED AND EXPERIENCED IN EROSION AND SEDIMENTATION CONTROL TO ASCERTAIN THAT THE BMP'S ARE OPERATIONAL AND EFFECTIVE IN PREVENTING POLLUTION TO THE WATERS OF THE COMMONWEALTH. A WRITTEN REPORT OF EACH INSPECTION SHALL BE KEPT AND INCLUDE: A SUMMARY OF SITE CONDITIONS, BMP'S AND COMPLIANCE, AND THE DATE, TIME, AND THE NAME OF THE PERSON CONDUCTING THE INSPECTION. ALL SITE INSPECTIONS SHALL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE INCLUDING THE COMPLIANCE ACTIONS, DATE, TIME, AND THE NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG SHALL BE KEPT ON-SITE AT ALL TIMES AND MADE AVAILABLE TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION UPON REQUEST.

ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, RESEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY.

MISCELLANEOUS ADJUSTMENTS AND CORRECTIONS SHALL BE MADE TO ANY EROSION CONTROL STRUCTURE AS DEEMED NECESSARY BY THE ENGINEER OR PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REPRESENTATIVE IN ORDER TO CORRECT UNFORESEEN PROBLEMS CAUSED BY A STORM PRIOR TO STABILIZATION.

IF EROSION AND SEDIMENTATION BMP'S FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMP'S OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED. WHERE BMP'S ARE FOUND TO BE INOPERATIVE OR FAIL TO ALLEVIATE EROSION AND SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE OWNER'S REPRESENTATIVE.

PERIMETER CONTROLS

1. THE PERIMETER CONTROLS SHALL BE INSPECTED AFTER EVERY RUN-OFF EVENT. ANY NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
2. ACCUMULATED SEDIMENT SHALL BE REMOVED AS REQUIRED TO KEEP THE FENCE FUNCTIONAL. IN ALL CASES, THE DEPOSITS WILL BE REMOVED WHERE ACCUMULATIONS REACH HALF THE ABOVE THE GROUND HEIGHT OF THE PERIMETER CONTROLS.
3. ALL UNDERCUTTING OR EROSION OF THE TOE ANCHOR WILL BE REPAIRED IMMEDIATELY WITH COMPACTED BACKFILL MATERIAL.
4. ADHERE TO ANY MANUFACTURER'S RECOMMENDATIONS FOR REPLACEMENT OF THE PERIMETER CONTROLS.
5. ANY ACCUMULATED DEBRIS AT THE SILT BARRIERS WILL BE REMOVED AND PROPERLY DISPOSED IN A RESPONSIBLE MANNER. BARRIERS SHALL BE CHECKED AND REALIGNED OR RESET AS REQUIRED. ANY DEBRIS OR SOLID WASTE MATERIAL ACCUMULATED FROM CONSTRUCTION ACTIVITIES SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN AN APPROVED LANDFILL. CONSTRUCTION WASTE SHALL NOT BE BURIED ON THE SUBJECT SITE.

ROCK CONSTRUCTION ENTRANCE

1. THE STRUCTURE'S THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSION BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS SHALL BE REMOVED AND RETURNED TO THE SITE. WASHING OF THE ROADWAY IS NOT PERMITTED.
2. STABILIZED CONSTRUCTION ENTRANCES SHALL BE CLEANED AND REDRESSED WHEN VOIDS BECOME CHOKED WITH MUD AND SEDIMENT.
3. FILTER FABRIC SHALL BE INSTALLED UNDER ALL ROCK CONSTRUCTION ENTRANCES.

ESCGP-2 PERMIT REQUIREMENTS FOR INSPECTION AND MAINTENANCE OF BMP'S

1. THE PERMITTEE AND THE CO-PERMITTEE MUST ENSURE THAT VISUAL SITE INSPECTIONS ARE CONDUCTED WEEKLY AND AFTER EACH RUNOFF EVENT BY QUALIFIED PERSONNEL TO ASSURE THE EFFECTIVENESS OF BMP OPERATIONS. A WRITTEN REPORT OF EACH INSPECTION SHALL BE KEPT.
2. THE PERMITTEE AND CO-PERMITTEE SHALL RETAIN RECORDS OF ALL MONITORING INFORMATION INCLUDING INSPECTION REPORTS AS REQUIRED BY THE PERMIT FOR A PERIOD OF 3 YEARS FROM THE DATE OF TERMINATION OF COVERAGE UNDER THIS PERMIT.
3. THE PERMITTEE AND CO-PERMITTEE SHALL TAKE ALL REASONABLE STEPS TO MINIMIZE OR PREVENT ANY DISCHARGE IN VIOLATION OF THIS PERMIT THAT HAS REASONABLE LIKELIHOOD OF ADVERSELY AFFECTING HUMAN HEALTH OR THE ENVIRONMENT.
4. UPON REDUCTION, LOSS, OR FAILURE OF A BMP, THE PERMITTEE AND CO-PERMITTEE SHALL TAKE IMMEDIATE ACTION TO RESTORE THE BMP OR PROVIDE AN ALTERNATIVE METHOD OF TREATMENT.
5. THE PERMITTEE AND CO-PERMITTEE MUST COMPLY WITH ALL TERMS AND CONDITIONS OF THE ESCGP-2 PERMIT. ANY PERMIT NONCOMPLIANCE IS GROUNDS FOR ENFORCEMENT ACTION. THE PERMITTEE AND CO-PERMITTEE MAY BE SUBJECT TO CRIMINAL AND/OR CIVIL PENALTIES FOR VIOLATIONS OF THE TERMS AND CONDITIONS OF THIS PERMIT.
6. THE OWNER OR OPERATOR OF THE FACILITY WITH STORMWATER DISCHARGE AS COVERED BY THIS PERMIT SHALL MAKE PLANS AVAILABLE AT THE SITE OF THE CONSTRUCTION ACTIVITY AT ALL TIMES.
7. THE STAGING OF EARTH DISTURBANCE ACTIVITIES AND MAINTENANCE REQUIREMENTS CONTAINED IN THE EROSION AND SEDIMENT CONTROL PLAN MUST BE FOLLOWED.
8. AN EROSION AND SEDIMENT CONTROL PLAN SHALL BE READY AND IMPLEMENTED FOR ALL OFF-SITE SPOIL AND BORROW AREAS.

MULCHING SPECIFICATIONS

MULCHING SHALL CONFORM TO THE SPECIFICATIONS IN THE RESTORATION & REHABILITATION PLAN, INCLUDED HEREIN FOR CONVENIENCE.

SOIL SUPPLEMENT SPECIFICATIONS

SUPPLEMENTS SHALL CONFORM TO THE SPECIFICATIONS IN THE RESTORATION & REHABILITATION PLAN, INCLUDED HEREIN FOR CONVENIENCE.

CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE

1. IF THE SITE HAS EXCESS FILL THAT NEEDS TO BE EXPORTED TO AN OFF-SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS ON THE APPLICANT. IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON THE SITE.
2. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S "MANAGEMENT OF FILL" DOCUMENT NUMBER 256-2182-773
3. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT (NOT INCLUDING MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE), AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED.
4. ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, AND REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTIONS AND/OR REVIEW OR THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF A REGULATED SUBSTANCE.
5. FILL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S MUNICIPAL OR RESIDENTIAL WASTE REGULATIONS BASED ON 25 PA CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

SOILS LIMITATIONS AND RESOLUTIONS

THE FOLLOWING ADDRESSES POTENTIAL ON-SITE SOILS USE LIMITATIONS BASED UPON TYPICAL USDA SOIL LIMITATIONS FOR THE SOILS ANTICIPATED TO BE ENCOUNTERED DURING CONSTRUCTION AND PROPOSED RESOLUTIONS (RELATING TO THE SOILS WHERE CONSTRUCTION ACTIVITIES ARE PROPOSED):

1. SUSCEPTIBLE TO FROST ACTION - PIPELINES ARE TO BE BACKFILLED WITH SUITABLE FILL AND WILL BE PLACED AT A SUITABLE DEPTH. EXCESSIVE DAMAGE FROM FROST ACTION IS NOT ANTICIPATED.
2. GRAVEL CONTENT IN TOPSOIL - PRESENCE OF GRAVEL OR ROCK FRAGMENTS IN THE TOPSOIL MAY MAKE THE ESTABLISHMENT OF VEGETATION DIFFICULT. PROPER PREPARATION (RAKING, LIME, AND FERTILIZER APPLICATION, ETC.) OF THE TOPSOIL WILL MINIMIZE THOSE FACTORS AND AID IN THE ESTABLISHMENT OF VEGETATION.
3. STEEP SLOPES - STEEP SLOPES EXIST ON SITE AND HAVE BEEN FACTORED INTO THE DESIGN. EROSION CONTROL BLANKETS HAVE BEEN PROPOSED WHERE SHOWN ON THE DRAWINGS BASED ON SOIL CONDITIONS.
4. DROUGHT - WATERING OF SEED MAY BE REQUIRED.
5. HIGH WATER TABLE/SHALLOW DEPTH TO SATURATED ZONE - A PUMPED WATER FILTER BAG DETAIL HAS BEEN INCLUDED IN THE DRAWINGS. ANY WATER ENCOUNTERED DURING EXCAVATION ACTIVITIES SHOULD BE DISCHARGED THROUGH THIS FILTER BAG AS AN EROSION AND SEDIMENT CONTROL MEASURE.
6. CUTBANKS CAVE - THE SITE IMPROVEMENTS WILL REQUIRE SHALLOW BULK EXCAVATION. ALL POTENTIAL TRENCH WORK SHALL REQUIRE ADEQUATE SHORING TO PREVENT CAVE-INS.
7. SHALLOW DEPTH TO BEDROCK - THE SOILS THAT HAVE A SHALLOW DEPTH TO BEDROCK SHALL BE TAKEN INTO CONSIDERATION FOR EARTH MOVING ACTIVITIES. ANY BEDROCK ENCOUNTERED IS ANTICIPATED TO BE LIMITED AND SHALL BE REMOVED.
8. MODERATE RISK OF CORROSION IN METAL AND CONCRETE PIPING - PROVIDE ADEQUATE COVER OVER CONCRETE PIPES. STEEL PIPE IS TO RECEIVE A PROTECTIVE COATING PRIOR TO BACKFILL.
9. HYDRIC SOILS - VERY LIMITED DISTURBANCE TO THIS SOIL AREA IS PROPOSED. WETLAND DELINEATION WAS PERFORMED AND THE LOCATIONS OF THE WETLAND AREAS ARE INDICATED ON THE DRAWINGS.

RECYCLING AND DISPOSAL

PROCEDURES THAT ENSURE THAT THE PROPER MEASURES FOR THE RECYCLING OR DISPOSAL OF MATERIALS ASSOCIATED WITH OR FROM THE PROJECT SITE WILL BE UNDERTAKEN IN ACCORDANCE WITH DEPARTMENT REGULATIONS. INDIVIDUALS RESPONSIBLE FOR EARTH DISTURBANCE ACTIVITIES MUST ENSURE THAT PROPER MECHANISMS ARE IN PLACE TO CONTROL WASTE MATERIALS. CONSTRUCTION WASTES INCLUDE, BUT ARE NOT LIMITED TO, EXCESS SOIL MATERIALS, BUILDING MATERIALS, CONCRETE WASH WATER, SANITARY WASTES, ETC. THAT COULD ADVERSELY IMPACT WATER QUALITY. THE CONTRACTOR SHALL PLAN AND IMPLEMENT MEASURES FOR HOUSEKEEPING, MATERIALS MANAGEMENT, AND LITTER CONTROL DURING CONSTRUCTION. WHEREVER POSSIBLE, RECYCLING OF EXCESS MATERIALS IS PREFERRED RATHER THAN DISPOSAL. DISPOSAL OF CONSTRUCTION WASTES SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

LINEAR PROJECT SPECIFIC NOTES

1. LIMITING EXPOSED AREAS

EARTH DISTURBANCE ACTIVITIES SHALL BE PLANNED AND CONDUCTED TO MINIMIZE THE EXTENT AND DURATION OF THE DISTURBANCE [SECTION 102.4(8)(4)].

THE LENGTH OF TIME FOR CONSTRUCTING ACCESS ROADS, UTILITY LINE TRENCH BACK-FILLING, FINAL GRADING AND CLEANUP SHOULD BE KEPT TO A MINIMUM. GOOD PLANNING AND SCHEDULING OF THE VARIOUS UTILITY CONSTRUCTION ITEMS, TOGETHER WITH TIMELY AVAILABILITY OF MATERIALS, ADEQUATE EQUIPMENT, AND ADEQUATE MANPOWER, WILL HELP REDUCE THE EXPOSURE TIME OF DISTURBED LAND.

PIPELINES WITH JOINTS THAT ALLOW A MANUFACTURED LENGTH OF PIPE TO BE PLACED IN THE TRENCH WITH THE PIPE JOINT ASSEMBLED/MADE IN THE TRENCH REQUIRE AN OPEN PIPELINE TRENCH THAT IS ONLY SLIGHTLY LONGER THAN THE LENGTH OF PIPE BEING INSTALLED. THE TOTAL LENGTH OF EXCAVATED TRENCH OPEN AT ANY ONE TIME SHOULD NOT BE GREATER THAN THE TOTAL LENGTH OF PIPELINE/UTILITY LINE THAT CAN BE PLACED IN THE TRENCH AND BACK-FILLED IN ONE WORKING DAY. NO MORE THAN 50 LINEAR FEET OF OPEN TRENCH SHOULD EXIST WHEN PIPELINE/UTILITY LINE INSTALLATION CEASES AT THE END OF THE WORKDAY. SOIL SUPPLEMENTS, SEED AND MULCH SHOULD BE APPLIED WITHIN 7 DAYS AFTER THE PIPELINE/UTILITY LINE IS INSTALLED.

LARGE DIAMETER STEEL PIPELINES WITH WELDED JOINTS WHERE THE PIPE JOINTS ARE WELDED WHILE THE PIPE IS OUT OF THE TRENCH USUALLY REQUIRE A FAIRLY LONG LENGTH OF OPEN PIPELINE TRENCH. THE TOTAL TIME OF EARTH EXPOSURE FOR THIS TYPE OF PIPELINE CONSTRUCTION, INCLUDING THE ACCESS ROADWAY PARALLEL TO THE PIPELINE, SHOULD GENERALLY BE LIMITED TO NO MORE THAN 60 CALENDAR DAYS AT ANY GIVEN POINT ALONG THE PIPELINE. THIS MEANS, FOR EXAMPLE, THAT FROM THE TIME THAT EARTH DISTURBANCE ACTIVITIES COMMENCE AT STATION 1+00 UNTIL FINAL GRADING IS COMPLETED AND SOIL SUPPLEMENTS, SEED, AND MULCH ARE APPLIED AT STATION 1+00, NO MORE THAN 60 CALENDAR DAYS SHOULD EXPIRE.

2. SWALE/DITCH/CHANNEL/WATERWAY CROSSINGS

ADEQUATELY SIZED CULVERTS SHALL BE INSTALLED FOR ACCESS ROADS AT LOCATIONS WHERE ROADS CROSS A SWALE/DITCH/CHANNEL/WATERWAY WHETHER OR NOT FLOWING WATER IS ENCOUNTERED.

WHERE THE UTILITY LINE TRENCH CROSSES A SWALE/DITCH/CHANNEL/WATERWAY WITH FLOWING WATER, THEN A TEMPORARY PIPE CULVERT, PROPERLY SAND BAGGED, SHOULD BE INSTALLED PRIOR TO THE TRENCHING OPERATION AND MAINTAINED UNTIL THE UTILITY LINE IS INSTALLED, THE TRENCH BACKFILLED, AND THE SWALE/DITCH/CHANNEL OR WATER WAY IS RESTORED AND STABILIZED. COFFERDAMS AND A PUMP OR DIRECTIONAL DRILLING MAY BE USED AT CROSSINGS AS APPROVED BY THE OWNER'S REPRESENTATIVE.

WHERE A UTILITY LINE CROSSES A DRY SWALE/DITCH/CHANNEL/WATERWAY AND THE EXCAVATED TRENCH MUST REMAIN OPEN FOR MORE THAN ONE WORKING DAY, THEN A TEMPORARY PIPE CULVERT, PROPERLY SAND BAGGED, SHOULD BE INSTALLED AND MAINTAINED UNTIL THE SWALE/DITCH/CHANNEL/WATERWAY IS RESTORED AND STABILIZED.

FLOWING WATER SHALL BE PROPERLY HANDLED WHERE UTILITY LINES CROSS STREAMS OR WETLANDS.

3. CHANNEL AND STREAM BANK STABILIZATION

ADEQUATE STREAM BANK STABILIZATION SHALL BE PROVIDED AT ALL LOCATIONS WHERE STREAM BANKS ARE DISTURBED. THE STREAM BANK STABILIZATION SHALL BE DESIGNED TO WITHSTAND THE ANTICIPATED WATER FLOW VELOCITIES OR THE MAXIMUM ANTICIPATED SHEAR STRESS.

ALL EXISTING SWALES/DITCHES/CHANNELS OR WATERWAYS TO BE DISTURBED SHALL BE STABILIZED TO WITHSTAND ANTICIPATED WATER FLOW VELOCITIES OR MAXIMUM ANTICIPATED SHEAR STRESS WHEN THEY ARE REOPENED.

PROPOSED DITCHES AND CHANNELS SHALL BE PROVIDED WITH ADEQUATE STABILIZATION TO WITHSTAND DESIGN FLOW VELOCITIES OR MAXIMUM SHEAR STRESS WHEN THEY ARE INSTALLED.

4. PERMANENT STABILIZATION

UPON COMPLETION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION [SECTION 102.22(A)]. THE INSTALLATION OF PAVEMENT, ROCK RIP RAP OR GABIONS ARE SOME EXAMPLES OF STABILIZATION.

THE STANDARD FOR VEGETATIVE COVER AS STABILIZATION IS PERENNIAL VEGETATION THAT IS ESTABLISHED WITH A UNIFORM COVERAGE OR DENSITY OF 70% ACROSS THE DISTURBED AREA. THE APPLICATION OF LIME, FERTILIZER, SEED, AND MULCH IS USUALLY DONE TO ACHIEVE PERMANENT STABILIZATION.

5. INTERIM STABILIZATION

TEMPORARY SEEDING WITH MULCH COVER FOR INTERIM STABILIZATION IS A TYPE OF BMP THAT CAN USUALLY BE PROVIDED WHERE THE EARTH DISTURBANCE ACTIVITY TEMPORARILY CEASES. THE INSTALLATION OF AN EROSION CONTROL BLANKET OR APPLICATION OF MULCH UPON SEEDED AREAS ARE BOTH CONSIDERED TO BE INTERIM STABILIZATION BMP'S TO PROTECT THE SEEDED AREA UNTIL VEGETATION IS ESTABLISHED.

6. SLOPE BREAKERS/ WATERBARS

TEMPORARY SLOPE BREAKERS/WATERBARS SHALL BE INSTALLED ACROSS DISTURBED AREAS (ACCESS ROAD, ETC.) OF THE UTILITY LINE RIGHT-OF-WAY ON ALL SLOPES GREATER THAN 5% TO COLLECT THE RUNOFF FROM DISTURBED AREAS AND TO DISCHARGE THIS RUNOFF TO WELL VEGETATED AREAS FOR REMOVAL OF SEDIMENT (SEE WATERBAR DETAIL). SPACING OF TEMPORARY SLOPE BREAKERS/WATERBARS SHALL BE DETERMINED BASED ON FIELD CONDITIONS.

IN CONJUNCTION WITH FINAL GRADING, PERMANENT SLOPE BREAKERS/WATERBARS SHALL BE INSTALLED WHEN FINAL GRADING ACTIVITIES ARE TAKING PLACE IN THE RIGHT-OF-WAY. WATERBARS SHALL BE INSTALLED ON ALL SLOPES GREATER THAN 5% AS SHOWN ON THE DRAWINGS. PERMANENT WATERBARS SHALL DISCHARGE RUNOFF TO WELL VEGETATED AREAS (SEE WATERBAR DETAIL).

7. SOLIDS SEPARATION

STRAW BALE BARRIERS, ROCK FILTER OUTLETS, AND FILTER SOCKS ARE EXAMPLES OF SUITABLE SOLID SEPARATION BMP'S. THESE DEVICES FUNCTION BY FILTERING SEDIMENT FROM RUNOFF OR BY REDUCING THE VELOCITY OF RUNOFF.

FILTER BAGS MAY BE USED AS SUITABLE SOLID SEPARATION BMP TO FILTER MUDDY WATER FROM TRENCHES OR EXCAVATIONS.

RECOMMENDED SEED MIXTURES			
MIXTURE NUMBER	SPECIES	SEEDING RATE PER ACRE	
		MOST SITES	ADVERSE SITES
3	BIRDSFOOT, PLUS	6 LB.	10 LB.
	TALL FESCUE	30 LB.	35 LB.

SOIL AMENDMENT	PERMANENT SEEDING APPLICATION RATE			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
AGRICULTURAL LIME	7.5 TONS	300 LB.	3,100 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
10-10-20 FERTILIZER	1,000 LB.	25 LB.	210 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS

MULCH TYPE	APPLICATION RATE (MIN.)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LB.	1,240 LB.	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOOD CHIPS	4 - 6 TONS	185 - 275 LB	1,650 - 2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LB.	415 LB.	SEE NOTE 1

NOTES:
1. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB./ACRE AT MINIMUM.

NO.	DATE	DWN.	CHKD.	APPD.	DESCRIPTION

REVISIONS

ERM

DETAILS
MURRYSVILLE BOROUGH, WESTMORELAND COUNTY, PENNSYLVANIA
DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WV 26301

SCALE: NTS
DATE: 8/28/15
DRAWN: -
CHECKED: -
APPROVED: -

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO. -
TASK NO. - SUB TASK NO. -
GROUP ID - DRAWING NO.
SHEET 4 OF 4

3/31/2017 12:32 PM

LAUNCHER MP0-636
EROSION AND SEDIMENT CONTROL PLAN

DOMINION TRANSMISSION, INC
CLARKSBURG, WEST VIRGINIA

MARCH 2017

Contains Critical Energy Infrastructure Information - Filed Separately

DRAWING INDEX

PREPARED FOR
DOMINION TRANSMISSION, INC

PREPARED BY

ERM

ERM CONSULTING & ENGINEERING, INC.

Hartford Office 860-466-8500

P:\Projects\0290620 Dominion.PR\SHP\Pennsylvania\PA Compressor Stations\CAD\COVER.dwg

RECOMMENDED SEED MIXTURES			
MIXTURE NUMBER	SPECIES	SEEDING RATE PER ACRE	
		MOST SITES	ADVERSE SITES
3	BIRDSFOOT, PLUS	6 LB.	10 LB.
	TALL FESCUE	30 LB.	35 LB.

SOIL AMENDMENT	PERMANENT SEEDING APPLICATION RATE			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
AGRICULTURAL LIME	7.5 TONS	300 LB.	3,100 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS
10-10-20 FERTILIZER	1,000 LB.	25 LB.	210 LB.	OR AS PER SOIL TEST; MAY NOT BE REQUIRED IN AGRICULTURAL FIELDS

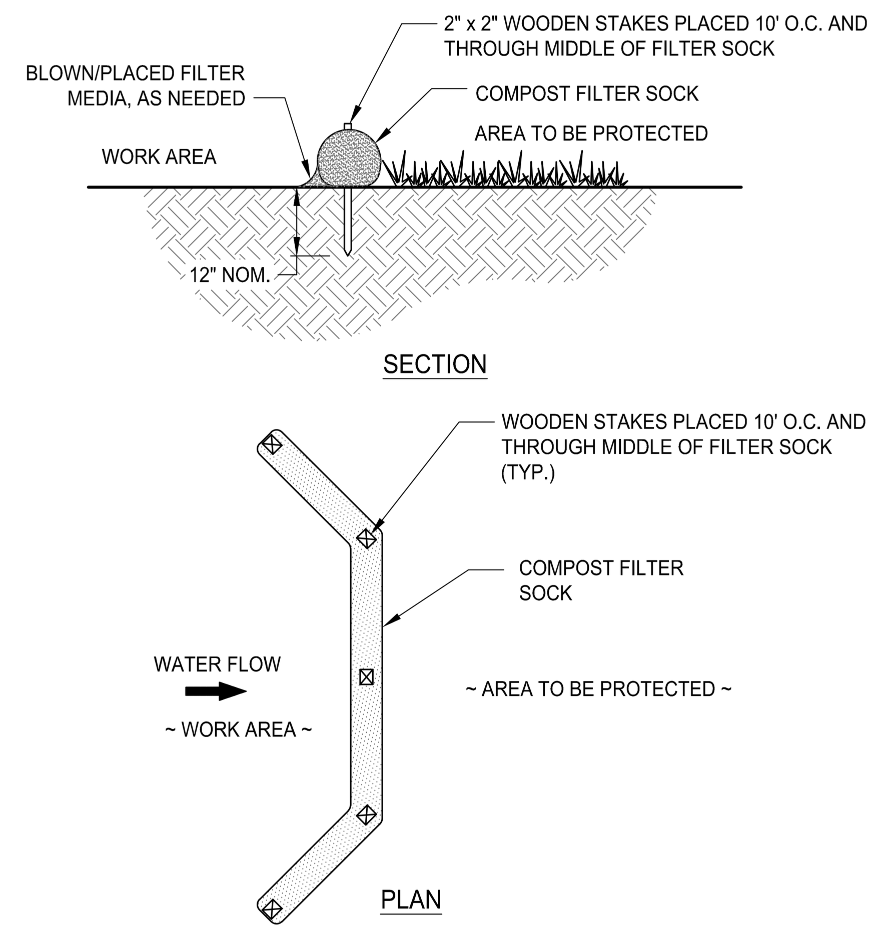
MULCH TYPE	APPLICATION RATE (MIN.)			NOTES
	PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	140 LB.	1,240 LB.	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES
WOOD CHIPS	4 - 6 TONS	185 - 275 LB	1,650 - 2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDROMULCH	1 TON	47 LB.	415 LB.	SEE NOTE 1

NOTES:

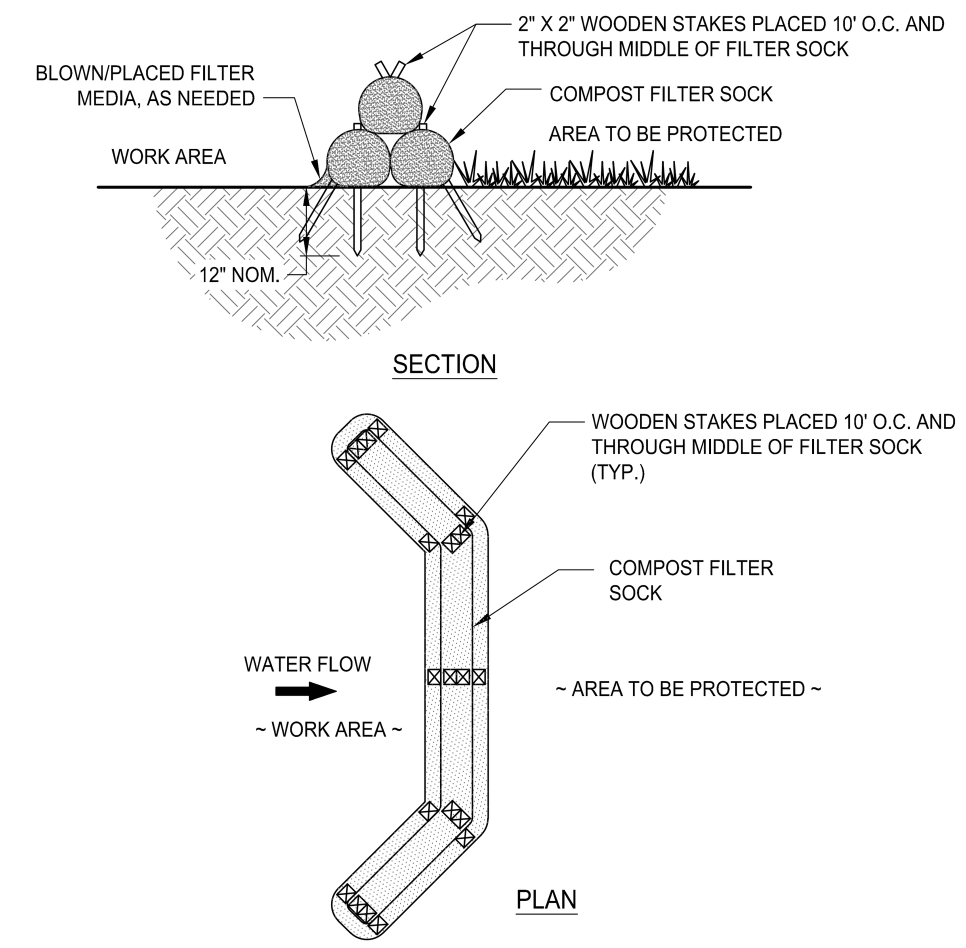
1. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB./ACRE AT MINIMUM.

SEEDING TABELS

N.T.S.



SINGLE SOCK



STACKED SOCKS

NOTES:

1. FILTER SOCK TO BE FABRIC MUST MEET THE MINIMUM SPECIFICATIONS IN TABLE 4.1 OF THE PENNSYLVANIA EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (2012). FILTER MEDIA INSIDE AND, AS NECESSARY UP-SLOPE OF FILTER SOCK, MUST MEET THE COMPOST STANDARDS IN TABLE 4.2 OF THE SAME MANUAL.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FILTER SOCK.
3. WHEN LARGE DIAMETER SOCKS ARE NEEDED TO MEET SLOPE LENGTH REQUIREMENTS, SOCKS MAY BE STACKED IN PYRAMID FASHION TO REACH EQUIVALENT SOCK HEIGHTS.
4. THREE 12" SOCKS = ONE 18" SOCK. THREE 18" SOCKS = ONE 24" SOCK. THREE 24" SOCKS = ONE 32' SOCK.

COMPOST FILTER SOCK DETAIL

N.T.S.

NO.	DATE	DWN.	CHKD.	APPVD.	DESCRIPTION

REVISIONS

03.31.2017

ERM

DETAILS

MURRYSVILLE BOROUGH, WESTMORELAND COUNTY, PENNSYLVANIA

DOMINION TRANSMISSION, INC.
445 WEST MAIN STREET
CLARKSBURG, WV 26301

SCALE:	NTS
DATE:	8/28/15
DRAWN:	-
CHECKED:	-
APPROVED:	-

gai consultants
SOUTHPOINTE OFFICE
6000 TOWN CENTER BLVD
SUITE 300 EAST
CANONSBURG, PA 15317
724-873-3545

PROJECT NO./DASH NO. -

TASK NO.	SUB TASK NO.
-	-
GROUP ID	DRAWING NO.
-	

SHEET 2 OF 2

3/31/2017 12:57 PM

\\gaiamdc01\data\Annapolis\Projects\C150620 Dominion PR\SHP\Pennsylvania\PA Alignment Sheets\CAD\DETAILS_Launch dwg-Launch Details – ARCH full bleed D (24.00 x 36.00 Inches) – 3/31/2017 – yvonne.lockett

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX B – SOIL REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Westmoreland County, Pennsylvania

SHP PA Full Route

July 21, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

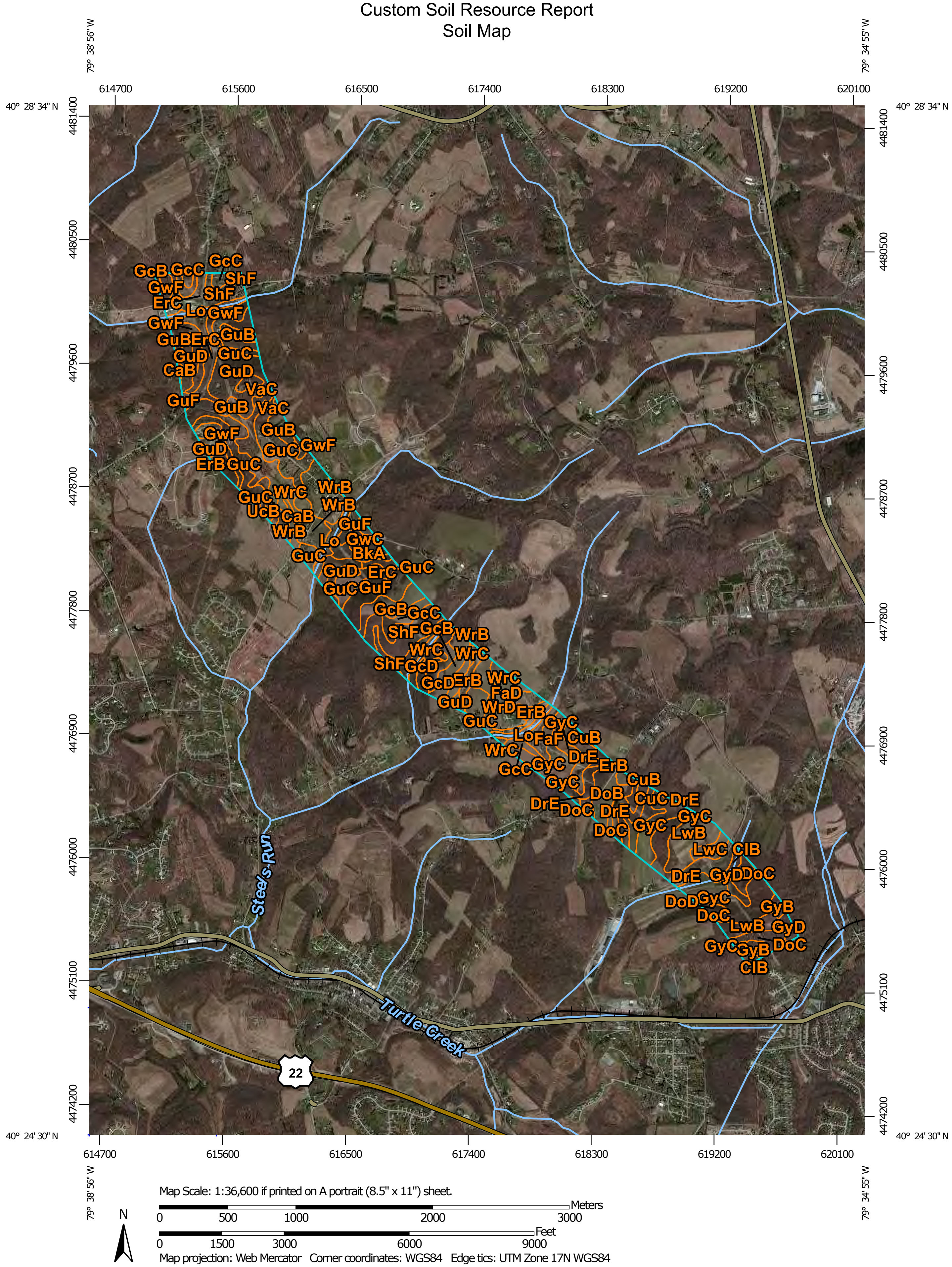
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


79° 38' 56" W
79° 34' 55" W
40° 28' 34" N
40° 24' 30" N
614700
615600
616500
617400
618300
619200
620100
4481400
4480500
4479600
4478700
4477800
4476900
4476000
4475100
4474200
GcB GcC GcC ShF
GwF ShF
ErC Lo GwF
GwF GuB ErC GuB
GuD GuC
CaB GuD
VaC
GuF GuB VaC
GuB
GwF
GuD GuC GwF
ErB GuC
WrB
GuC WrC WrB
UcB CaB
GuF
WrB Lo GwC
GuC BkA
GuD ErC GuC
GuC GuF
GcB GcC
ShF GcB WrB
WrC WrC
ShF GcD
GcD ErB WrC
FaD
GuD WrD ErB
GuC GyC
Lo FaF CuB
WrC DrE
GcC GyC ErB
GyC CuB
DoB CuC DrE
DrE DoC DrE GyC
DoC GyC LwB
LwC ClB
DrE GyD DoC
DoD GyC
DoC GyB
LwB GyD
GyC GyB DoC
ClB
Steel's Run
Turtle Creek
22
Map Scale: 1:36,600 if printed on A portrait (8.5" x 11") sheet.
Meters
0 500 1000 2000 3000
Feet
0 1500 3000 6000 9000
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westmoreland County, Pennsylvania
Survey Area Data: Version 7, Sep 22, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westmoreland County, Pennsylvania (PA129)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BkA	Brinkerton silt loam, 0 to 3 percent slopes	8.3	1.0%
CaB	Cavode silt loam, 3 to 8 percent slopes	5.2	0.6%
ClB	Clarksburg silt loam, 3 to 8 percent slopes	17.2	2.0%
CuB	Culleoka channery silt loam, 3 to 8 percent slopes	4.6	0.5%
CuC	Culleoka channery silt loam, 8 to 15 percent slopes	2.8	0.3%
DoB	Dormont silt loam, 3 to 8 percent slopes	17.2	2.0%
DoC	Dormont silt loam, 8 to 15 percent slopes	11.6	1.4%
DoD	Dormont silt loam, 15 to 25 percent slopes	3.0	0.4%
DrE	Dormont-Culleoka complex, 25 to 50 percent slopes	53.0	6.2%
ErB	Ernest silt loam, 3 to 8 percent slopes	26.0	3.1%
ErC	Ernest silt loam, 8 to 15 percent slopes	56.3	6.6%
FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	9.6	1.1%
FaF	Fairpoint very channery silt loam, 25 to 75 percent slopes	19.9	2.3%
GcB	Gilpin channery silt loam, 3 to 8 percent slopes	28.2	3.3%
GcC	Gilpin channery silt loam, 8 to 15 percent slopes	41.7	4.9%
GcD	Gilpin channery silt loam, 15 to 25 percent slopes	9.9	1.2%
GuB	Gilpin-Upshur complex, 3 to 8 percent slopes	16.8	2.0%
GuC	Gilpin-Upshur complex, 8 to 15 percent slopes	67.9	8.0%
GuD	Gilpin-Upshur complex, 15 to 25 percent slopes	70.9	8.3%
GuF	Gilpin-Upshur complex, 25 to 75 percent slopes	25.8	3.0%
GwB	Gilpin-Weikert channery silt loams, 3 to 8 percent slopes	8.3	1.0%
GwC	Gilpin-Weikert channery silt loams, 8 to 15 percent slopes	5.0	0.6%

Westmoreland County, Pennsylvania (PA129)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GwF	Gilpin-Weikert channery silt loams, 25 to 60 percent slopes	43.0	5.0%
GyB	Guernsey silt loam, 3 to 8 percent slopes	10.1	1.2%
GyC	Guernsey silt loam, 8 to 15 percent slopes	66.1	7.8%
GyD	Guernsey silt loam, 15 to 25 percent slopes	15.2	1.8%
Lo	Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded	20.7	2.4%
LwB	Lowell silty clay loam, 3 to 8 percent slopes	32.7	3.8%
LwC	Lowell silty clay loam, 8 to 15 percent slopes, eroded	7.2	0.8%
ShF	Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes	32.0	3.8%
UcB	Upshur silty clay loam, 3 to 8 percent slopes	1.6	0.2%
VaC	Vandergrift silt loam, 8 to 15 percent slopes	3.3	0.4%
WrB	Wharton silt loam, 3 to 8 percent slopes	18.8	2.2%
WrC	Wharton silt loam, 8 to 15 percent slopes	84.3	9.9%
WrD	Wharton silt loam, 15 to 25 percent slopes	7.3	0.9%
Totals for Area of Interest		**851.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Westmoreland County, Pennsylvania

BkA—Brinkerton silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: l8px
Elevation: 900 to 1,800 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Brinkerton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brinkerton

Setting

Landform: Draws, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Acid fine-silty colluvium derived from shale and siltstone

Typical profile

Ap - 0 to 8 inches: silt loam
Btg - 8 to 21 inches: silty clay loam
Btgx - 21 to 42 inches: silt loam
BC - 42 to 65 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 30 inches to fragipan
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.33 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

Minor Components

Ernest

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Lobdell

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

CaB—Cavode silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l8s4
Elevation: 1,000 to 1,700 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cavode and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cavode

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Acid clayey residuum weathered from clayey shale

Typical profile

Ap - 0 to 10 inches: silt loam
Btg - 10 to 47 inches: silty clay loam
BCg - 47 to 57 inches: channery silt loam
R - 57 to 61 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 90 inches to lithic bedrock
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Minor Components

Gilpin

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear

Brinkerton

Percent of map unit: 5 percent
Landform: Draws, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

ClB—Clarksburg silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t31k
Elevation: 660 to 1,470 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 168 to 201 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clarksburg and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clarksburg

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Fine-loamy colluvium derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam
BE - 9 to 12 inches: silt loam
Bt1 - 12 to 23 inches: silty clay loam
Bt2 - 23 to 28 inches: silty clay loam
Btx - 28 to 48 inches: silty clay loam
BC - 48 to 65 inches: gravelly silty clay loam
C - 65 to 110 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 24 to 37 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Dormont

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear

Melvin

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

CuB—Culleoka channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2s5gm
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Culleoka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Minor Components

Dormont

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Convex, linear

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex

CuC—Culleoka channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gn
Elevation: 720 to 1,610 feet
Mean annual precipitation: 37 to 48 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 173 to 206 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Culleoka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Minor Components

Dormont

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Convex, linear

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex

DoB—Dormont silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2s5gj
Elevation: 800 to 1,540 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 173 to 197 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dormont and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D

Minor Components

Culleoka

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave, linear
Across-slope shape: Concave

DoC—Dormont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gh
Elevation: 800 to 1,540 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 173 to 197 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dormont and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Minor Components

Culleoka
Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Lowell
Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex

Guernsey
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

DoD—Dormont silt loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2s5gk
Elevation: 800 to 1,540 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Dormont and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting
Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear

Across-slope shape: Concave, linear
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Minor Components

Culleoka

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex

DrE—Dormont-Culleoka complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2s5gz
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 50 percent
Culleoka and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, nose slope, head slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B

Minor Components

Lowell

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex

Guernsey

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

Fluvaquents

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear

ErB—Ernest silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l8ql
Elevation: 900 to 1,800 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ernest and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ernest

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Acid fine-loamy colluvium derived from shale and siltstone

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 24 inches: silty clay loam
Btx - 24 to 50 inches: channery silt loam
C - 50 to 74 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.33 in/hr)
Depth to water table: About 17 to 22 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Brinkerton
Percent of map unit: 5 percent
Landform: Draws, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Gilpin
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear

Lobdell
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

ErC—Ernest silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: l8qm
Elevation: 900 to 1,800 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ernest and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ernest

Setting
Landform: Hillslopes

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Acid fine-loamy colluvium derived from shale and siltstone

Typical profile
Ap - 0 to 8 inches: silt loam
Bt - 8 to 24 inches: silty clay loam
Btx - 24 to 50 inches: channery silt loam
C - 50 to 74 inches: channery silt loam

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.33 in/hr)
Depth to water table: About 17 to 22 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D

Minor Components

Lobdell
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Brinkerton
Percent of map unit: 5 percent
Landform: Draws, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Gilpin
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex

FaD—Fairpoint very channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: lq10
Elevation: 800 to 2,800 feet
Mean annual precipitation: 36 to 54 inches
Mean annual air temperature: 37 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairpoint, unstable fill, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairpoint, Unstable Fill

Setting

Landform position (two-dimensional): Backslope
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale

Typical profile

A - 0 to 9 inches: very channery silt loam
C - 9 to 75 inches: very channery clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Minor Components

Culleoka

Percent of map unit: 5 percent
Landform: Hillslopes

Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Guernsey
Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

Wet spots
Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

FaF—Fairpoint very channery silt loam, 25 to 75 percent slopes

Map Unit Setting
National map unit symbol: lq0z
Elevation: 700 to 1,500 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Fairpoint, unstable fill, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairpoint, Unstable Fill

Setting
Landform: Plateaus
Landform position (two-dimensional): Backslope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale

Typical profile
A - 0 to 2 inches: very channery silt loam
C - 2 to 75 inches: very channery clay loam

Properties and qualities
Slope: 25 to 75 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

Minor Components

Guernsey
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

Culleoka
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

GcB—Gilpin channery silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2t1kt
Elevation: 870 to 2,720 feet
Mean annual precipitation: 40 to 53 inches
Mean annual air temperature: 47 to 52 degrees F
Frost-free period: 167 to 179 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Gilpin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting
Landform: Hills

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile
Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Wharton
Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Weikert
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex

GcC—Gilpin channery silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2t1kw
Elevation: 800 to 3,090 feet

Mean annual precipitation: 40 to 62 inches
Mean annual air temperature: 46 to 53 degrees F
Frost-free period: 166 to 181 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gilpin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Wharton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Weikert

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope

Down-slope shape: Convex
Across-slope shape: Convex

GcD—Gilpin channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2t1kv
Elevation: 790 to 3,120 feet
Mean annual precipitation: 39 to 61 inches
Mean annual air temperature: 46 to 53 degrees F
Frost-free period: 161 to 181 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Minor Components

Weikert

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex

Wharton

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

GuB—Gilpin-Upshur complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t1lq
Elevation: 790 to 2,190 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 49 to 52 degrees F
Frost-free period: 152 to 176 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Gilpin and similar soils: 50 percent
Upshur and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Description of Upshur

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Residuum weathered from clayey shale and/or residuum weathered from mudstone

Typical profile

Ap - 0 to 6 inches: silty clay loam
Bt1 - 6 to 9 inches: silty clay
Bt2 - 9 to 25 inches: silty clay
Bt3 - 25 to 35 inches: silty clay
BCt - 35 to 40 inches: parachannery silty clay loam
C - 40 to 50 inches: very parachannery silty clay loam
Cr - 50 to 60 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 42 to 84 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Minor Components

Wharton

Percent of map unit: 20 percent

Landform: Ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, concave
Across-slope shape: Linear

GuC—Gilpin-Upshur complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t1lr
Elevation: 760 to 2,270 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 49 to 52 degrees F
Frost-free period: 152 to 176 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gilpin and similar soils: 50 percent
Upshur and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Description of Upshur

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Residuum weathered from clayey shale and/or residuum weathered from mudstone

Typical profile

Ap - 0 to 6 inches: silty clay loam
Bt1 - 6 to 9 inches: silty clay
Bt2 - 9 to 25 inches: silty clay
Bt3 - 25 to 35 inches: silty clay
BCt - 35 to 40 inches: parachannery silty clay loam
C - 40 to 50 inches: very parachannery silty clay loam
Cr - 50 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 42 to 84 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Minor Components

Wharton

Percent of map unit: 20 percent
Landform: Ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, concave
Across-slope shape: Linear

GuD—Gilpin-Upshur complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2t1ls
Elevation: 740 to 2,270 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 47 to 51 degrees F
Frost-free period: 152 to 176 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 50 percent
Upshur and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: extremely channery loam
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 30 to 36 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Description of Upshur

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Residuum weathered from clayey shale and/or residuum weathered from mudstone

Typical profile

Ap - 0 to 6 inches: silty clay loam
Bt1 - 6 to 9 inches: silty clay
Bt2 - 9 to 25 inches: silty clay
Bt3 - 25 to 35 inches: silty clay
BCt - 35 to 40 inches: parachannery silty clay loam
C - 40 to 50 inches: very parachannery silty clay loam
Cr - 50 to 60 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 42 to 84 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Minor Components

Wharton

Percent of map unit: 20 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, concave
Across-slope shape: Linear

GuF—Gilpin-Upshur complex, 25 to 75 percent slopes

Map Unit Setting

National map unit symbol: l8rq
Elevation: 800 to 2,500 feet
Mean annual precipitation: 35 to 54 inches
Mean annual air temperature: 37 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 45 percent
Upshur and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material
Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: channery silt loam
Bt - 6 to 24 inches: channery silt loam
C - 24 to 30 inches: very channery loam
R - 30 to 35 inches: bedrock

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Description of Upshur

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material
Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: silty clay loam
Bt - 8 to 46 inches: clay
C - 46 to 56 inches: channery clay
R - 56 to 68 inches: bedrock

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: 40 to 70 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

Minor Components

Wharton

Percent of map unit: 20 percent
Landform: Hillsides or mountainsides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear

GwB—Gilpin-Weikert channery silt loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l8p8
Elevation: 800 to 1,700 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gilpin and similar soils: 60 percent
Weikert and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: very channery loam
R - 30 to 35 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Description of Weikert

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy residuum weathered from shale and siltstone

Typical profile

A - 0 to 5 inches: channery silt loam
Bw - 5 to 15 inches: very channery silt loam
C - 15 to 18 inches: extremely channery silt loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D

Minor Components

Wharton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

GwC—Gilpin-Weikert channery silt loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: l8p9
Elevation: 800 to 1,800 feet
Mean annual precipitation: 36 to 46 inches

Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gilpin and similar soils: 50 percent
Weikert and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: very channery loam
R - 30 to 35 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Description of Weikert

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy residuum weathered from shale and siltstone

Typical profile

A - 0 to 5 inches: channery silt loam
Bw - 5 to 15 inches: very channery silt loam
C - 15 to 18 inches: extremely channery silt loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D

Minor Components

Wharton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave

Ernest

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

GwF—Gilpin-Weikert channery silt loams, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: l8q3
Elevation: 800 to 1,700 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Gilpin and similar soils: 60 percent
Weikert and similar soils: 25 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gilpin

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: very channery loam
R - 30 to 35 inches: bedrock

Properties and qualities

Slope: 25 to 60 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

Description of Weikert

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy residuum weathered from shale and siltstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 5 inches: channery silt loam
Bw - 5 to 15 inches: very channery silt loam
C - 15 to 18 inches: extremely channery silt loam
R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 25 to 65 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Minor Components

Shelocta

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear, convex

Wharton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

GyB—Guernsey silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l8qy
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Guernsey and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 27 inches: silty clay loam
Btg - 27 to 47 inches: clay
Cg - 47 to 56 inches: silty clay
R - 56 to 63 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 50 to 75 inches to lithic bedrock
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 17 to 25 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear

Culleoka

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

GyC—Guernsey silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: l8qz
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Guernsey and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 27 inches: silty clay loam
Btg - 27 to 47 inches: clay
Cg - 47 to 56 inches: silty clay
R - 56 to 63 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 50 to 75 inches to lithic bedrock
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 17 to 25 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D

Minor Components

Lowell

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex

Culleoka

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

GyD—Guernsey silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: l8r0
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Guernsey and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 27 inches: silty clay loam
Btg - 27 to 47 inches: clay
Cg - 47 to 56 inches: channery silty clay
R - 56 to 63 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 50 to 75 inches to lithic bedrock
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 17 to 25 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D

Minor Components

Culleoka

Percent of map unit: 15 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Lowell

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex

Lo—Lobdell silt loam, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2t326
Elevation: 520 to 1,430 feet
Mean annual precipitation: 39 to 44 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 167 to 191 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lobdell and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lobdell

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 6 inches: silt loam
Bw1 - 6 to 20 inches: loam
Bw2 - 20 to 38 inches: loam
C - 38 to 65 inches: stratified loam to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Holly

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Wetlands (W3)

Orrville

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Moist Loams (ML3)

Melvin

Percent of map unit: 5 percent
Landform: Backswamps
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Wetlands (W3)

LwB—Lowell silty clay loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l8r2
Elevation: 800 to 1,300 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lowell and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lowell

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 10 inches: silty clay loam
Bt - 10 to 46 inches: clay
C - 46 to 59 inches: silty clay
R - 59 to 69 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Guernsey

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave

Culleoka

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

LwC—Lowell silty clay loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2s5gt
Elevation: 830 to 1,340 feet
Mean annual precipitation: 38 to 46 inches
Mean annual air temperature: 49 to 55 degrees F
Frost-free period: 175 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lowell and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lowell

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 10 inches: silty clay loam
Bt - 10 to 46 inches: silty clay
C - 46 to 59 inches: silty clay
R - 59 to 69 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 41 to 80 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 7 percent
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Culleoka

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex

Guernsey

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave

ShF—Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes

Map Unit Setting

National map unit symbol: l8qt
Elevation: 480 to 3,000 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Shelocta and similar soils: 50 percent
Gilpin and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shelocta

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear, convex
Parent material: Acid fine-loamy colluvium derived from sandstone and siltstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 8 inches: channery silt loam
Bt1 - 8 to 14 inches: channery silt loam
Bt2 - 14 to 40 inches: channery silt loam
C - 40 to 80 inches: very channery loam

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B

Description of Gilpin

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid fine-loamy residuum weathered from shale and siltstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
A - 2 to 8 inches: channery silt loam
Bt - 8 to 24 inches: channery silt loam
C - 24 to 30 inches: very channery loam
R - 30 to 35 inches: bedrock

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained

Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

Minor Components

Ernest
Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave

Rock outcrop
Percent of map unit: 2 percent

UcB—Upshur silty clay loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: l8rk
Elevation: 800 to 1,700 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Upshur and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Upshur

Setting
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 8 inches: silty clay loam
Bt - 8 to 46 inches: clay
C - 46 to 56 inches: channery clay
R - 56 to 68 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 70 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Gilpin

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear

Wharton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

VaC—Vandergrift silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: l8p6
Elevation: 800 to 1,700 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Vandergrift and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vandergrift

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Clayey colluvium derived from limestone and shale

Typical profile

Ap - 0 to 9 inches: silty clay loam
Bt - 9 to 56 inches: silty clay
C - 56 to 66 inches: channery silty clay loam
R - 66 to 71 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D

Minor Components

Gilpin

Percent of map unit: 15 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex

Upshur

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

WrB—Wharton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t185
Elevation: 760 to 2,860 feet
Mean annual precipitation: 37 to 57 inches
Mean annual air temperature: 46 to 53 degrees F
Frost-free period: 158 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Wharton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wharton

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silt loam
Bt2 - 16 to 22 inches: silt loam
Bt3 - 22 to 31 inches: silt loam
BC - 31 to 46 inches: silty clay loam
C - 46 to 69 inches: channery silty clay loam
Cr - 69 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 71 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 16 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Cavode

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Gilpin

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

Brinkerton

Percent of map unit: 5 percent
Landform: Depressions on hillslopes
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear

WrC—Wharton silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t5mm
Elevation: 620 to 2,160 feet
Mean annual precipitation: 37 to 51 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 161 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wharton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wharton

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silt loam
Bt2 - 16 to 22 inches: silt loam
Bt3 - 22 to 31 inches: silt loam
BC - 31 to 46 inches: silty clay loam
C - 46 to 69 inches: channery silty clay loam
Cr - 69 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 71 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 16 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D

Minor Components

Gilpin

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

Ernest

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Rarden

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear

WrD—Wharton silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2t5mn
Elevation: 520 to 1,890 feet
Mean annual precipitation: 37 to 51 inches
Mean annual air temperature: 47 to 54 degrees F
Frost-free period: 163 to 207 days
Farmland classification: Not prime farmland

Map Unit Composition

Wharton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wharton

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silt loam
Bt2 - 16 to 22 inches: silt loam
Bt3 - 22 to 31 inches: silt loam
BC - 31 to 46 inches: silty clay loam
C - 46 to 69 inches: channery silty clay loam
Cr - 69 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 40 to 71 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 16 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D

Minor Components

Gilpin

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

Ernest

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Rarden

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Westmoreland County, Pennsylvania

SHP - Salem Township Workspace

January 11, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:3,680 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 150, 300, 600, 900

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westmoreland County, Pennsylvania
Survey Area Data: Version 10, Sep 19, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Westmoreland County, Pennsylvania (PA129)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
ClB	Clarksburg silt loam, 3 to 8 percent slopes	7.8	16.4%
DoC	Dormont silt loam, 8 to 15 percent slopes	1.4	2.9%
DrD	Dormont-Culleoka complex, 15 to 25 percent slopes	6.3	13.3%
ErB	Ernest silt loam, 3 to 8 percent slopes	3.2	6.7%
FaC	Fairpoint very channery silt loam, 8 to 15 percent slopes	0.3	0.7%
FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	5.1	10.7%
GyC	Guernsey silt loam, 8 to 15 percent slopes	8.6	18.2%
GyD	Guernsey silt loam, 15 to 25 percent slopes	1.1	2.3%
UhD	Urban land-Guernsey complex, 8 to 25 percent slopes	10.6	22.4%
WrC	Wharton silt loam, 8 to 15 percent slopes	3.0	6.3%
Totals for Area of Interest		**47.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Westmoreland County, Pennsylvania

ClB—Clarksburg silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t31k
Elevation: 660 to 1,470 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 168 to 201 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clarksburg and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clarksburg

Setting

Landform: Hillslopes
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Fine-loamy colluvium derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam
BE - 9 to 12 inches: silt loam
Bt1 - 12 to 23 inches: silty clay loam
Bt2 - 23 to 28 inches: silty clay loam
Btx - 28 to 48 inches: silty clay loam
BC - 48 to 65 inches: gravelly silty clay loam
C - 65 to 110 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 24 to 37 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Dormont

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Melvin

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

DoC—Dormont silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s5gh
Elevation: 800 to 1,540 feet
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 173 to 197 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dormont and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear
Across-slope shape: Concave, linear

Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 15 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

DrD—Dormont-Culleoka complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2s5gy
Elevation: 200 to 1,300 feet
Mean annual precipitation: 32 to 48 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dormont and similar soils: 45 percent
Culleoka and similar soils: 37 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dormont

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, head slope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Fine-loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 11 inches: silt loam
Bt1 - 11 to 21 inches: silt loam
Bt2 - 21 to 31 inches: silty clay loam
Bt3 - 31 to 46 inches: channery silty clay loam
Bt4 - 46 to 62 inches: channery silty clay loam
BC - 62 to 75 inches: channery silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.66 in/hr)
Depth to water table: About 24 to 44 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Hydric soil rating: No

Description of Culleoka

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Fine-loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt - 10 to 19 inches: channery silt loam
BC - 19 to 26 inches: very channery silt loam
C - 26 to 31 inches: very channery silt loam
R - 31 to 41 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 24 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Lowell

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Guernsey

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Thorndale

Percent of map unit: 3 percent

Landform: Depressions, drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

ErB—Ernest silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t32b
Elevation: 690 to 2,230 feet
Mean annual precipitation: 37 to 55 inches
Mean annual air temperature: 47 to 52 degrees F
Frost-free period: 155 to 191 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ernest and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ernest

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Fine-loamy colluvium derived from sedimentary rock

Typical profile

Ap - 0 to 8 inches: silt loam
Bt1 - 8 to 15 inches: silt loam
Bt2 - 15 to 24 inches: silt loam
Btx1 - 24 to 36 inches: channery silt loam
Btx2 - 36 to 50 inches: channery silt loam
C - 50 to 74 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 23 to 28 inches to fragipan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 15 to 22 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Gilpin

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Buchanan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Brinkerton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Wetlands (W3)
Hydric soil rating: Yes

FaC—Fairpoint very channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: lq11
Elevation: 800 to 2,800 feet
Mean annual precipitation: 36 to 54 inches
Mean annual air temperature: 37 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairpoint, unstable fill, and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairpoint, Unstable Fill

Setting

Landform position (two-dimensional): Backslope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Parent material: Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale

Typical profile

A - 0 to 9 inches: very channery silt loam
C - 9 to 75 inches: very channery clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Guernsey

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Aquents

Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

FaD—Fairpoint very channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: lq10
Elevation: 800 to 2,800 feet
Mean annual precipitation: 36 to 54 inches
Mean annual air temperature: 37 to 62 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Fairpoint, unstable fill, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fairpoint, Unstable Fill

Setting

Landform position (two-dimensional): Backslope
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale

Typical profile

A - 0 to 9 inches: very channery silt loam
C - 9 to 75 inches: very channery clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Guernsey

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: No

Aquents

Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

GyC—Guernsey silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t32f
Elevation: 600 to 1,880 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 165 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Guernsey and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Interfluve, crest, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Colluvium derived from limestone and shale over residuum weathered from limestone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
BE - 8 to 15 inches: silt loam
Bt1 - 15 to 22 inches: silty clay loam
Bt2 - 22 to 37 inches: silty clay
Btg - 37 to 54 inches: silty clay loam
2C - 54 to 60 inches: channery silt loam
2Cr - 60 to 70 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 59 to 62 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 16 to 23 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Coshocton

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Westmoreland

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Berks

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

GyD—Guernsey silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2t32g
Elevation: 670 to 2,510 feet
Mean annual precipitation: 37 to 52 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 165 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Guernsey and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guernsey

Setting

Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium derived from limestone and shale over residuum weathered from limestone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
BE - 8 to 15 inches: silt loam
Bt1 - 15 to 22 inches: silty clay loam
Bt2 - 22 to 37 inches: silty clay
Btg - 37 to 54 inches: silty clay loam
2C - 54 to 60 inches: channery silt loam
2Cr - 60 to 70 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 59 to 62 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 16 to 23 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Culleoka

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Berks

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Westmoreland

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, interfluve, side slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

UhD—Urban land-Guernsey complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: lq3s
Elevation: 800 to 1,200 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Guernsey and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Pavement, buildings and other artifically covered areas human transported material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Guernsey

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 27 inches: silty clay loam
Btg - 27 to 47 inches: clay
Cg - 47 to 56 inches: channery silty clay
R - 56 to 63 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 50 to 59 inches to lithic bedrock
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 15 to 25 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Hydric soil rating: No

WrC—Wharton silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t5mm
Elevation: 620 to 2,160 feet
Mean annual precipitation: 37 to 51 inches
Mean annual air temperature: 47 to 53 degrees F
Frost-free period: 161 to 205 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Wharton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wharton

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Fine-loamy residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 16 inches: silt loam
Bt2 - 16 to 22 inches: silt loam
Bt3 - 22 to 31 inches: silt loam
BC - 31 to 46 inches: silty clay loam
C - 46 to 69 inches: channery silty clay loam
Cr - 69 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 40 to 71 inches to paralithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 16 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Gilpin

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Ernest

Percent of map unit: 5 percent
Landform: Hillslopes

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Rarden

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Table C-1
Supply Header Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area, Westmoreland County

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Slope Percent Low	Slope Percent High	Surface Texture[a]	Drainage Class[b]	Permeability[c]	Taxonomic Classification	Parent Material
BkA	Brinkerton silt loam, 0 to 3 percent slopes	Brinkerton	100	0	3	SIL	P	M	Fine-silty, mixed, superactive, mesic Typic Fragiaqualfs	acid fine-silty colluvium derived from shale and siltstone
ClB	Clarksburg silt loam, 3 to 8 percent slopes	Clarksburg	100	3	8	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Oxyaquic Fragiudalfs	fine-loamy colluvium derived from limestone, sandstone, and shale
CuC	Culleoka channery silt loam, 8 to 15 percent slopes	Culleoka	100	8	15	CN-SIL	W	MR	Fine-loamy, mixed, active, mesic Ultic Hapludalfs	fine-loamy residuum weathered from sandstone and shale
DoB	Dormont silt loam, 3 to 8 percent slopes	Dormont	100	3	8	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs	fine-loamy residuum weathered from limestone, sandstone, and shale
DoC	Dormont silt loam, 8 to 15 percent slopes	Dormont	100	8	15	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs	fine-loamy residuum weathered from limestone, sandstone, and shale
DoE	Dormont silt loam, 25 to 35 percent slopes	Dormont	100	25	35	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs	fine-loamy residuum weathered from limestone, sandstone, and shale
DrE	Dormont-Culleoka complex, 25 to 50 percent slopes	Culleoka	44	25	50	CN-SIL	W	M	Fine-loamy, mixed, active, mesic Ultic Hapludalfs	fine-loamy residuum weathered from sandstone and shale
		Dormont	56	25	50	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs	fine-loamy residuum weathered from limestone, sandstone, and shale
ErB	Ernest silt loam, 3 to 8 percent slopes	Ernest	100	3	8	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults	acid fine-loamy colluvium derived from shale and siltstone
ErC	Ernest silt loam, 8 to 15 percent slopes	Ernest	100	8	15	SIL	MW	M	Fine-loamy, mixed, superactive, mesic Aquic Fragiudults	acid fine-loamy colluvium derived from shale and siltstone
FaB	Fairpoint very channery silt loam, 0 to 8 percent slopes	Fairpoint	100	0	8	CNV-SIL	W	MS	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents	Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale
FaC	Fairpoint very channery silt loam, 8 to 15 percent slopes	Fairpoint	100	8	15	CNV-SIL	W	MS	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents	Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale

Table C-1
Supply Header Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area, Westmoreland County

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Slope Percent Low	Slope Percent High	Surface Texture[a]	Drainage Class[b]	Permeability[c]	Taxonomic Classification	Parent Material
FaD	Fairpoint very channery silt loam, 15 to 25 percent slopes	Fairpoint	100	15	25	CNV-SIL	W	MS	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents	Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale
FaF	Fairpoint very channery silt loam, 25 to 75 percent slopes	Fairpoint	100	25	75	CNV-SIL	W	MS	Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents	Moderately acid to neutral loamy coal extraction mine spoil derived from limestone, sandstone, and shale
GcB	Gilpin channery silt loam, 3 to 8 percent slopes	Gilpin	100	3	8	CN-SIL	W	M	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GcC	Gilpin channery silt loam, 8 to 15 percent slopes	Gilpin	100	8	15	CN-SIL	W	M	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GcD	Gilpin channery silt loam, 15 to 25 percent slopes	Gilpin	100	15	25	CN-SIL	W	M	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GuB	Gilpin-Upshur complex, 3 to 8 percent slopes	Upshur	44	3	8	SICL	W	MS	Fine, mixed, superactive, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale
		Gilpin	56	3	8	CN-SIL	W	MS	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GuC	Gilpin-Upshur complex, 8 to 15 percent slopes	Upshur	44	8	15	CN-SIL	W	M	Fine, mixed, superactive, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale
		Gilpin	56	8	15	CN-SIL	W	MS	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GuD	Gilpin-Upshur complex, 15 to 25 percent slopes	Upshur	44	15	25	SICL	W	M	Fine, mixed, superactive, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale
		Gilpin	56	15	25	CN-SIL	W	M	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GuF	Gilpin-Upshur complex, 25 to 75 percent slopes	Upshur	44	25	75	MPM	W	R	Fine, mixed, superactive, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale

Table C-1
Supply Header Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area, Westmoreland County

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Slope Percent Low	Slope Percent High	Surface Texture[a]	Drainage Class[b]	Permeability[c]	Taxonomic Classification	Parent Material
		Gilpin	56	25	75	CN-SIL	W	R	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GwF	Gilpin-Weikert channery silt loams, 25 to 60 percent slopes	Weikert	29	25	65	SPM	W	R	Loamy-skeletal, mixed, active, mesic Lithic Dystrudepts	acid loamy residuum weathered from shale and siltstone
		Gilpin	71	25	60	SPM	W	R	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
GyB	Guernsey silt loam, 3 to 8 percent slopes	Guernsey	100	3	8	SIL	MW	M	Fine, mixed, superactive, mesic Aquic Hapludalfs	clayey residuum weathered from limestone and shale
GyC	Guernsey silt loam, 8 to 15 percent slopes	Guernsey	100	8	15	SIL	MW	M	Fine, mixed, superactive, mesic Aquic Hapludalfs	clayey residuum weathered from limestone and shale
GyD	Guernsey silt loam, 15 to 25 percent slopes	Guernsey	100	15	25	SIL	MW	M	Fine, mixed, superactive, mesic Aquic Hapludalfs	clayey residuum weathered from limestone and shale
LlB	Library silt loam, 0 to 8 percent slopes	Library	100	0	8	SIL	SP	M	Fine, mixed, active, mesic Aeric Endoaqualfs	clayey residuum weathered from limestone and shale
Lo	Lobdell silt loam, 0 to 2 percent slopes	Lobdell	100	0	2	SIL	MW	M	Fine-loamy, mixed, active, mesic Fluvaquentic Eutrudepts	recent loamy alluvium derived from sandstone and shale
LwB	Lowell silty clay loam, 3 to 8 percent slopes	Lowell	100	3	8	SICL	W	M	Fine, mixed, active, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale
LwC	Lowell silty clay loam, 8 to 15 percent slopes, eroded	Lowell	100	8	15	SICL	W	M	Fine, mixed, active, mesic Typic Hapludalfs	clayey residuum weathered from limestone and shale
ShF	Shelocta-Gilpin channery silt loams, 25 to 75 percent slopes	Gilpin	44	25	75	SPM	W	R	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
		Shelocta	56	25	75	SPM	W	R	Fine-loamy, mixed, active, mesic Typic Hapludults	acid fine-loamy colluvium derived from sandstone and siltstone
UhD	Urban land-Guernsey complex, 8 to 25 percent slopes	Guernsey	40	8	25	SIL	MW	M	Fine, mixed, superactive, mesic Aquic Hapludalfs	clayey residuum weathered from limestone and shale

Table C-1
Supply Header Project
Selected Physical and Interpretive Characteristics of the Soil Map Units Within the Project Area, Westmoreland County

Map Unit Symbol	Map Unit Name	Component Name	Component Percent	Slope Percent Low	Slope Percent High	Surface Texture[a]	Drainage Class[b]	Permeability[c]	Taxonomic Classification	Parent Material
		Urban land	60	8	25	SIL	MW	M	N/A	pavement, buildings and other artifically covered areas human transported material
UwD	Urban land-Wharton complex, 8 to 25 percent slopes	Wharton	40	8	25	SIL	MW	N/A	Fine-loamy, mixed, active, mesic Aquic Hapludults	acid fine-loamy residuum weathered from shale and siltstone
		Urban land	60	8	25	SIL	MW	M	N/A	pavement, buildings and other artifically covered areas human transported material
WrB	Wharton silt loam, 3 to 8 percent slopes	Wharton	100	3	8	SIL	MW	M	Fine-loamy, mixed, active, mesic Aquic Hapludults	fine-loamy residuum weathered from shale and siltstone
WrC	Wharton silt loam, 8 to 15 percent slopes	Wharton	100	8	15	SIL	MW	M	Fine-loamy, mixed, active, mesic Aquic Hapludults	fine-loamy residuum weathered from shale and siltstone

a Surface textures include: channery silty loam (CN-SIL), very channery silty loam (CNV-SIL), silty clay loam (SICL), silt loam (SIL), and slightly decomposed plant material (SPM).
b Drainage classes include: poorly (P), somewhat poorly (SP), moderately well (MW), and well (W) drained.
c Permeability rates include: rapid (R), moderately rapid (MR), moderate (M), and moderately slow (MS).

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX C – WETLAND AND WATERCOURSE REPORT

Supply Header Project

Wetland and Waterbody Survey Report 1

Prepared by:

ERM

November 2016

Supply Header Project
Wetland and Waterbody Survey Report 1

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

ACRONYMS

ACP	Atlantic Coast Project
CFR	Code of Federal Regulations
COE	U.S. Army Corps of Engineers
D&D	Duncan & Duncan West, LLC
DTI	Dominion Transmission, Inc.
EPA	Environmental Protection Agency
ERM	Environmental Resources Management
FAC	Facultative Plants
FACU	Facultative Upland Plants
FACW	Facultative Wetland Plants
GPS	Global Positioning System
NHD	National Hydrography Dataset
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OBL	Obligate Plants
OHWM	Ordinary High Water Mark
PEM	Palustrine System Emergent Wetland Class
PFO	Palustrine System Forested Wetland Class
PSS	Palustrine System Scrub-Shrub Wetland Class
SHP	Supply Header Project
TOB	top of bank
UPL	Uplands Plants
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

Environmental Resources Management (ERM), on behalf of Dominion Transmission, Inc. (DTI), conducted wetland and waterbody surveys for the proposed Supply Header Project (SHP). Surveys were completed by contracted staff from Duncan & Duncan WEST, LLC (D&D) and ERM staff. This report presents results of the wetland and waterbody field surveys that were completed in Pennsylvania for the SHP. The survey area consists of a 300-foot-wide corridor approximately 3.9 miles in Pennsylvania and associated aboveground facilities (Figure 1). The survey corridor includes areas within the U.S. Army Corps of Engineers (COE) Pittsburgh District. This report will only include information regarding delineated resources within Commonwealth of Pennsylvania.

Wetland and waterbody surveys were conducted along the proposed mainline TL-636, JB Tonkin Compressor Station, Crayne Compressor Station, and all associated access roads, contractor yards, and impoundment areas. Westmoreland County in Pennsylvania was surveyed for TL-636 and JB Tonkin Compressor Station. Greene County in Pennsylvania was surveyed for Crayne Compressor Station. The field surveys were conducted from October 2014 to July 2015 and in September 2015 along the proposed pipeline routes. This report will specifically include the wetlands and waterbodies delineated within Pennsylvania. This report serves as the wetland and waterbody report to be submitted to the Federal Energy Regulatory Commission.

This report provides an assessment of wetlands, rivers, streams, open waterbodies (e.g., ponds), and seep points documented within the survey corridor based on qualified wetland biologists' best professional judgment and interpretation of the *U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual* (COE, 1987), *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (COE, 2010), the *COE Regulatory Guidance Letter regarding Ordinary High Water Mark Identification* (COE, 2005), and other applicable COE guidance documents and regulations. The report also documents observations made at "non-water points" where desktop data indicated a wetland or waterbody may be present but upon field inspection requisite wetland parameters or discernable evidence of waterbody morphological characteristics were not present. The wetland and waterbody delineation report identifies delineated resources regulated under the 1972 Clean Water Act as Waters of the United States and under PA Code Title 25 Environmental Protection - Chapter 105 Dam Safety and Water Management as Regulated Waters of this Commonwealth at the proposed SHP area. Please refer to figures within the Chapter 105 Water Obstruction and Encroachment Permit application for relevant location information for the wetlands and waterbodies documented in the report. Specifically, Section 7 includes alignment sheets with aerial photography maps each with illustrated wetlands and waterbodies delineated during field surveys.

Figure 1 – Supply Header Project Map

2.0 METHODS

Prior to conducting field surveys, a review of high resolution aerial photographic resources and other desktop data (e.g., National Wetland Inventory, soils maps, USGS maps) was conducted prior to field surveys. These resources were used both prior to and during field surveys to identify potential wetland or waterbody areas that may be present within the survey corridor.

Field surveys for the proposed pipeline were conducted within a 300-foot-wide survey corridor and proposed access roads were conducted within a 50-foot-wide survey corridor. The survey area was evaluated to determine the presence of water features including wetlands, waterbodies (streams and open waterbodies), non-tidal ditches, and seep points. Data were also collected to document a lack of water features where desktop data indicated water features may be present; these are referred to as non-water points.

Accessible tracts within the survey corridor were evaluated to determine the presence or absence of water features, including wetlands, waterbodies (streams and open waterbodies), seep points, and non-water points. Specific naming conventions were followed during field surveys in order to catalog each feature type collected. Tables 2-1 and 2-2 describe the unique naming conventions for these features.

TABLE 2-1

Supply Header Project
Wetland, Waterbody, Seep, and Non-Water Point Feature Naming Protocol

Water Feature Type	Polygon/Line	County	Field Crew Letter	Feature Number	Special Designation
Wetland	w (wetland)	county code	crew letter (e.g., a, b, c)	001, 002, 003, …	f, e, s (PFO, PEM, PSS wetlands)
Waterbody	s (stream) o (open waterbody)	county code	crew letter (e.g., a, b, c)	001, 002, 003, …	p, i, e (change in stream morphology to perennial, intermittent, or ephemeral)
Non-tidal Ditch	d (ditch)	county code	crew letter (e.g., a, b, c)	001, 002, 003, …	
Seep	p (seep)	county code	crew letter (e.g., a, b, c)	001, 002, 003, …	
Non-Water Point	no (non-water)	county code	crew letter (e.g., a, b, c)	001, 002, 003, …	

2.1 DESKTOP REVIEW

Several sources of information were used to complete a “desktop” review of survey areas for potential wetlands and waterbodies prior to conducting field surveys. Biologists utilized high resolution aerial photography, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data, U.S. Department of Agriculture oil Survey Geographical Database, the USGS National Hydrography Dataset (NHD), and USGS Topographic Maps. The evaluation prior to field survey allowed crews to identify areas of high probability for wetlands or waterbodies in planning and preparation for field survey.

Table 2-2

Supply Header Project
Survey Corridor County Codes

Facility Type/State	County	County Code
TL-636/JB Tonkin Compressor Station		
Pennsylvania	Westmoreland	wm

2.2 FIELD SURVEY

The field surveys for the SHP were conducted by D&D from October 2014 to July 2015 and by ERM in September 2015. Wetland boundaries, waterbody thalweg or banks, data collection points, open waterbody boundaries, seep points, and non-water points were surveyed using a Trimble® 6000 series GeoXH model global positioning system (GPS) unit. The field data collection settings within the GPS units used available satellites to capture location data. Note that while the GPS data collected during survey provides reasonably accurate spatial information regarding the wetlands, open waterbodies, seep points, and non-water points delineated, typically one-meter accuracy with sufficient satellite reception, it does not constitute the same accuracy as a professional land survey.

2.2.1 Wetlands

The delineation of wetlands was conducted using the method described in the 1987 Manual, along with either of the Regional Supplements. The wetland boundaries were delineated using the routine onsite determination method described in the Regional Supplements and utilizing *the National Wetland Plant List: 2014 (NWPL)* (Lichvar et al., 2012; Federal Register, 2012) for determination of plant indicator status, and the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979) to classify wetlands. According to the COE 1987 Wetland Manual, three criteria or parameters are considered during a wetland delineation, and for a plant community to be considered a wetland it must have: a predominance of hydrophytic vegetation, indications of wetland hydrology, and the presence of hydric soils under normal circumstances (i.e., where naturally problematic conditions or disturbances are absent). Wetland data sheets were completed at sample points within each wetland community type (i.e., Cowardin classification) making up the wetland or wetland complex, along with a minimum of one corresponding upland community sample point.

2.2.1.1 Hydrophytic Vegetation

The 1987 Manual and NWPL defines the wetland indicator status of plants as follows:

- Obligate Wetland Plants (OBL): almost always occur in wetlands (estimated probability >99 percent) in wetlands under natural conditions. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.
- Facultative Wetland Plants (FACW): usually occur in wetlands (estimated probability >67 percent to 99 percent), but may occur in non-wetlands. These

plants predominantly occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

- Facultative Plants (FAC): occur in wetlands and uplands (estimated probability 33 percent to 99 percent within wetlands). These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH and elevation. They have a wide tolerance of soil moisture conditions.
- Facultative Upland Plants (FACU): usually occur in uplands, but many occur in wetlands (estimated probability 1 percent to <33 percent in wetlands). These plants predominantly occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.
- Upland Plants (UPL): almost never occur in wetlands (estimated probability <1 percent). These plants occupy mesic to xeric upland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

Dominant vegetation was assessed for each stratum present (tree, sapling/shrub, woody vine, and herbaceous) at a sample point location. In most cases, plant dominance was determined using the COE "50/20 Rule" in which species from each stratum that individually or collectively make up more than 50 percent of the total cover in each stratum, plus any other species that account for at least 20 percent of the total cover in the stratum are determined to be dominant species. The hydrophytic vegetation criterion is met when greater than 50 percent of the dominant plant species are classified as OBL, FACW, or FAC. Vegetation information was recorded on the appropriate COE data forms.

2.2.1.2 Wetland Hydrology

Hydrology is influenced by many variables, including: seasonal and long-term rainfall patterns, local geology, topography, soil type, local water table conditions, and drainage. According to the 1987 Manual and Regional Supplements, wetland hydrology is present if 14 or more consecutive days of inundation or water saturation within 12 inches of the soil surface occurs during the growing season at a minimum frequency of 5 years in 10.

Indicators of wetland hydrology provide evidence that a site has a persistent wetland hydrologic regime. The Regional Supplements both provide a list of hydrology indicators that include primary and secondary indicators, which are grouped as:

- Observation of Surface Water or Saturated Soils
- Evidence of Recent Inundation
- Evidence of Current and Recent Soil Saturation
- Evidence of Other Site Conditions or Data

One primary indicator or two secondary indicators are required to confirm that wetland hydrology is present or occurs at some time during the growing season. Field observations of hydrology were made at each vegetation community sample point. Examples of key indicators observed include presence of water above the ground surface, high water table within the hole dug for soil observations, saturated soil in the upper portion of the soil profile, water-stained leaves, drainage patterns as evidence of water presence, and the geomorphic position of the vegetation community and sample point location. Hydrology information was recorded on the appropriate COE data sheets.

2.2.1.3 Hydric Soils

The 1987 Manual defines hydric soils as soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

Hydric soils are characterized by specific morphological characteristics developed in the soil profile over time due to reduction of iron, manganese, and sulfur under saturated and anaerobic conditions (U.S. Department of Agriculture [USDA] Natural Resource Conservation Service [NRCS], 2010). The hydric soil indicators described in the Regional Supplements are a subset of hydric soil indicators described in *Field Indicators of Hydric Soils in the United States, Version 7.0 (2010)*. The *Munsell Book of Soil Color Charts (2014)* was utilized to determine soil matrix and mottle colors (redoximorphic features) and record soil profile descriptions. The soils were observed and documented at representative sample point locations in both wetland communities and adjacent upland communities to help establish the wetland boundary. Soil profile descriptions were recorded on the appropriate COE data sheets.

2.2.1.4 Cowardin Classification

The Cowardin Classification was developed in 1979 to classify a variety of wetland habitats. The Cowardin Classification divides wetlands into five systems, including: Marine, Estuarine, Riverine, Lacustrine, and Palustrine. These represent the five major landscape settings. The classification system further divides wetland communities into systems and classes. The 2014 and 2015 surveys were conducted in inland wetlands, and descriptions of the common Cowardin Classification community types are described in the bullets below.

- Palustrine System Emergent Wetland Class (PEM): A PEM wetland is defined as a non-tidal wetland characterized by erect, rooted, hydrophytic herbaceous species. These wetland habitats are often dominated by perennial plants, where the vegetation is present for the majority of the growing season (Cowardin, 1979).
- Palustrine Forested Wetland Class (PFO): A PFO wetland is defined as a non-tidal wetland characterized by dominant woody vegetation that is greater than 20 feet tall, with an understory of small trees and shrubs, as well as an herbaceous layer (Cowardin, 1979).
- Palustrine System Scrub-Shrub Wetland Class (PSS): A PSS wetland is defined as a non-tidal wetland consisting of woody vegetation that is less than 20 feet tall, including shrubs, young trees, and stunted trees or shrubs (Cowardin, 1979).

Each wetland delineated was assigned a Cowardin class. For wetland complexes, or wetlands that are comprised of more than one wetland plant community (i.e., Cowardin class) a sample point was established and observations recorded to document each community. Unique wetland IDs and separate polygons were established based on the wetland community present within the complex. The field crews in 2014 and 2015 collected wetland information for PEM, PFO, and PSS wetlands.

2.2.2 Waterbodies

Waterbodies documented during field survey were categorized as 1) linear or flowing waterbodies such as streams and rivers, and assigned a unique ID starting with an “s” or 2) non-flowing open waterbodies such as ponds and lakes which were assigned a unique ID starting with an “o”. Linear or flowing waterbodies were identified as landscape features with a channel that include a bed and a bank in a concave landscape position where water flow has resulted in a feature that possesses an ordinary high water mark (OHWM). Based on evidence of flow regime at the time of survey linear waterbodies were attributed a flow regime, according to the definitions provided by the COE for the Nationwide Permit Program in Code of Federal Regulations (CFR) 33 Part 330 (Federal Register, 1993). Similarly non-flowing, open waterbody features were assigned a Cowardin hydrology regime based on observations recorded at the time of survey. Definitions of these flow regimes and hydrology regimes are included below.

2.2.2.1 Regime Classification

Water regime classification is defined by its flow duration. The following regime classifications are described below as defined by the CFR 33 Part 330 ruling:

- Perennial Stream: A perennial stream has flowing water year round during a typical year. The water table is located above the stream bed for most of the year, and groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
- Intermittent Stream: An intermittent stream has flowing water during most times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water, and runoff from rainfall is a supplemental source of water for stream flow.
- Ephemeral Stream: An ephemeral stream has flowing water only during and for a short duration after precipitation events. Ephemeral stream beds are located above the water table year round, therefore, groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Non-flowing or open waterbodies were documented based on the evidence of inundation/saturation at the time of surveys, utilizing one of four categories based on the USFWS’s *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979) including the following:

- Non-flowing: Water covers the land surface throughout the year in all years.
- Semi-Non-flowing: Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface

- Seasonally flooded: Surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.
- Temporarily flooded: Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season.

2.2.3 Non-tidal Ditches

Field crews documented ditches that had an OHWM, bed and bank, and/or were connected to waters of the United States. Additionally, the ditches documented by the field review contained one or more of the following characteristics, in accordance with Draft Guidance provided by the Environmental Protection Agency (EPA, 2015):

- Standing or flowing water
- A link to two or more waters of the United States.
- Drain wetlands or waterbodies that can be linked to waters of the United States.
- Excavated within waters of the United States.
- A relocated, channelized, and/or straightened tributary

Ditches that exhibited wetland characteristics were classified as wetlands if they met the criteria specified in the Manual or applicable Regional Supplement.

2.2.4 Seep Points

Seep points are defined as small areas where groundwater saturates the soil surface on steep slopes or along sidehill cuts or banks. Seeps do not meet the definition of either a waterbody, due to lack of OHWM, top of bank (TOB), or a wetland, lacking the three wetland parameters (hydrology, vegetation, soils). One example of where a seep point would likely be found would be a road cut. Seep points were reviewed and documented on a case-by-case basis by wetland biologists. Where seep points were observed a GPS data point was taken along with corresponding photos of the area.

2.2.5 Non-Water Points

Non-water points were collected to document areas mapped as NWI polygons or NHD lines that did not meet the required criteria of wetlands or waterbodies (i.e., upland habitat). Observations were recorded, photographs were taken, and a GPS point was recorded at each non-water point to document that wetland biologists visited the point and determined that a wetland or waterbody was not present. COE wetland delineation forms were used to record information for non-water points located within NWI wetlands polygons. Documentation of non-water points provides a record to demonstrate that areas mapped as NWI and NHD, or areas with an aerial photography signature indicative of wetland conditions, which from a desktop may be assumed to be aquatic, were visited by wetland biologists and determined to lack the requisite indicators of a wetland or waterbody.

3.0 RESULTS AND FINDINGS

The following sections present the results of water resources survey from October 2014 through July 2015 and in September 2015 on the SHP, including wetlands, waterbodies, seep points, and non-water points that were documented on accessible tracts within the SHP survey corridor. The workspace for Greene and Westmoreland Counties were surveyed to identify water resources; however, there were no water resources present in the Crayne Compressor Station workspace in Greene County, Pennsylvania. Therefore, the report only includes resources identified during the surveys in Westmoreland County, Pennsylvania. **Please note that only features, datasheets, and photos documenting water resources within the Commonwealth of Pennsylvania are included in this package.**

3.1 WETLANDS

A total of 12 wetlands have been documented within the survey corridor along the proposed pipeline route in Westmoreland County, Pennsylvania during the field season. A table listing the delineated wetlands is located in Table 3.1-1. Table 3.1-1 includes the state, county, unique project wetland ID, Cowardin classification, approximate milepost, latitude, and longitude. Datasheets and photo pages for each wetland and upland sample point are provided in Appendix A.

3.2 WATERBODIES

A total of 18 waterbodies have been documented within the survey corridor along the proposed pipeline route in Westmoreland County, Pennsylvania during the field season. A table listing delineated waterbodies is located in Table 3.2-1. Table 3.2-1 includes the state, county, unique project waterbody ID, USGS waterbody name, hydrologic regime, field estimated OHWM width (ft.), and field estimated bank-to-bank width (feet), approximate milepost, latitude, and longitude. Datasheets and photo pages for each waterbody sample point are provided in Appendix B.

3.3 NON-TIDAL DITCHES

No ditches were documented within the survey corridor along the proposed pipeline route.

3.4 SEEP POINTS

No seep points were documented within the survey corridor along the proposed pipeline route.

3.5 NON-WATER POINTS

No non-water points were documented within the survey corridor along the proposed pipeline route.

TABLE 3.1-1

Supply Header Project
Wetland Inventory

Facility/State/County/ Approximate Milepost	Unique ID	Cowardin Classification	Latitude	Longitude
TL-636/JB Tonkin Compressor Station				
Pennsylvania				
Westmoreland				
N/A	wwmh005e	PEM	40.4623523262295	-79.6405387816610
N/A	wwmc001e	PEM	40.4248188478790	-79.5852955813219
0.2	wwmh012f	PFO	40.4253265676696	-79.5937998332657
0.6	wwmh001f	PFO	40.4294960198917	-79.6006394801935
0.7	wwmh001f	PFO	40.4296412578112	-79.6007430355412
1.2	wwmh002e	PEM	40.4330644395070	-79.6092591167805
1.3	wwmh002e	PEM	40.4341094348971	-79.6106072005217
1.9	wwmh007e	PEM	40.4408612173111	-79.6192503762113
2.6	wwmh003f	PFO	40.4478566206251	-79.6279818503258
2.9	wwmh008e	PEM	40.4504207257220	-79.6311135129026
2.9	wwmh009e	PEM	40.4510617698231	-79.6316585447007
3.2	wwmh010f	PFO	40.4532326030784	-79.6344216791762
3.6	wwmh011f	PFO	40.4594885736349	-79.6385750988932
3.8	wwmh006e	PEM	40.4609615939800	-79.6393562606762

TABLE 3.2-1

Supply Header Project
Waterbody Inventory

Facility/State/ County/ Approximate Milepost	Unique ID	USGS Name	Hydrologic Regime	OHWM Width (feet)	Bank to Bank Width (feet)	Latitude	Longitude
TL-636/ JB Tonkin Compressor Station							
Pennsylvania							
Westmoreland							
0.2	swmh002	UNT to Turtle Creek	Perennial	5	7	40.4256194295263	-79.5938036878563
0.2	swmh001	UNT to Turtle Creek	Perennial	3	6	40.4246553849002	-79.5978463239672
0.5	swmh001	UNT to Turtle Creek	Perennial	3	6	40.4239428950187	-79.6016011497773
0.7	swmh003	UNT to Turtle Creek	Perennial	3	5	40.4296380136157	-79.6006253571047
1.2	swmh004	UNT to Kemerer Hollow	Perennial	4	8	40.4339717856692	-79.6105601276734
1.4	swmh005	Kemerer Hollow	Perennial	4	8	40.4346663145257	-79.6117141834835
1.7	swmh012	UNT to Kemerer Hollow	Perennial	1	10	40.4376884466757	-79.6162735163807
1.9	swmh013	UNT to Kemerer Hollow	Perennial	5	10	40.4408025125325	-79.61904440035428
2.5	swmh006	UNT to Steels Run	Perennial	4	8	40.4464247413319	-79.6262876179098
2.6	swmh007	Steels Run	Perennial	6	10	40.4480418510385	-79.6277784475133
2.6	owmh001	Unnamed pond	Perennial	na	na	40.4478735936819	-79.6276178052457
2.7	swmh008	UNT to Steels Run	Perennial	2	3	40.4488460016674	-79.6286836208999
2.9	swmh014	UNT to Steels Run	Perennial	4	8	40.4529233917312	-79.6339882048317
2.9	owmh002	Unnamed pond	Perennial	na	na	40.4510793541902	-79.6324995561128
3.3	swmh016	UNT to Steel's Run	Intermittent	2	4	40.4557676297418	-79.6350443216715
3.6	swmh015	UNT to Haymakers Run	Perennial	5	8	40.4593731937649	-79.6385927916215
3.8	swmh011	UNT to Haymakers Run	Perennial	3	8	40.4613229149341	-79.639525114389
N/A	swmh010	Haymakers Run	Perennial	9	15	40.4625279998542	-79.6393433785753
N/A	smwh009	UNT to Haymakers Run	Perennial	4	20	40.4625887449162	-79.639446227021

4.0 REFERENCES

Cowardin, L.M., Carter, V., Golet, F.C., and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., Jamestown, North Dakota: Northern Prairie Wildlife Research Center Home Page. Available online at: http://www.npwrc.usgs.gov/resource/1998/classwet/classwet.htm. Accessed January 22 2015.

Environmental Protection Agency. 2015. *Draft Guidance on Identifying Waters Protected by the Clean Water Act*. Available online at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf. Accessed March 27 2015.

Federal Register. 1993. *33 CFR Part 328;: Definition of Waters of the United States*. U.S. Government Printing Office, Washington, D.C. (51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993).

Federal Register. 2012. *Publication of the Final National Wetland Plant List.* Vol. 77, No. 90, May 9, 2012, pp. 27210-27214.

Lichvar, R., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. *National Wetland Plant List Indicator Rating Definitions.* ERDC/CRREL TN-12-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Available online at: http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf. Accessed January 22 2015.

U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

U.S. Army Corps of Engineers. 2005. *Ordinary High Water Mark Identification.* Regulatory Guidance Letter No. 05-05. Available online at: http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf. Accessed January 22 2015.

U.S. Army Corps of Engineers. 2010. Interim *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont.* ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture. Natural Resource Conservation Service (NRCS). 2010. *Field Indicators of Hydric Soils in the United* States (Version 7.0). Available at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf. Accessed January 22 2015.

SUPPLY HEADER PROJECT ENVIRONMENTAL SURVEY

Wetland and Waterbody Delineation Report

APPENDIX A

Wetland Datasheets and Photo Pages

TL-636

Westmoreland County

Pennsylvania

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-14-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH005E

Investigator(s): DD WEST Section, Township, Range: — ~W

Landform (hillslope, terrace, etc.): Depression w/in floodplain Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 27' 44.43" Long: 79° 38' 25.92" Datum: WGS 84

Soil Map Unit Name: Ernest NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes X No ___	Depth (inches): 6"	
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches): surface	Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Hydrology present
Obvious depressional area w/in floodplain

WWMH005e

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~[illegible]~~			
2. ~~[illegible]~~			
3. Juglans nigra	10	✓	FACU
4.			
5.			
6.			
7.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Sapling/Shrub Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Ligustrum sinense	10	✓	FACU
2. Salix nigra	10	✓	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		

50% of total cover: 10 20% of total cover: 4

Herb Stratum (Plot size: 10 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Typha latifolia	10		OBL
2. Carex comosa	5		OBL
3. Phalaris arundinacea	40	✓	FACW
4. Microstegium vimineum	15	✓	FAC
5. Polygonum sagittatum	15	✓	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		

50% of total cover: 42.5 20% of total cover: 17

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		

50% of total cover: 20% of total cover:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH005e_W

SOIL

Sampling Point: WWMH005e_W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 4/2		10YR 4/6	>10	C	M,PL	LOAM	
11-16+	10YR 4/3		10YR 4/6	>15	C	M	CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

wwmh005e_w

Wetland data point wwmh005e_w facing east

Wetland data point wwmh005e_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-14-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH005U

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 5

Subregion (LRR or MLRA): N Lat: 40° 27' 44.44" Long: 79° 38' 26.39" Datum: WGS 84

Soil Map Unit Name: Lobdell NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks: Not ~~all~~ all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WWMH005

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus serotina	15	✓	FACU
2. Acer rubrum	15	✓	FAC
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		

Sapling/Shrub Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rosa multiflora	25	✓	FACU
2. Ligustrum sinense	15	✓	FACU
3. Rhus glabra	10	✓	UPL
4.			
5.			
6.			
7.			
8.			
9.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		

Herb Stratum (Plot size: 10ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rubus leucodermis	10		FACU
2. Solidago altissima	25	✓	FACU
3. ~~[illegible]~~			
4. Verbesina occidentalis	25	✓	FACU
5. Dactylis glomerata	35	✓	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 42.5	20% of total cover: 19		

Woody Vine Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus quinquefolia	5	✓	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .11 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	15	x 3 = 45
FACU species	155	x 4 = 620
UPL species	10	x 5 = 50
Column Totals:	180 (A)	(B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WWMH005 U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3						Loam	
5-18+	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soils present

wwmh005_u

Upland data point wwmh005_u facing east

Upland data point wwmh005_u facing south

wwmh005 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Atlantic Coast Pipeline City/County: Westmoreland Sampling Date: 9/30/2015

Applicant/Owner: Dominion State: PA Sampling Point: wwmc001_w

Investigator(s): GB, MC Section, Township, Range: ______

Landform (hillslope, terrace, etc.): draw Local relief (concave, convex, none): concave Slope (%): 4

Subregion (LRR or MLRA): ______ Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ______ NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No ______	**Is the Sampled Area within a Wetland?**	**Yes** ✔ **No** ______
Hydric Soil Present?	Yes ✔	No ______		
Wetland Hydrology Present?	Yes ✔	No ______		

Remarks:
Wetland data point for a saturated PEM wetland located in a draw on an existing pipeline ROW

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✔	Depth (inches): ______
Water Table Present?	Yes ______	No ✔	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✔	Depth (inches): ______

Wetland Hydrology Present? Yes ✔ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: wwmc001_w

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Sapling/Shrub Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Panicum hemitomon*	20	Yes	FACW
2. *Solidago gigantea*	20	Yes	FACW
3. *Dichanthelium clandestinum*	15	Yes	FAC
4. *Vernonia noveboracensis*	10	No	FACW
5. *Eupatorium novae-angliae*	10	No	
6. *Carex conjuncta*	7	No	FACW
7. *Setaria verticillata*	7	No	FAC
8. *Phleum pratense*	7	No	FACU
9. *Persicaria pensylvanica*	6	No	FACW
10.			
11.			
	102 = Total Cover		
50% of total cover: 51	20% of total cover: 20.4		

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	63	x 2 =	126
FAC species	22	x 3 =	66
FACU species	7	x 4 =	28
UPL species	0	x 5 =	0
Column Totals:	92 (A)		220 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
✔ 2 - Dominance Test is >50%
✔ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: wwmc001_w

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					SCL	
4-9	10YR 4/2	95	10YR 4/6	5	C	PL/M	SCL	
9-18	10YR 4/1	85	7.5YR 4/6	15	C	PL/M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): ______

Hydric Soil Present? Yes ✔ No ___

Remarks:

wwmc001e_w

Wetland data point wwmc001e_w

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Atlantic Coast Pipeline City/County: Westmoreland Sampling Date: 9/30/2015

Applicant/Owner: Dominion State: PA Sampling Point: wwmc001_u

Investigator(s): GB, MC Section, Township, Range: ______

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 9

Subregion (LRR or MLRA): ______ Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ______ NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✔	
Hydric Soil Present?	Yes ___	No ✔	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** ✔
Wetland Hydrology Present?	Yes ___	No ✔	

Remarks:
Upland data point taken above toe of slope for a saturated PEM wetland located in a draw on an existing pipeline ROW

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ______
Water Table Present?	Yes ___	No ✔	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ___	No ✔	Depth (inches): ______

Wetland Hydrology Present? Yes ___ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
no hydrology indicators present

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: wwmc001_u

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Sapling/Shrub Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Rosa multiflora*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Symphyotrichum ericoides*	15	Yes	FACU
2. *Solidago gigantea*	15	Yes	FACW
3. *Panicum hemitomon*	12	Yes	FACW
4. *Dichanthelium clandestinum*	10	Yes	FAC
5. *Symphyotrichum novae-angliae*	10	Yes	FACW
6. *Phleum pratense*	10	Yes	FACU
7. *Solidago curtisii*	10	Yes	FACU
8. *Penstemon laevigatus*	8	No	FACU
9. *Avena sativa*	5	No	UPL
10. *Ambrosia artemisiifolia*	5	No	FACU
11. *Trifolium repens*	5	No	FACU
	105 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21		

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	37	x 2 =	74
FAC species	10	x 3 =	30
FACU species	58	x 4 =	232
UPL species	5	x 5 =	25
Column Totals:	110 (A)		361 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ______ No ✔

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: wwmc001_u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100					SCL	
8-18	10YR 4/4	65	10YR 4/6	35	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✔

Remarks:

wwmc001e_u

Wetland data point wwmc001e_u

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 5-14-15
Applicant/Owner: Dominion State: PA Sampling Point: WWMH012 fw
Investigator(s): DDWEST Section, Township, Range: —
Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): —
Subregion (LRR or MLRA): P Lat: 40.4252 Long: 79.5941 Datum: WGS 84
Soil Map Unit Name: Clarksburg NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____	Is the Sampled Area within a Wetland?	Yes X No ____
Hydric Soil Present? Yes X No ____		
Wetland Hydrology Present? Yes X No ____		

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- X Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): >16"
Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

WWMH012fw

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: ________

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pensylvanicum	50	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50 = Total Cover		
50% of total cover: 25 20% of total cover: 10			

Sapling/Shrub Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pensylvanicum	20	✓	FACW
2. Rosa multiflora	25	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	45 = Total Cover		
50% of total cover: 22.5 20% of total cover: 9			

Herb Stratum (Plot size: 10)	Absolute % Cover	Dominant Species?	Indicator Status
1. Boehmeria cylindrica	20	✓	FACW
2. Impatiens capensis	15		FACW
3. Galium tinctorium	15		OBL
4. Symplocarpus foetidus	20	✓	OBL
5. Panicum rigidulum	20	✓	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45 20% of total cover: 18			

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	____ = Total Cover		
50% of total cover: ____ 20% of total cover: ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH012Pu

SOIL Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/1		10YR 4/4	>10	C	M	LOAM	
10-16+	10YR 4/2		10YR 4/4	>10	C	M	LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soil present

wwmh012f_w

wwmh012f_w facing north

wwmho12f_w facing east

1

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: WESTMORELAND Sampling Date: 5-14-15

Applicant/Owner: Dominion State: PA Sampling Point: WWMH012U

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR or MLRA): P Lat: 40.4252° Long: 79.5940 Datum: WGS84

Soil Map Unit Name: Clarksburg NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks: NOT ALL THREE PARAMETERS PRESENT

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WWMH012 U

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	20	✓	FACU
2. Carya glabra	20	✓	FACU
3. Fraxinus pennsylvanica	20	✓	FACW
4. Prunus serotina	15	✓	FACU
5.			
6.			
7.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		

Sapling/Shrub Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cornus florida	15		FACU
2. Crataegus crus-galli	10		FACU
3. Rosa multiflora	30	✓	FACU
4. Lindera benzoin	25	✓	
5.			
6.			
7.			
8.			
9.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Herb Stratum (Plot size: 10)	Absolute % Cover	Dominant Species?	Indicator Status
1. Dactylis glomerata	40	✓	FACU
2. Plantago ~~[illegible]~~ rugellii	10		FACU
3. Krigia dandelion	10 ~~[illegible]~~		FAC
4. ~~[illegible]~~ Avena sativa	30	✓	UPL
5. Trifolium repens	10		FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	____	x 1 = ____
FACW species	____	x 2 = ____
FAC species	____	x 3 = ____
FACU species	____	x 4 = ____
UPL species	____	x 5 = ____
Column Totals:	____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH012

SOIL

Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2						Loam	
5-12	10YR 4/3						Loam	
12-18+	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil present

wwmh012_u

wwmh012f_u facing south

wwmho12f_u facing west

wwmh012

wwmh012 soil

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-13-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH001f-W

Investigator(s): DDWKST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 25' 46.19" Long: 79° 36' 03.21" Datum: WGS 84

Soil Map Unit Name: Clarksburg NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____ Hydric Soil Present? Yes X No ____ Wetland Hydrology Present? Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes X No ~~X~~ Depth (inches): ~~2~~ 16"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

WLWMH001f-W

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WLWMH001f-W

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	✓	FAC
2. Betula nigra	20	✓	FACW
3. Fraxinus pennsylvanica	30	✓	FACW
4.			
5.			
6.			
7.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ligustrum sinense	15	✓	FACU
2. Rosa multiflora	25	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Polygonum sagittatum	30	✓	OBL
2. Carex intumescens	20	✓	FACW
3. Solidago gigantea	20	✓	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Smilax rotundifolia	10	✓	FAC
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 78 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH001f-W

SOIL

Sampling Point: ______

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2		10YR 4/6	>10	C	M, PL	Loam	
3-11	10YR 3/1		10YR 4/6	>20	C	M PL		
11-18+	10YR 4/2		10YR 4/6	>20	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soil present

wwmh001f_w

Wetland data point wwmh001f_w facing south

Wetland data point wwmh001f_w facing west

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-13-14
Applicant/Owner: Dominion State: PA Sampling Point: DWMH001-U
Investigator(s): DD WEST Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 10-25%
Subregion (LRR or MLRA): N Lat: 40°25'46.33" Long: 79°36'03.67" Datum: WGS 84
Soil Map Unit Name: Library NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWMH001 #f

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: -U

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus montana	15	✓	UPL
2. Quercus velutina	25	✓	UPL
3. Prunus serotina	15	✓	FACU
4. Quercus alba	15	✓	FACU
5.			
6.			
7.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ligustrum sinense	25	✓	FACU
2. Rosa multiflora	25	✓	FACU
3. Prunus serotina	10		FACU
4.			
5.			
6.			
7.			
8.			
9.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Solidago altissima	25	✓	FACU
2. Sanicula ~~[illegible]~~ marilandica	15	✓	FACU
3. Microstegium vimineum	15	✓	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Smilax rotundifolia	10	✓	FAC
2. Parthenocissus quinquefolia	5	✓	FACU
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 19 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	25	x 3 = 75
FACU species	135	x 4 = 540
UPL species	40	x 5 = 200
Column Totals:	200 (A)	815 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH002 -U

SOIL

Sampling Point: -U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	2.5Y 4/3						Loam	
9-12	2.5Y 5/3						Loam	
12-18+	2.5Y 5/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soils present

wwmh001_u

Upland data point wwmh001_u facing east

Upland data point wwmh001_u facing north

wwmh001_w soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: WESTMORELAND Sampling Date: 11-13-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH002c-W

Investigator(s): DD WEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 26' 01.90" Long: 79° 36' 36.91" Datum: WGS 84

Soil Map Unit Name: Ernest NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____	
Water Table Present?	Yes X	No ____	Depth (inches): 18"	
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 11"	Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

WWMH002

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: e-w

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	15	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		

50% of total cover: 7.5 20% of total cover: 3

Sapling/Shrub Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Malus pumila	15	✓	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15 = Total Cover		

50% of total cover: 7.5 20% of total cover: 3

Herb Stratum (Plot size: 10ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Typha latifolia	25	✓	OBL
2. Dipsacus fullonum	15		FACU
3. Cyperus strigosus	20	✓	FACW
4. Leptochloa panicea	10		FACW
5. Agrimonia parviflora	5		FACW
6.			
7. Phalaris arundinacea	25	✓	FACW
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: 20% of total cover:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

WWM H002

SOIL

Sampling Point: e-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2		10YR 4/4	?10	C	M, PL	LOAM	
3-12	10YR 4/1		10YR 4/4 4/6	?15	C	M, PL	LOAM	
12-16+	10YR 4/2		10YR 4/4 4/6	?15	C	M, PL	LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

wwmh002e_w

Wetland data point wwmh002e_w facing south

Wetland data point wwmh002e_w facing west

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-13-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH002-U

Investigator(s): DD WEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 10-25

Subregion (LRR or MLRA): N Lat: 40°26'02.04" Long: 79°36'36.62" Datum: WGS 84

Soil Map Unit Name: Lobdell NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ______

Water Table Present? Yes ___ No X Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ______

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWM H002

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: U

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya glabra	15	✓	FACU
2. Malus pumila	15	✓	NI
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rosa multiflora	5	✓	FACU
2. Ligustrum sinense	5	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phytolacca americana	10		FACU
2. Rubus leucodermis	10		UPL
3. Vernonia gigantea	10		FAC
4. Solidago altissima	20	✓	FACU
5. Dactylis glomerata	25	✓	FACU
6. Glechoma hederacea	15	✓	FACU
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	15	x 3 = 45
FACU species	95	x 4 = 380
UPL species	10	x 5 = 50
Column Totals:	110 (A)	475 (B)

Prevalence Index = B/A = 4.32

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

LOWM H002

SOIL

Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16+	10YR 4/4						loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil present

wwmh002_u

Upland data point wwmh002_u facing east

Upland data point wwmh002_u facing north

wwmh002_w soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-14-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH007e-W

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40°26'26.89" Long: 79°37'09.84" Datum: WGS84

Soil Map Unit Name: Ernest NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): Surface
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

WWMH007e

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: -W

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	20	✓	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		

50% of total cover: 10 20% of total cover: 4

Sapling/Shrub Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	5	✓	OBL
2. Rosa multiflora	15	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		

50% of total cover: 10 20% of total cover: 4

Herb Stratum (Plot size: 10 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Juncus effusus	10		FACW
2. Phalaris arundinacea	25	✓	FACW
3. Carex comosa	25	✓	FACW
4. Leersia virginica	15	✓	FACW
5. Typha latifolia	10		OBL
6. Aster pilosus	5		FAC
7. Microstegium vimineum	10		FAC
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: ______ 20% of total cover: ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ______

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH007e

SOIL

Sampling Point: — W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR3/1		10YR 4/4	>2	C	M ~~PL~~		
11-18	10YR 4/2		10YR 4/4	>2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- X Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soil present

wwmh007e_w

Wetland data point wwmh007e_w facing east

Wetland data point wwmh007e_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-14-14
Applicant/Owner: Dominion State: PA Sampling Point: WWMH007U
Investigator(s): DDWEST Section, Township, Range: ——
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): —— Slope (%): 6-20
Subregion (LRR or MLRA): N Lat: 40° 26' 26.70" Long: 79° 37' 10.31" Datum: WGS 84
Soil Map Unit Name: LobdeCC NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ___ No X		Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present? Yes ___ No X		
Wetland Hydrology Present? Yes ___ No X		

Remarks: Not all three parameters are present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWMH007

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: U

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
= Total Cover			
50% of total cover:	20% of total cover:		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~[illegible]~~			
2. Robinia pseudoacacia	10	✓	FACU
3. Rosa multiflora	15	✓	FACU
4.			
5.			
6.			
7.			
8.			
9.			
= Total Cover	25		
50% of total cover: 12.5	20% of total cover: 5		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Dactylis glomerata	60	✓	FACU
2. Trifolium pratense	10		FACU
3. Rumex crispus	10		FAC
4. Taraxacum officinale	10		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover	90		
50% of total cover: 45	20% of total cover: 18		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
= Total Cover			
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	10	x 3 = 30
FACU species	105	x 4 = 420
UPL species	0	x 5 = 0
Column Totals:	115 (A)	450 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH007
SOIL
Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3						Loam	
3-8	10 YR 5/4						Loam	
8-16+	10 YR 4/4						Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil present

wwmh007_u

Upland data point wwmh007_u facing east

Upland data point wwmh007_u facing south

wwmh007 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-13-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH023 f-w

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Bottomland/depression Local relief (concave, convex, none): Concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 26' 52.52" Long: 79° 37' 40.98" Datum: WGS 84

Soil Map Unit Name: Lobdell NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____	
Hydric Soil Present? Yes X No ____		
Wetland Hydrology Present? Yes X No ____		

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____	
Water Table Present?	Yes ____	No X	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 12"	**Wetland Hydrology Present?** Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WWMH003F W

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	40	✓	OBL
2. Acer rubrum	10	✓	FAC
3.			
4.			
5.			
6.			
7.			
= Total Cover	50		

50% of total cover: 25 20% of total cover: 10

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10	✓	FAC
2. Salix nigra	30	✓	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
= Total Cover	40		

50% of total cover: 20 20% of total cover: 8

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rubus arvensis	15	✓	FAC
2. Panicum clandestinum	25	✓	FAC
3. Polygonum sagittatum	10	✓	FACW
4. Phalaris arundinacea	15	✓	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover	65		

50% of total cover: 32.5 20% of total cover: 13

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
= Total Cover			

50% of total cover: 20% of total cover:

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- __ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- __ 3 - Prevalence Index is ≤3.0[1]
- __ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH003f

SOIL

Sampling Point: w

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2		10YR 4/4	75			LOAM	
4-12	10YR 4/2		10YR 4/4+4/6	710			LOAM	
12-16	10YR 4/1		10YR 4/4	710			LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

wwmh003f_w

Wetland data point wwmh003f_w facing south

Wetland data point wwmh003f_w facing west

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-13-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH003U

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 10

Subregion (LRR or MLRA): N Lat: 40° 26' 52.63" Long: 79° 37' 41.13" Datum: WGS 84

Soil Map Unit Name: Lobdell NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X		Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present? Yes ____ No X		
Wetland Hydrology Present? Yes ____ No X		

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWMH003

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: ✓

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus serotina	30	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		

50% of total cover: 15 20% of total cover: 6

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Robinia pseudoacacia	20	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		

50% of total cover: 10 20% of total cover: 4

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Glechoma hederacea	30	✓	FACU
2. Solidago altissima	15	✓	FACU
3. Rubus allegheniensis	15	✓	FACU
4. Phytolacca americana	10		FACU
5. Sanicula ~~[illegible]~~ marilandica	10		FACU
6. Rubus leucodermis	10		UPL
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		

50% of total cover: 45 20% of total cover: 18

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus quinquefolia	10	✓	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	140	x 4 =	560
UPL species	10	x 5 =	50
Column Totals:	150 (A)		610 (B)

Prevalence Index = B/A = 4.07

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH003

SOIL

Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 4/3						loam	
11-18+	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil present

wwmh003_u

Upland data point wwmh003_u facing east

Upland data point wwmh003_u facing north

wwmh003_w soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH008e

Investigator(s): DDWEST Section, Township, Range: — W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 27' 01.36" Long: 79° 37' 51.85 Datum: WGS 84

Soil Map Unit Name: Gilpin NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks: Small depressional wetland (herbaceous) within pasture

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches): 0.5	
Water Table Present?	Yes X No ___	Depth (inches): Surface	
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches): surface	Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present
Obvious depression within pasture

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WWMH008e -W

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: ____ 20% of total cover: ____

Sapling/Shrub Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5. NONE			
6.			
7.			
8.			
9.			
	= Total Cover		

50% of total cover: ____ 20% of total cover: ____

Herb Stratum (Plot size: 10 ft)			
1. Eleocharis parvula	35	✓	OBL
2. Leptochloa panicea	45	✓	FACW
3. Juncus effusus	5		FACW
4. Carex comosa	15		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		

50% of total cover: ____ 20% of total cover: ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- __ 3 - Prevalence Index is ≤3.0[1]
- __ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH008e

SOIL

Sampling Point: -W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/1		10YR 4/6	>2	C	M, PL	~~clay~~ LOAM	
9-13	10YR 5/4		10YR 5/6 & 2/1	>20	C	M	CLAY LOAM	
13-18+	10YR 4/1		10YR 4/4	>5	C	M	~~C~~ LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

small depressional wetland within pasture that historically was filled with c.a. 4-6 inches of upland clayloam, but has still retained all wetland + hydric characteristics.

wwmh008e_w

Wetland data point wwmh008e_w facing east

Wetland data point wwmh008e_w facing south

11-15-14

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH008U

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 0 - 2

Subregion (LRR or MLRA): N Lat: 40° 27' 01.19" Long: 79° 37' 52.04 Datum: WGS84

Soil Map Unit Name: Gilpin NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	___	X
Hydric Soil Present?	___	X
Wetland Hydrology Present?	___	X
Is the Sampled Area within a Wetland?	___	X

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	___	X	___
Water Table Present?	___	X	___
Saturation Present? (includes capillary fringe)	___	X	___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology ~~indicators~~ present

WWMH008 U

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: U

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Dactylis glomerata	80	✓	FACU
2. Glechoma hederacea	5		FACU
3. Trifolium pratense	10		FACU
4. Rumex crispus	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ______ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

Pasture

WWMH008

SOIL Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/3						Loam	
14-18+	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil present

wwmh008_u

Upland data point wwmh008_u facing east

Upland data point wwmh008_u facing south

wwmh008 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Suppy Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH009e

Investigator(s): DD WEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): bottomland/depression Local relief (concave, convex, none): concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40° 27 03.91 Long: 79° 37' 54.26" Datum: WGS 84

Soil Map Unit Name: Wharton NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Obvious depressional wetland within floodplain of small perennial stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches): 0.5"	Wetland Hydrology Present? Yes X No ___
Water Table Present?	Yes X No ___	Depth (inches): surface	
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches): surface	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology present

US Army Corps of Engineers Eastern Mountains and Piedmont – Version 2.0

WWM H009e-W

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WWM H009e-W

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	10	✓	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	15	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Typha latifolia	30	✓	OBL
2. Phalaris arundinacea	30	✓	FACW
3. Polygonum sagittatum	25	✓	OBL
4. Vernonia gigantea	5		FAC
5. Juncus effusus	10		FACW
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH009c

SOIL

Sampling Point: -W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1		10YR 4/6	>20	C	M,PL	LOAM	
5-15	10YR 4/1		10YR 4/6	>20	C	M	LOAM	
15-18+	10YR 4/1		10YR 4/1	>5	C	M	CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

wwmh009e_w

Wetland data point wwmh009e_w facing east

Wetland data point wwmh009e_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH009 U

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 0-2

Subregion (LRR or MLRA): N Lat: 40°27'03.64" Long: 79°37'54.54" Datum: WGS 84

Soil Map Unit Name: Gilpin NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WWMH009

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Sapling/Shrub Stratum (Plot size: 30 ft)			
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Herb Stratum (Plot size: 10 ft)			
1. Dactylis glomerata	80	✓	FACU
2. Trifolium pratense	10		FACU
3. Rumex crispus	5		FAC
4. Glechoma hederacea	5		FACU
5.			
6. NONE			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft)			
1. NONE			
2.			
3.			
4.			
5.			
		= Total Cover	

50% of total cover: ______ 20% of total cover: ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	5	x 3 = 15
FACU species	95	x 4 = 380
UPL species		x 5 =
Column Totals:	100 (A)	395 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ______ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WWMB009

SOIL Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 4/3						Loam	
11-18+	10YR 4/4						Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil present

wwmh009_u

Upland data point wwmh009_u facing east

Upland data point wwmh009_u facing south

wwmh009 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: wwmh010f_w

Investigator(s): DDWEST Section, Township, Range: —

Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): Concave Slope (%): —

Subregion (LRR or MLRA): N Lat: 40°27' 13.13" Long: 79° 38' 06.38" Datum: WGS 84

Soil Map Unit Name: ______ NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ___	Depth (inches): ___	
Water Table Present?	Yes ___	No ___	Depth (inches): ___	
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): ___	**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: wwmh010f_w

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Fagus grandifolia	40	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			

40 = Total Cover

50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (Plot size: 30 ft)

1.–9. NONE

= Total Cover

50% of total cover: ____ 20% of total cover: ____

Herb Stratum (Plot size: ____)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Athyrium felix femina	10	✓	FACW
2. Mikrostegium vimineum	25	✓	FAC
3.			
4. Agrimonia parviflora	10	✓	FACW
5. Phalaris arundinacea	10	✓	FACW
6. Onoclea sensibilis	10	✓	FACW
7.			
8.			
9.			
10.			
11.			

65 = Total Cover

50% of total cover: 32.5 20% of total cover: 13

Woody Vine Stratum (Plot size: ____)

1.–5. NONE

= Total Cover

50% of total cover: ____ 20% of total cover: ____

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	-	x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

WWMH00f

SOIL

Sampling Point: - W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/1		10YR 4/4	2	C	M/PL	Loam	
3-14	10YR3/1		10YR 4/4	2	C	M	Loam	
14-18+	10YR3/1						mixed	loam + cobble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

wwmh010f_w

Wetland data point wwmh010f_w facing east

Wetland data point wwmh010f_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: wwmh010_U

Investigator(s): DD WEST Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5 - 15

Subregion (LRR or MLRA): N Lat: 40° 27' 13.22" Long: 79° 38' 06.09" Datum: W

Soil Map Unit Name: Wharton NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No X	Depth (inches): ____	
Water Table Present?	Yes ____ No X	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____ No X	Depth (inches): ____	**Wetland Hydrology Present? Yes ____ No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrology present

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: wwmh010_u

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	20	✓	FACU
2. Quercus velutina	20	✓	UPL
3. Prunus serotina	20	✓	FACU
4. Fagus grandifolia	25	✓	FACU
5.			
6.			
7.			
	85 = Total Cover		

50% of total cover: 42.5 20% of total cover: 17

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rosa multiflora	25	✓	FACU
2. Fagus grandifolia	15	✓	FACU
3. Prunus serotina	10		FACU
4. Quercus rubra	10		FACU
5.			
6.			
7.			
8.			
9.			
	70 = Total Cover		

50% of total cover: 35 20% of total cover: 14

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~[illegible]~~			
2. Polystichum acrostichoides	15	✓	FACU
3. Microstegium vimineum	15	✓	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30 = Total Cover		

50% of total cover: 15 20% of total cover: 6

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus quinquefolia	10	✓	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 11 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	15	x 3 = 45
FACU species	150	x 4 = 600
UPL species	20	x 5 = 100
Column Totals:	185 (A)	745 (B)

Prevalence Index = B/A = 4.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: wwmh010_u

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1						loam	
3-6	10YR 3/2						sandy loam	
6-18+	10YR 5/4						sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

No hydric soil present

wwmh010_u

Upland data point wwmh010_u facing east

Upland data point wwmh010_u facing south

wwmh010 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14
Applicant/Owner: Dominion State: PA Sampling Point: WWMH011f-W
Investigator(s): DDWEST Section, Township, Range: ___
Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): concave Slope (%): –
Subregion (LRR or MLRA): N Lat: 40°27' 34.22" Long: 79° 38' 18.85" Datum: WGS 84
Soil Map Unit Name: Wharton NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present? Yes X No ___		
Wetland Hydrology Present? Yes X No ___		

Remarks: All three parameters present
Small wetland associated with perennial stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes X	No ___	Depth (inches): ___	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): ___	**Wetland Hydrology Present?** Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology present

Sara

WWMH01F -W

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WWMH01F -W

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	25	✓	FAC
2. Ulmus americana	35	✓	FACW
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		

Sapling/Shrub Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~[illegible]~~			
2. Acer rubrum	10	✓	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

Herb Stratum (Plot size: 10ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Polygonum hydropiperoides	15	✓	OBL
2. Dulichium arundinacea	15	✓	OBL
3. Microstegium vimineum	20	✓	FAC
4. ~~[illegible]~~			
5. Athyrium felix-femina	15	✓	FACW
6. Onoclea sensibilis	10		FACW
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 16		

Woody Vine Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: wwmH010f_W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/1						loam	
12-18+	10YR4/1		10YR4/4	25	C	M	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10) **(LRR N)**
- __ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Dark Surface (S7)
- __ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- __ Thin Dark Surface (S9) **(MLRA 147, 148)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- __ Umbric Surface (F13) **(MLRA 136, 122)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- __ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10) **(MLRA 147)**
- __ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- __ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soil present

wwmh011f_w

Wetland data point wwmh011f_w facing east

Wetland data point wwmh011f_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-15-14

Applicant/Owner: Dominion State: PA Sampling Point: WWMH011

Investigator(s): DDWEST Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): ______ Slope (%): 10-20

Subregion (LRR or MLRA): N Lat: 40° 27' 34.13" Long: 79° 38' 19.08 Datum: WGS 84

Soil Map Unit Name: Gilpin NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWMH011

SOIL

Sampling Point: U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3						Sandy loam	
3-8	10YR 5/4						LOAM	
8-18+	10YR 5/6						CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

No hydric soils present

WWMH011

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: U

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	20	✓	FACU
2. Quercus velutina	20	✓	UPL
3. Prunus serotina	20	✓	FACU
4. Carya glabra	15	✓	FACU
5.			
6.			
7.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	10	✓	FACU
2. Quercus velutina	5		UPL
3. Prunus serotina	10	✓	FACU
4. Carya glabra	10	✓	FACU
5. Rosa multiflora	20	✓	FACU
6.			
7.			
8.			
9.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Polystichum acrostoides	20	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	0	x 3 = 0
FACU species	135	x 4 = 540
UPL species	25	x 5 = 125
Column Totals:	160 (A)	665 (B)

Prevalence Index = B/A = 4.16

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

wwmh011_u

Upland data point wwmh011_u facing east

Upland data point wwmh011_u facing south

wwmh011 soils

Wetland/upland soils

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: DTI Supply Header City/County: Westmoreland Sampling Date: 11-14-14
Applicant/Owner: Dominion State: PA Sampling Point: WWMH006e
Investigator(s): DDWEST Section, Township, Range: ____
Landform (hillslope, terrace, etc.): Bottomland/Depression Local relief (concave, convex, none): concave Slope (%): ____ W
Subregion (LRR or MLRA): N Lat: 40°27' 40.05" Long: 79°38' 22.09" Datum: WGS 84
Soil Map Unit Name: Lobdell NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____ Hydric Soil Present? Yes X No ____ Wetland Hydrology Present? Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____

Remarks: All three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____ Water Table Present? Yes X No ____ Depth (inches): 6" Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): Surface	Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
linear Depression running along side small perennial stream

WWMH006e_W

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WWMH006e_W

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Sapling/Shrub Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	10	✓	OBL
2. Ligustrum sinense	5	✓	FACU
3. Rosa multiflora	10	✓	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	25 = Total Cover		

50% of total cover: 12.5 20% of total cover: 5

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Phalaris arundinacea	20	✓	FACW
2. Onoclea sensibilis	10		FACW
3. Microstegium vimineum	40	✓	FAC
4. Polygonum sagittatum	20	✓	OBL
5. ~~[illegible]~~			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		

50% of total cover: 45 20% of total cover: 16

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: ______ 20% of total cover: ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ______

Remarks: (Include photo numbers here or on a separate sheet.)

WWMH0060

SOIL

Sampling Point: -W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1							
10-20+	10YR 3/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- X Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil present

wwmh006e_w

Wetland data point wwmh006e_w facing east

Wetland data point wwmh006e_w facing south

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: PT1 Supply Header City/County: Westmoreland Sampling Date: 11-14-14
Applicant/Owner: Dominion State: PA Sampling Point: WWM A006
Investigator(s): DD WEST Section, Township, Range: —
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): — Slope (%): 5-10%
Subregion (LRR or MLRA): N Lat: 40° 27' 40.17" Long: 79° 38' 21.80" Datum: WGS 84
Soil Map Unit Name: Lobdell NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ___ No X		Is the Sampled Area within a Wetland? Yes ___ No X
Hydric Soil Present? Yes ___ No X		
Wetland Hydrology Present? Yes ___ No X		

Remarks: Not all three parameters present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology present

WWMH006

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: U

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Rosa multiflora	25	✓	FACU
2. Ligustrum sinense	20	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		

Herb Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Solidago altissima	15		FACU
2. Dipsacus fullonum	10		FACU
3. Ambrosia artemisiifolia	10		FACU
4. Festuca arundinacea	30	✓	FACU
5. Microstegium vimineum	30	✓	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 42.5	20% of total cover: 19		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
	______ = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	30	x 3 = 90
FACU species	110	x 4 = 440
UPL species	0	x 5 = 0
Column Totals:	140 (A)	530 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WWMH006U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/3						LOAM	
9-18"	10YR 4/4		10YR 5/4	2	C	M	LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10) **(LRR N)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
___ Thin Dark Surface (S9) **(MLRA 147, 148)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
___ Umbric Surface (F13) **(MLRA 136, 122)**
___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(MLRA 147)**
___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil present

wwmh006_u

Upland data point wwmh006_u facing east

Upland data point wwmh006_u facing south

wwmh006 soils

Wetland/upland soils

SUPPLY HEADER PROJECT ENVIRONMENTAL SURVEY

Wetland and Waterbody Delineation Report

APPENDIX B

Waterbody Datasheets and Photo Pages

TL-636

Westmoreland County

Pennsylvania

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI supply Header	UNT TO TURTLE CREEK	SWM HOO 2	11-13-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-256			NONE

Survey Type: *(check one)* ☒ Centerline ☐ Re-Route ☐ Access Road ☐ Other: ____

Physical Attributes

Stream Classification: *(check one)* ☐ Ephemeral ☐ Intermittent ☒ Perennial

Waterbody Type: *(check one)* ☒ Stream ☐ River ☐ Ditch ☐ Pond ☐ Lake ☐ Connecting swale [a] ☐ Other: ____

OHWM
Width: 5 ft.
Height: 9" ft.

OHWM Indicator: *(check all that apply)* ☒ Clear line on bank ☐ Shelving ☐ Wrested vegetation ☐ Scouring ☐ Water staining ☒ Bent, matted, or missing vegetation ☐ Wrack line ☐ Litter and debris ☐ Abrupt plant community change ☐ Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 7 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: ____ ft.

Depth of Water at Centerline: *(Approx.)* ____ ft.

Sinuosity: *(check one)* ☐ Straight ☒ Meandering

Water velocity: *(Approx.)* <1 fps

Bank height Right: 12" ft. Left: 12" ft.

Bank slope Right: 70 degrees Left: 70 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐ No water ☐ Clear ☒ Turbid ☐ Sheen on surface ☐ Surface scum ☐ Algal mats ☐ Other: ____

Substrate: *(check all that apply)* ☐ Bedrock ☐ Gravel ☒ Sand ☒ Silt/clay ☐ Organic ☐ Other: ____

% of Substrate:	____ %	____ %	20 %	80 %	____ %	____ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: *(check all that apply)* ☒ Trees: ☒ Shrubs: ☒ Herbs
Avg. DBH of Dominants: *(approx.)* Trees 8" in. Shrubs 1" in.

Dominant Bank Vegetation: *(list)*
~~[illegible]~~ Carya glabra, Prunus serotina, Rosa multiflora, Festuca arundinacea

Aquatic Habitats (ex: submerged or emerged aquatic vegetation/overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)*
pools

Aquatic Organisms Observed: *(list)*
None

Invasive and/or T&E Species Observed: *(list)*
Rosa multiflora

Tributary is: *(check one)* ☒ Natural ☐ Artificial, man-made ☐ Manipulated

Disturbances: *(check all that apply)* ☒ Livestock access ☒ Manure in waterbody ☐ Waste discharge pipes ☐ Other: ____

Stream Quality[b]: *(check one)* ☐ High ☐ Moderate ☒ Low

Waterbody ID:
SWMH002

[a] *Connecting swales* are water features that *do not meet* the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

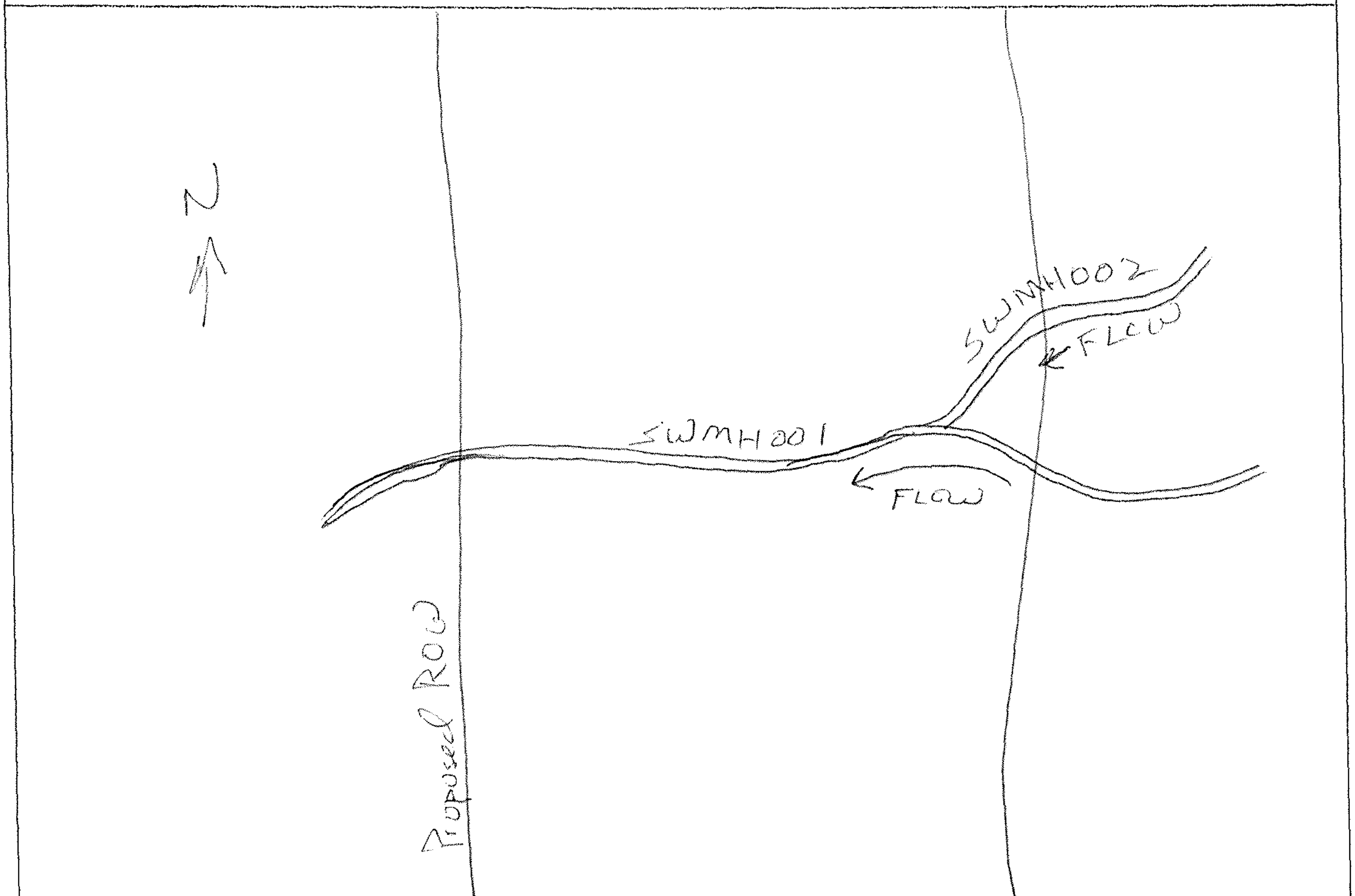
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh002

Waterbody swmh002 facing east upstream

Waterbody swmh002 facing west downstream

swmh002

Waterbody swmh002 facing upline cross stream

Waterbody Data Sheet

Survey Description

- Project Name: Supply DTI Header
- Waterbody Name: UNT TO TURTLE CREEK
- Waterbody ID: SWMH001
- Date: 11/13/14
- State: PA
- County: West Moreland
- Company: DDWEST
- Crew Member Initials: JD, DB
- Photo ID(s): 3
- Tract Number(s): 35-256
- Milepost Entry: 37
- Milepost Exit: 37
- Associated Wetland ID(s): NONE
- Survey Type: (check one) [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other:

Physical Attributes

- Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [X] Perennial
- Waterbody Type: (check one) [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other:
- OHWM Width: 3 ft.
- OHWM Height: 6" ft.
- OHWM Indicator: (check all that apply) [ ] Clear line on bank [ ] Shelving [ ] Wrested vegetation [X] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change
- Width of Waterbody - Top of Bank to Top of Bank at Centerline: 5 ft.
- Width of Waterbody - Water Edge to Water Edge at Centerline: 1 ft.
- Depth of Water at Centerline: (Approx.) 1" ft.
- Sinuosity: (check one) [ ] Straight [X] Meandering
- Water velocity: (Approx.) <1 fps
- Bank height: Right: 18" ft. Left: 12" ft.
- Bank slope: Right: 40 degrees Left: 60 degrees

Qualitative Attributes

- Water Appearance: (check one) [ ] No water [ ] Clear [X] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other:
- Substrate: (check all that apply) [ ] Bedrock [ ] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other:
- % of Substrate: Bedrock ___ % Gravel ___ % Sand 20 % Silt/clay 80 % Organic ___ % Other ___ %
- Width of Riparian Zone: 10 ft.
- Vegetative Layers: (check all that apply) [X] Trees [X] Shrubs [X] Herbs
- Avg. DBH of Dominants: (approx.) Trees: 10" in. Shrubs: 1' in.
- Dominant Bank Vegetation: (list) Salix nigra, Rosa multiflora, Festuca arundinacea
- Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) pools,
- Aquatic Organisms Observed: (list) None
- Invasive and/or T&E Species Observed: (list) Rosa multiflora,
- Tributary is: (check one) [X] Natural [ ] Artificial, man-made [ ] Manipulated
- Disturbances: (check all that apply) [X] Livestock access [X] Manure in waterbody [ ] Waste discharge pipes [ ] Other:
- Stream Quality[b]: (check one) [ ] High [ ] Moderate [X] Low

Waterbody ID:
SWMH001

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

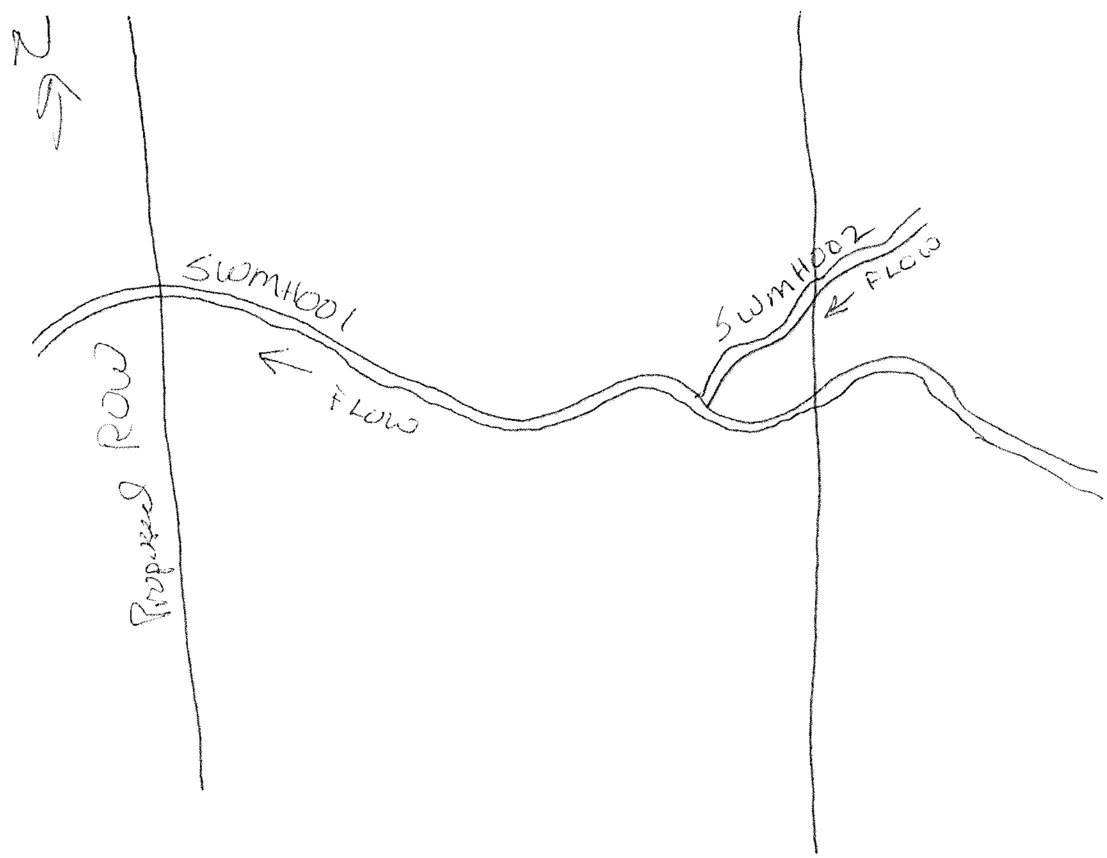
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh001

Waterbody swmh001 facing east upstream

Waterbody swmh001 facing west downstream

swmh001

Waterbody swmh001 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name: DTI Supply Header	Waterbody Name: UNT TO TURTLE CREEK	Waterbody ID: SWMH ~~[illegible]~~ 003	Date: 11-13-14
State: PA	County: Westmoreland	Company: DDWEST	Crew Member Initials: JD, DB	Photo ID(s): 3
Tract Number(s): 35-254	Milepost Entry: 3.3	Milepost Exit: 3.3	Associated Wetland ID(s): WWMH001f_W

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ____

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ____

OHWM
Width: 3 ft.
Height: 6" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [X] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 5 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: ____ ft.

Depth of Water at Centerline: *(Approx.)* ____ ft.

Sinuosity: *(check one)* [ ] Straight [X] Meandering

Water velocity: *(Approx.)* <1 fps

Bank height: Right: 1 ft. Left: 1 ft.

Bank slope: Right: ____ degrees Left: ____ degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [ ] Clear [X] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ____

Substrate: *(check all that apply)* [ ] Bedrock [ ] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ____

% of Substrate: ____ % ____ % 20 % 80 % ____ % ____ %

Width of Riparian Zone: >50 ft.

Vegetative Layers: *(check all that apply)* [X] Trees: [X] Shrubs: [X] Herbs

Avg. DBH of Dominants: *(approx.)* ____ in. ____ in.

Dominant Bank Vegetation: *(list)* Acer rubrum, Fraxinus pennsylvanica, Rosa multiflora, Ligustrum sinense ~~[illegible]~~

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Pools

Aquatic Organisms Observed: *(list)* ~~[illegible]~~ Frogs

Invasive and/or T&E Species Observed: *(list)* Rosa multiflora, Ligustrum sinense

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: upstream access by livestock

Stream Quality[b]: *(check one)* [ ] High [X] Moderate [ ] Low

Waterbody ID:
SWMH003

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

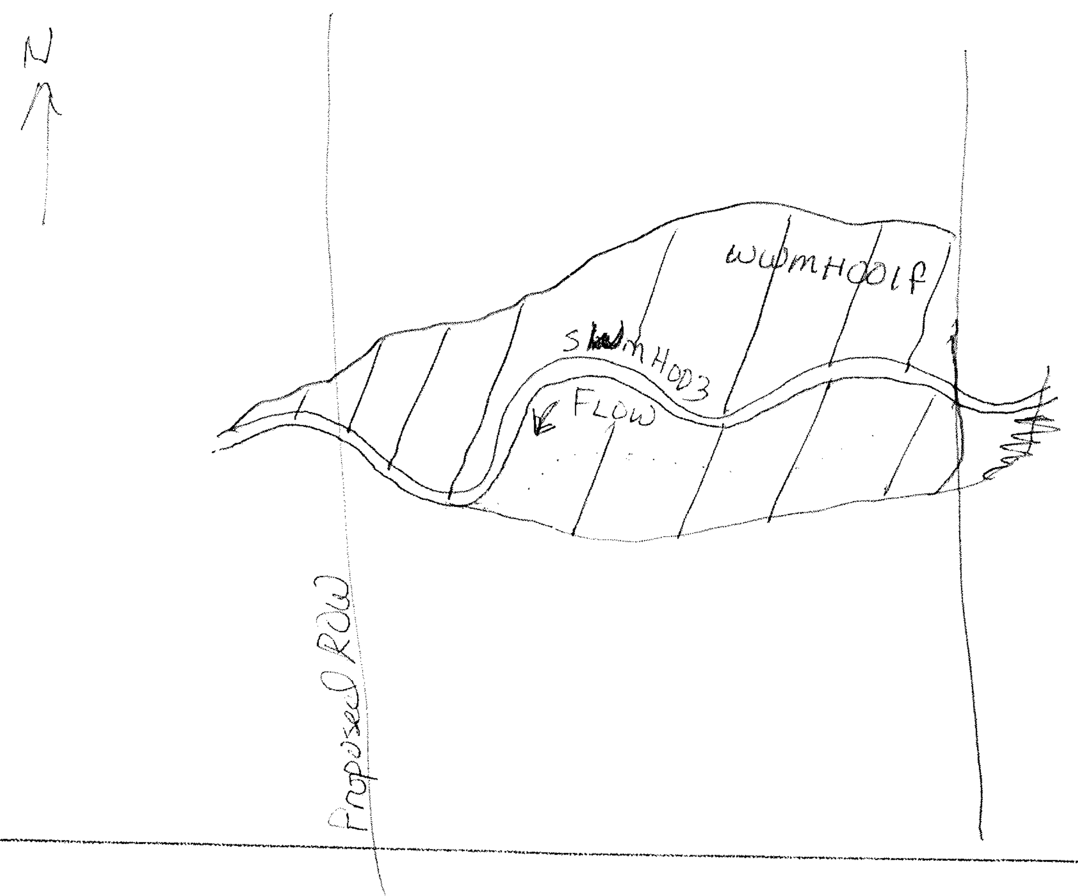
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh003

Waterbody swmh003 facing east upstream

Waterbody swmh003 facing west downstream

swmh003

Waterbody swmh003 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO ~~[illegible]~~ KEMERER HOLLOW	SWM H004	11-13-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-244, 245, 247, 249	2.5	2.7	WWMH002e.w

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 4 ft.
Height: 6" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline:	Width of Waterbody - Water Edge to Water Edge at Centerline:	Depth of Water at Centerline: *(Approx.)*
8 ft.	2 ft.	2" ft.

Sinuosity: *(check one)*	Water velocity: *(Approx.)*	Bank height	Bank slope
[ ] Straight [X] Meandering	<1 fps	Right: 1 ft. Left: 2 ft.	Right: 25 degrees Left: 40 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [ ] Clear [X] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: *(check all that apply)* [ ] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate: ~~[illegible]~~ % 20 % 20 % 60 % ____ % ____ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: *(check all that apply)* [X] Trees: [X] Shrubs: [X] Herbs
Avg. DBH of Dominants: *(approx.)* 10" in. 1" in.

Dominant Bank Vegetation: *(list)* Liriodendron tulipifera, Acer rubrum, Ligustrum sinensei, Rosa multiflora Solidago altissima

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* riffle, pools

Aquatic Organisms Observed: *(list)* None

Invasive and/or T&E Species Observed: *(list)* Rosa multiflora, Ligustrum sinense

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: Edge of ROW

Stream Quality[b]: *(check one)* [ ] High [ ] Moderate [ ] Low

Waterbody ID:
SWMH004

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

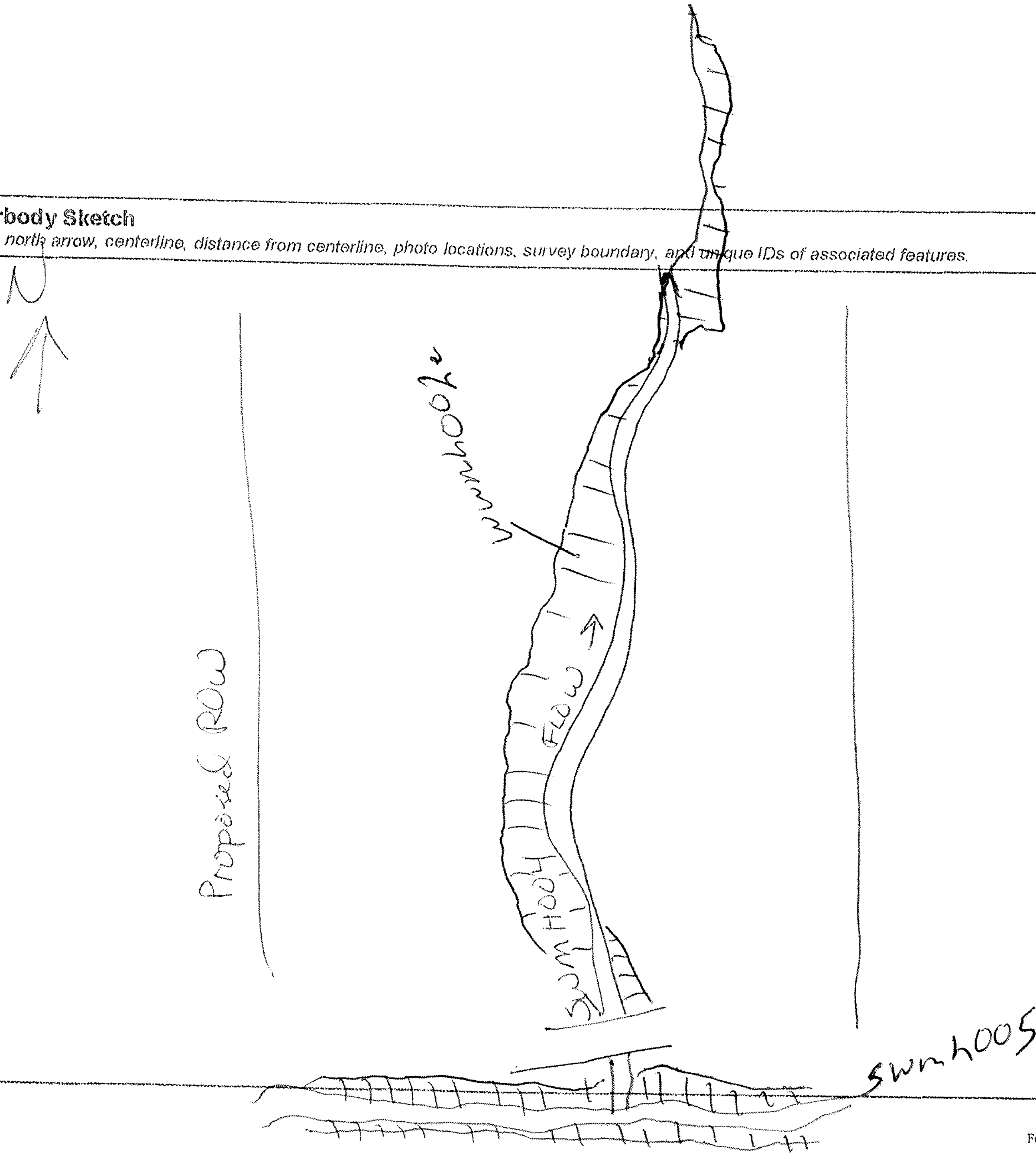
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh004

Waterbody swmh004 facing south upstream

Waterbody swmh004 facing north downstream

swmh004

Waterbody swmh004 facing east cross stream

Waterbody Data Sheet

Survey Description

Project Name: DTI Supply Header	Waterbody Name: KEMERER ~~STEELE CREEK~~ HOLLOW	Waterbody ID: SWMH005 ~~STEELE ROAD~~	Date: 11-13-14
State: PA	County: Westmoreland	Company: DDWEST	Crew Member Initials: JD, DB
			Photo ID(s): 3
Tract Number(s): 35-244	Milepost Entry: 2.5	Milepost Exit: 2.5	Associated Wetland ID(s): WWMH002e-w

Survey Type: (check one) [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: (check one) [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 4 ft.
Height: 6" ft.

OHWM Indicator: (check all that apply) [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 8 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 2' ft.

Depth of Water at Centerline: (Approx.) 2" ft.

Sinuosity: (check one) [ ] Straight [X] Meandering

Water velocity: (Approx.) >1 fps

Bank height: Right: 1 ft. Left: 1 ft.

Bank slope: Right: 30 degrees Left: 30 degrees

Qualitative Attributes

Water Appearance: (check one) [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: (check all that apply) [ ] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate: ___ % 40 ~~[illegible]~~ % 20 % 40 % ___ % ___ %

Width of Riparian Zone: ~~[illegible]~~ 5 ft.

Vegetative Layers: (check all that apply) [ ] Trees: [X] Shrubs: [X] Herbs
Avg. DBH of Dominants: (approx.) ___ in. 2" in.

Dominant Bank Vegetation: (list) Vernonia, Solidago altissima, ~~[illegible]~~ Rubus allegheniensis, Salix nigra

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) Riffle, pools, leaf mats

Aquatic Organisms Observed: (list) None

Invasive and/or T&E Species Observed: (list) NONE

Tributary is: (check one) [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: (check all that apply) [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: Edge of hay pasture

Stream Quality[b]: (check one) [ ] High [X] Moderate [ ] Low

Waterbody ID:
SWMH005

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

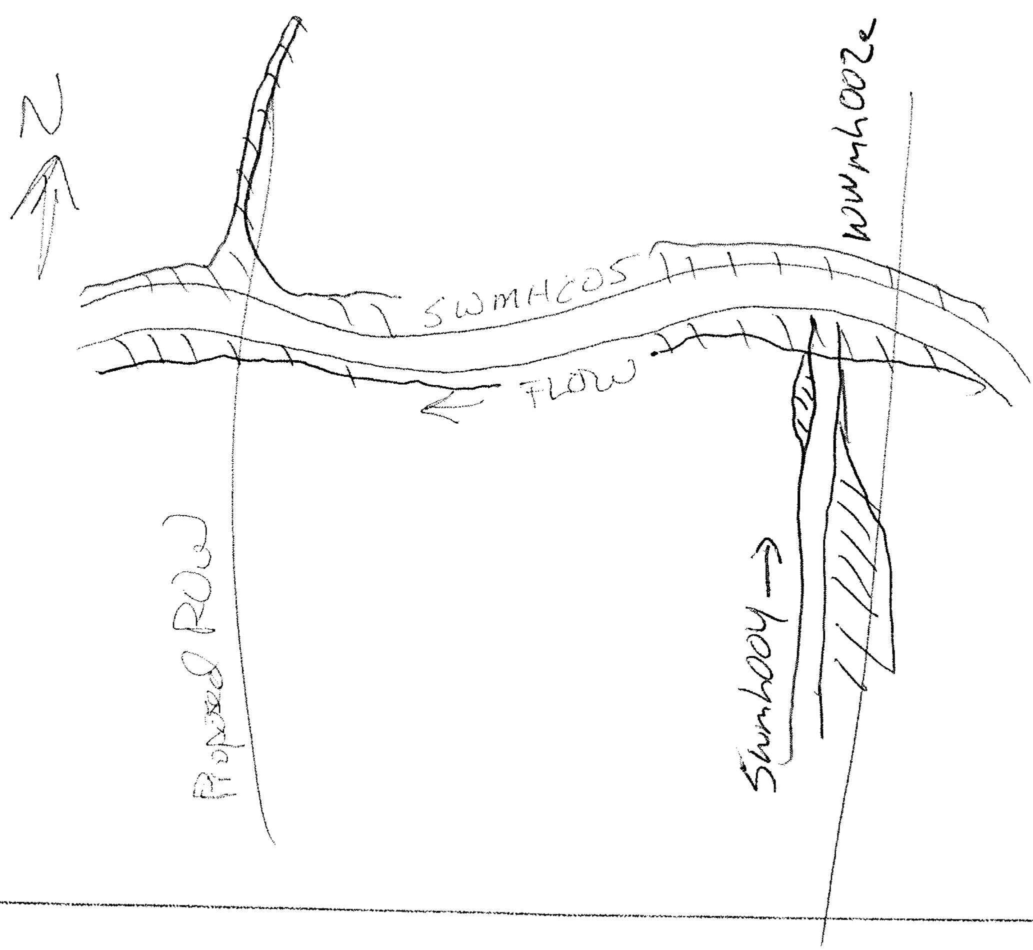
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh005

Waterbody swmh005 facing east upstream

Waterbody swmh005 facing west downstream

swmh005

Waterbody swmh005 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO Kermerer Hollow	SWMH012	11-14-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-238	2.15	2.15	NONE

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ____

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ____

OHWM
Width: 1 ft.
Height: 6" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [X] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 10 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 1 ft.

Depth of Water at Centerline: *(Approx.)* 1" ft.

Sinuosity: *(check one)* [ ] Straight [X] Meandering

Water velocity: *(Approx.)* <1 fps

Bank height Right: 4 ft. Left: 5 ft.

Bank slope Right: 30 degrees Left: 40 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [ ] Clear [X] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [X] Other: some iron oxidizing bacteria

Substrate: *(check all that apply)* [ ] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ____

% of Substrate: ____ % 10 % 20 % 70 % ____ % ____ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: *(check all that apply)* [ ] Trees: [X] Shrubs: [X] Herbs
Avg. DBH of Dominants: *(approx.)* ____ in. 3 in.

Dominant Bank Vegetation: *(list)* Salix nigra, Acer rubrum, Rosa multiflora, Solidago altissima, Dactylis glomerata

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Pools

Aquatic Organisms Observed: *(list)* NONE

Invasive and/or T&E Species Observed: *(list)* Rosa multiflora

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: bordered by hay pasture

Stream Quality[b]: *(check one)* [ ] High [ ] Moderate [X] Low

Waterbody ID: SWMH012

[a] *Connecting swales* are water features that *do not* meet the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

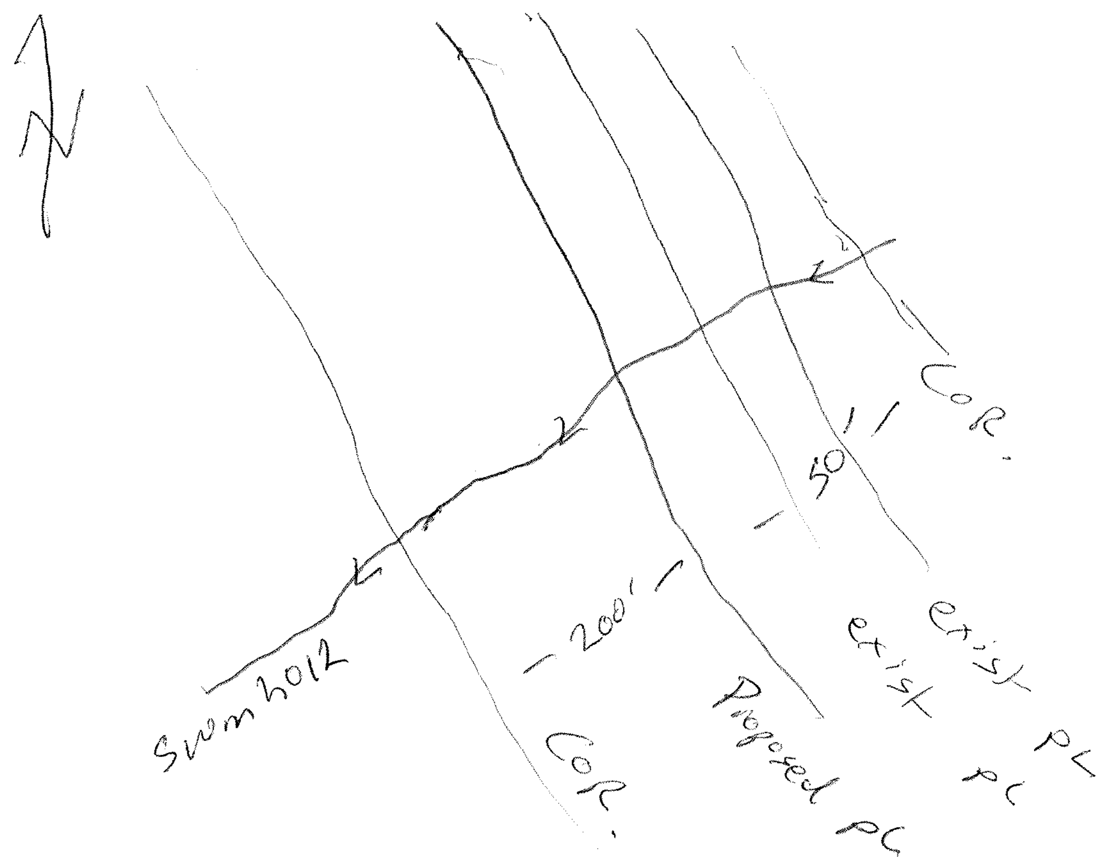
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh012

Waterbody swmh012 facing upstream

Waterbody swmh012 facing downstream

swmh012

Waterbody swmh012 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name: DTI Supply Header
Waterbody Name: UNT to Kermerer Hollow
Waterbody ID: SWMH013
Date: 11-14-14

State: PA
County: Westmoreland
Company: DDWEST
Crew Member Initials: JD, DB
Photo ID(s): 3

Tract Number(s): 35-236
Milepost Entry: 1.9
Milepost Exit: 1.9
Associated Wetland ID(s): WWMH007e-w

Survey Type: *(check one)*
- [x] Centerline
- [ ] Re-Route
- [ ] Access Road
- [ ] Other:

Physical Attributes

Stream Classification: *(check one)*
- [ ] Ephemeral
- [ ] Intermittent
- [x] Perennial

Waterbody Type: *(check one)*
- [x] Stream
- [ ] River
- [ ] Ditch
- [ ] Pond
- [ ] Lake
- [ ] Connecting swale [a]
- [ ] Other:

OHWM
Width: 5 ft.
Height: 6" ft.

OHWM Indicator: *(check all that apply)*
- [x] Clear line on bank
- [ ] Shelving
- [x] Wrested vegetation
- [ ] Scouring
- [ ] Water staining
- [x] Bent, matted, or missing vegetation
- [x] Wrack line
- [ ] Litter and debris
- [ ] Abrupt plant community change
- [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 10 ft.
Width of Waterbody - Water Edge to Water Edge at Centerline: 2.5 ft.
Depth of Water at Centerline: *(Approx.)* 2" ft.

Sinuosity: *(check one)*
- [ ] Straight
- [x] Meandering

Water velocity: *(Approx.)* >1 fps

Bank height
Right: 6 ft.
Left: 7 ft.

Bank slope
Right: 40 degrees
Left: 50 degrees

Qualitative Attributes

Water Appearance: *(check one)*
- [ ] No water
- [x] Clear
- [ ] Turbid
- [ ] Sheen on surface
- [ ] Surface scum
- [ ] Algal mats
- [ ] Other:

Substrate: *(check all that apply)*

Bedrock	Gravel	Sand	Silt/clay	Organic	Other:
[x]	[x]	[x]	[x]	[ ]	[ ]
30 %	40 %	~~[illegible]~~ 5 %	~~[illegible]~~ 25 %	%	%

Width of Riparian Zone: 10 ft.

Vegetative Layers: *(check all that apply)*
- [x] Trees:
- [x] Shrubs:
- [x] Herbs

Avg. DBH of Dominants: *(approx.)* 6 in. 1 in.

Dominant Bank Vegetation: *(list)* Salix nigra, Rosa multiflora, Phalaris arundinacea, Dipsacus

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* riffle, pools, leaf packs

Aquatic Organisms Observed: *(list)* small fish

Invasive and/or T&E Species Observed: *(list)* Rosa multiflora

Tributary is: *(check one)*
- [x] Natural
- [ ] Artificial, man-made
- [ ] Manipulated

Disturbances: *(check all that apply)*
- [ ] Livestock access
- [ ] Manure in waterbody
- [ ] Waste discharge pipes
- [x] Other: In hay pasture

Stream Quality[b]: *(check one)*
- [ ] High
- [x] Moderate
- [ ] Low

Waterbody ID: SWMH013

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.

swmh013

Waterbody swmh013 facing upstream

Waterbody swmh013 facing downstream

swmh013

Waterbody swmh013 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO STEELS RUN	SWM1+006	11-13-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-232	1.4	1.4	NONE

Survey Type: (check one) [x] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [x] Perennial

Waterbody Type: (check one) [x] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 4 ft.
Height: 4" ft.

OHWM Indicator: (check all that apply) [x] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [x] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 8 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: ______ ft.

Depth of Water at Centerline: (Approx.) ______ ft.

Sinuosity: (check one) [ ] Straight [x] Meandering

Water velocity: (Approx.) <1 fps

Bank height — Right: 2.5 ft. Left: 2.5 ft.

Bank slope — Right: 30 degrees Left: 30 degrees

Qualitative Attributes

Water Appearance: (check one) [ ] No water [x] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: (check all that apply) [ ] Bedrock [ ] Gravel [x] Sand [x] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate: ______ % ______ % 20 % 80 % ______ % ______ %

Width of Riparian Zone: >25 ft.

Vegetative Layers: (check all that apply) [ ] Trees: [x] Shrubs: [x] Herbs
Avg. DBH of Dominants: (approx.) ______ in. 1" in.

Dominant Bank Vegetation: (list) Cornus foemina Rosa multiflora, Dactylis glomeratus, Solidago altissima

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) pools

Aquatic Organisms Observed: (list) NONE

Invasive and/or T&E Species Observed: (list) Rosa multiflora

Tributary is: (check one) [x] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: (check all that apply) [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [x] Other: Clearing for ROW

Stream Quality[b]: (check one) [ ] High [x] Moderate [ ] Low

Form Rev. 2/21/2014

Waterbody ID: SWMH006

[a] **Connecting swales** are water features that *do not* meet the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

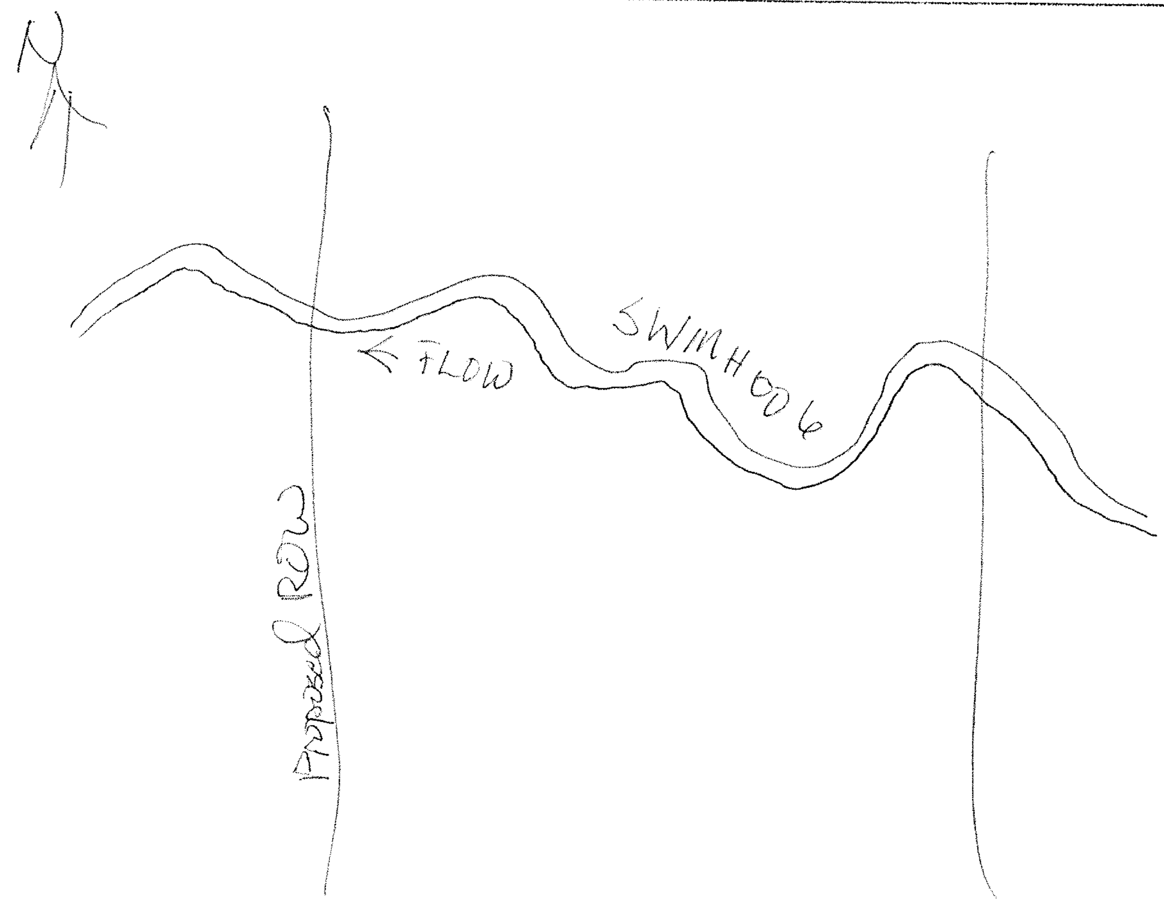
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh006

Waterbody swmh006 facing east upstream

Waterbody swmh006 facing west downstream

swmh006

Waterbody swmh006 facing upline cross stream

Waterbody Data Sheet

Survey Description

SWMH007

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	~~[illegible]~~ STEELS RUN	~~[illegible]~~	11-13-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-231	1.3	1.3	WWMH003f-W

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM Width: 6 ft. Height: 8 in ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 10 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: ____ ft.

Depth of Water at Centerline: *(Approx.)* ____ ft.

Sinuosity: *(check one)* [ ] Straight [X] Meandering

Water velocity: *(Approx.)* 71 fps

Bank height Right: 2 ft. Left: 2 ft.

Bank slope Right: 30 degrees Left: 30 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: *(check all that apply)* [ ] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate:	Bedrock	Gravel	Sand	Silt/clay	Organic	Other
	____ %	40 %	20 %	40 %	____ %	____ %

Width of Riparian Zone: 20 ft.

Vegetative Layers: *(check all that apply)* [X] Trees: [X] Shrubs: [X] Herbs

Avg. DBH of Dominants: *(approx.)* ____ in. ____ in.

Dominant Bank Vegetation: *(list)* Salix nigra, Juglans nigra, Vernonia Rubus allegheniensis

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Pools, riffles,

Aquatic Organisms Observed: *(list)* NONE

Invasive and/or T&E Species Observed: *(list)* NONE

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [X] Waste discharge pipes [ ] Other: runoff from adjacent upland

Stream Quality[b]: *(check one)* [ ] High [X] Moderate [ ] Low

Waterbody ID: SWMH007

[a] *Connecting swales* are water features that *do not* meet the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

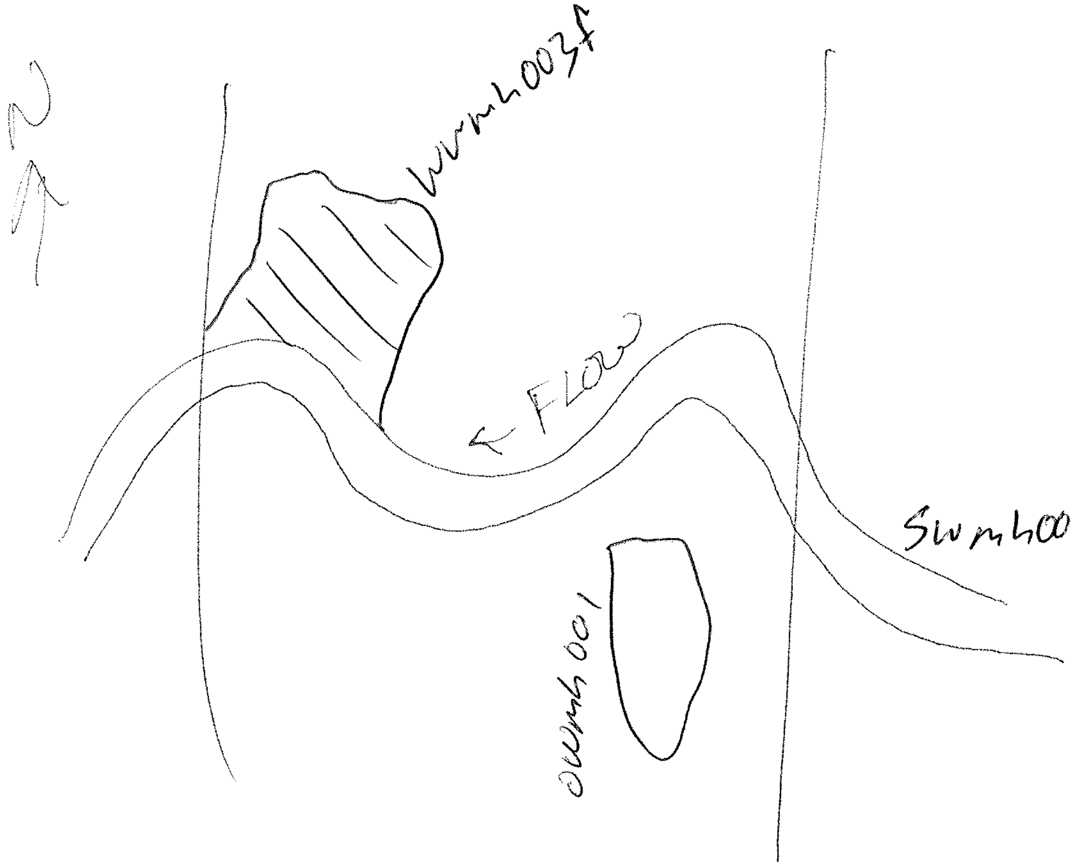
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh007

Waterbody swmh007 facing east upstream

Waterbody swmh007 facing west downstream

swmh007

Waterbody swmh007 facing upline cross stream

Open Waterbody Data Sheet

Survey Description

Project Name: DTI Supply Header	Waterbody Name: unnamed pond	Waterbody ID: OWMH001	Date: 11-13-14

State: PA	County: WESTMORELAND	Company: DDWEST	Crew Member Initials: JD, DB	Photos: 2

Tract Number(s): 35-231	Nearest Milepost: 1	Associated Wetland ID(s): WWMH003f_w

Survey Type: *(check one)* ☒Centerline ☐Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☐Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☒ Other: man-made

Hydrologic Regime: ☒ Permanently Flooded ☐ Semipermanently Flooded ☐ Seasonally Flooded ☐ Temporarily Flooded

OHWM Height: NA ft.

OHWM Indicator: *(check all that apply)* ☒Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☐Water staining ☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water: 2 ft. N/A☐

Bank height (average): 3 ft.

Bank slope (average): 30 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☒Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☒Sand ☒Silt/ clay ☐ Organic ☐ Other:

% of Substrate: ___% ___% ___% ___% 20% 80% ___% ___%

Width of Riparian Zone: 10 ft. N/A☐

Vegetative Layers: *(check all that apply)* ☒Trees: ☒Saplings/Shrubs: ☒Herbs

Avg. DBH of Dominants: *(approx.)* 15 in. ___ in. ___ in.

Dominant Bank Vegetation *(list)*:
Juglans nigra, Vernonia gigantea, Eleagnus umbellata, Dactylis glomerata

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.):
POOL

Aquatic Organisms Observed *(list)*:
small fish

T&E Species Observed *(list)*:
NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes):
NONE

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality [a]: *(check one)* ☐ High ☐ Moderate ☒ Low

Waterbody ID:
OWMH001

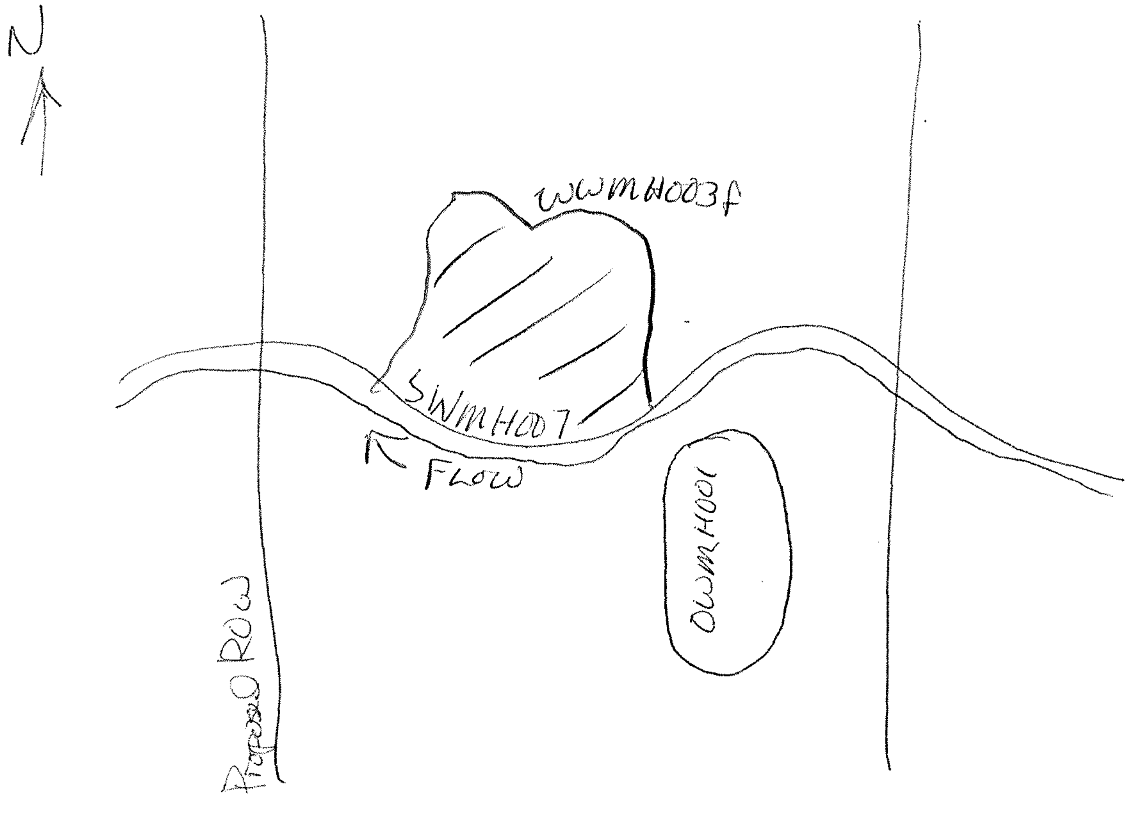
[a] **High Quality:** Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Waterbody Sketch (*Include north arrow, centerline, distance from centerline, data point locations, survey boundary, and IDs of associated features*)



owmh001

Waterbody owmh001 facing south

Waterbody owmh001 facing north

owmh001

Waterbody owmh001 facing east

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DT1 Supply Header	UNT TO STEELS CREEK	SWM4008	11-13-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-229, 230	1.2	1.2	NONE

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 2 ft.
Height: 4" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 3 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 1 ft.

Depth of Water at Centerline: *(Approx.)* 3" ft.

Sinuosity: *(check one)* [ ] Straight [X] Meandering

Water velocity: *(Approx.)* <1 fps

Bank height Right: 1 ft. Left: 1 ft.

Bank slope Right: 40 degrees Left: 40 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: *(check all that apply)* [ ] Bedrock [ ] Gravel [X] Sand [X] Silt/clay [X] Organic [ ] Other: ______

% of Substrate: ___ % ___ % 20 % 70 % 10 % ___ %

Width of Riparian Zone: ___ ft.

Vegetative Layers: *(check all that apply)* [X] Trees: [ ] Shrubs: [X] Herbs
Avg. DBH of Dominants: *(approx.)* 18 in. ___ in.

Dominant Bank Vegetation: *(list)* Acer rubrum

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Pools, leaf mats

Aquatic Organisms Observed: *(list)* NONE

Invasive and/or T&E Species Observed: *(list)* NONE

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [X] Livestock access [X] Manure in waterbody [ ] Waste discharge pipes [ ] Other: ______

Stream Quality[b]: *(check one)* [ ] High [ ] Moderate [X] Low

Waterbody ID:
SWMH008

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

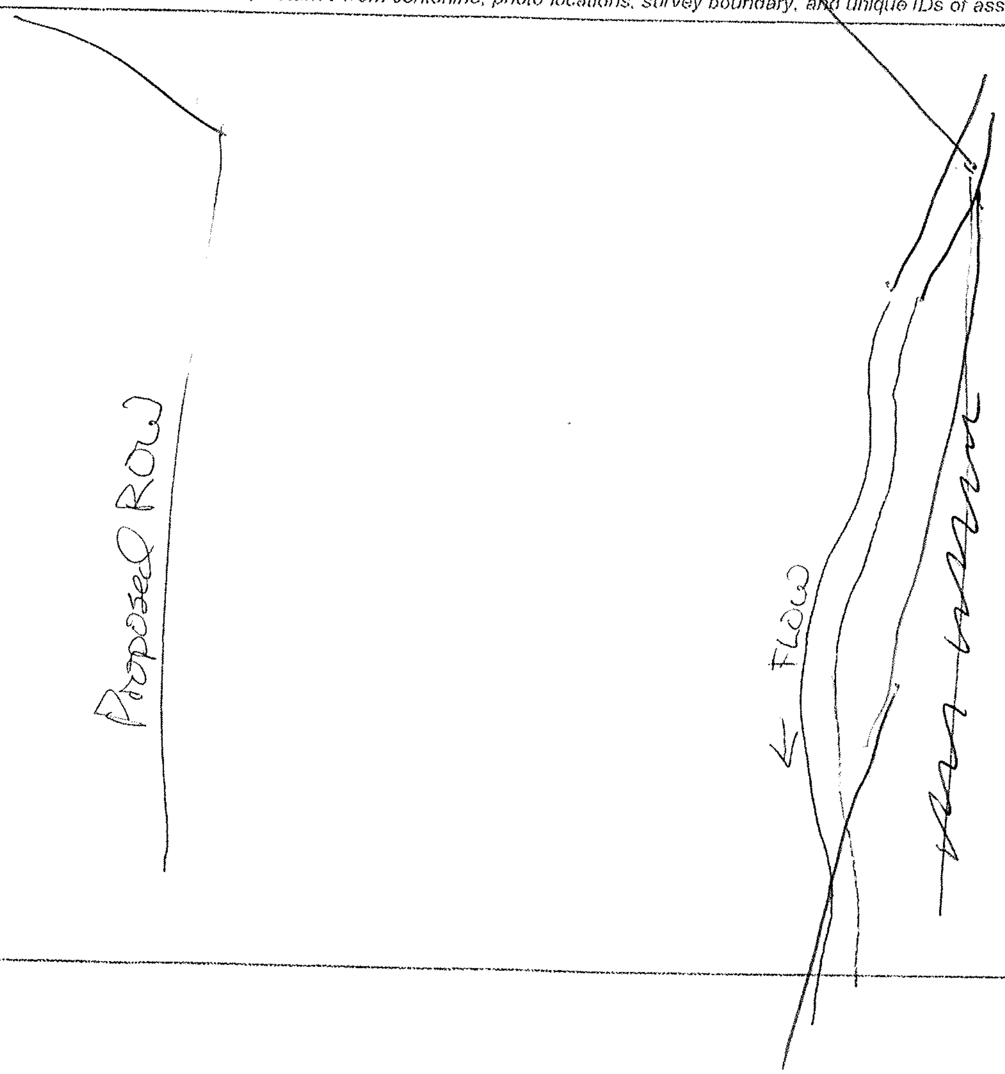
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh008

Waterbody swmh008 facing north upstream

Waterbody swmh008 facing south downstream

swmh008

Waterbody swmh008 facing east cross stream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO STEELS RUN	SWMH014	11-15-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-009, 020, 35-016.01 35-220, 221, 222, 223, 224, 225	0.5	1.0	WWMH009e_W + WWMH010f_W

Survey Type: (check one) [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: (check one) [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 4 ft.
Height: 4" ft.

OHWM Indicator: (check all that apply) [X] Clear line on bank [ ] Shelving [X] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 8 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 18" ft.

Depth of Water at Centerline: (Approx.) 1.5" ft.

Sinuosity: (check one) [ ] Straight [X] Meandering

Water velocity: (Approx.) <1 fps

Bank height
Right: ______ ft.
Left: ______ ft.

Bank slope
Right: ______ degrees
Left: ______ degrees

Qualitative Attributes

Water Appearance: (check one) [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: (check all that apply) [ ] Bedrock [ ] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate: ______ % ______ % 20 % 80 % ______ % ______ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: (check all that apply) [X] Trees: [X] Shrubs: [X] Herbs
Avg. DBH of Dominants: (approx.) ______ in. ______ in.

Dominant Bank Vegetation: (list) Juglans nigra, Rosa multiflora, Rubus leucodermis, Phalaris arundinacea

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) Pools

Aquatic Organisms Observed: (list) Small fish

Invasive and/or T&E Species Observed: (list) Rosa multiflora

Tributary Is: (check one) [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: (check all that apply) [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: MAINTAINED PASTURE ADJACENT

Stream Quality[b]: (check one) [ ] High [X] Moderate [ ] Low

Waterbody ID: SWMH014

[a] *Connecting swales* are water features that do *not* meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

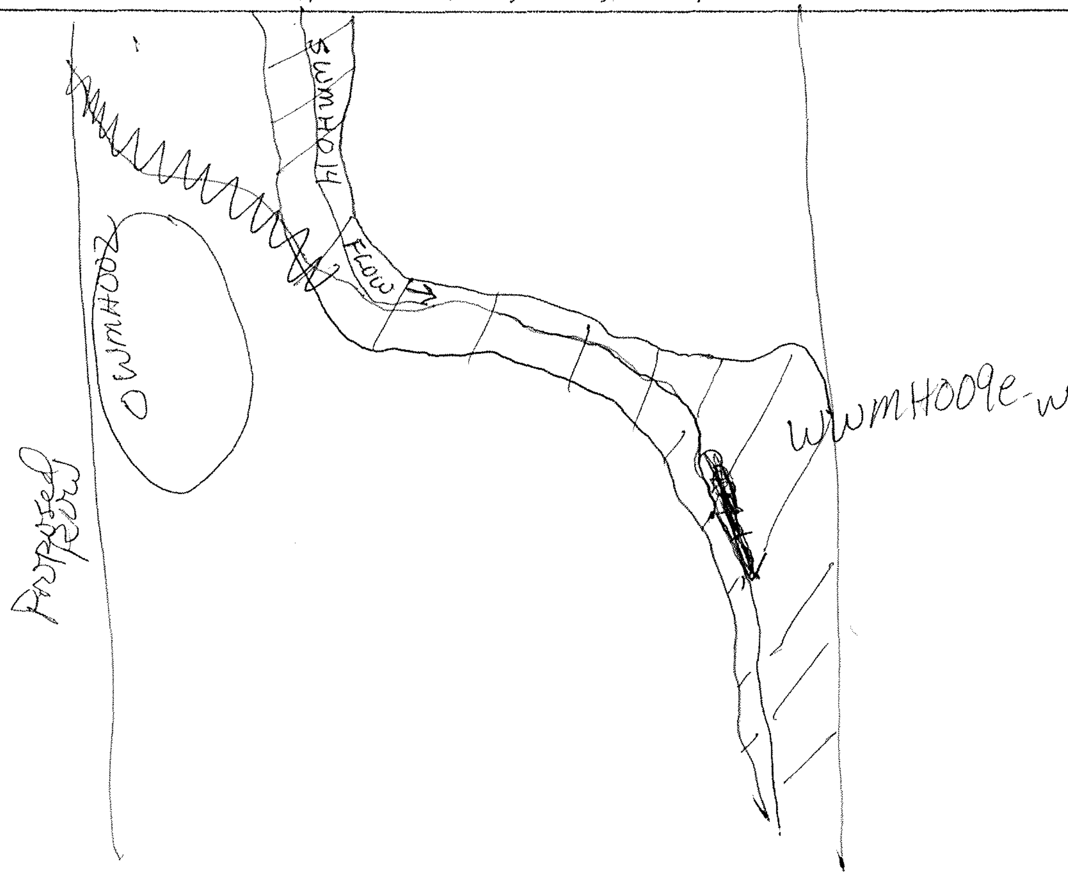
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



Form Rev. 2/21/2014

swmh014

Waterbody swmh014 facing upstream

Waterbody swmh014 facing downstream

swmh014

Waterbody swmh014 facing upline cross stream

Open Waterbody Data Sheet

Survey Description

Project Name: DTI Supply ~~Southeastern Reliability~~ Hender	Waterbody Name: UNKOWN	Waterbody ID: OWMH002	Date: 11-15-14
State: PA	County: Westmoreland	Company: DDWEST	Crew Member Initials: JD, DB
Photos: 3			
Tract Number(s): 35-223	Nearest Milepost: 1.0	Associated Wetland ID(s): ~~[illegible]~~ NONE	

Survey Type: *(check one)* ☒Centerline ☐Re-Route ☐Access Road ☐Other:

Physical Attributes

Waterbody Type: *(check one)* ☐Stock Pond ☐ Natural Pond ☐ Lake ☐ Reservoir ☐ Impoundment ☐ Oxbow ☒Other: MAN-made fish pond < 1/4 acre

Hydrologic Regime: ☒Permanently Flooded ☐ Semipermanently Flooded ☐ Seasonally Flooded ☐ Temporarily Flooded

OHWM Height: NA ft.

OHWM Indicator: *(check all that apply)* ☒Clear line on bank ☐Shelving ☐Wrested vegetation ☐Scouring ☐Water staining ☐Bent, matted, or missing vegetation ☐Wrack line ☐Litter and debris ☐Abrupt plant community change ☐Soil characteristic change

Depth of Water: UNKNOWN ft. N/A☐	Bank height (average): 2.5 ft.	Bank slope (average): 20 degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☒Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☐ Sand ☐ Silt/ clay ☐ Organic ☐ Other: UNKNOWN

% of Substrate: ____% ____% ____% ____% ____% ____% ____% ____%

Width of Riparian Zone: 0 ft. N/A☐

Vegetative Layers: *(check all that apply)* ☐ Trees: ☐ Saplings/Shrubs: ☒Herbs

Avg. DBH of Dominants: *(approx.)* ____in. ____in. ____in.

Dominant Bank Vegetation *(list)*: Juncus accuminatus, Juncus interior, Carex comosa, Aster pilosus

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools, etc.): Deep pool,

Aquatic Organisms Observed *(list)*: Fish

T&E Species Observed *(list)*: NONE

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes): Maintained pasture surrounding pond

Waterbody is: *(check one)* ☐ Natural ☒ Artificial, man-made ☐ Manipulated

Waterbody Quality [a]: *(check one)* ☐ High ~~☒Moderate~~ ☒Low

Form Rev. 04/30/2013

Waterbody ID:
OWMH002

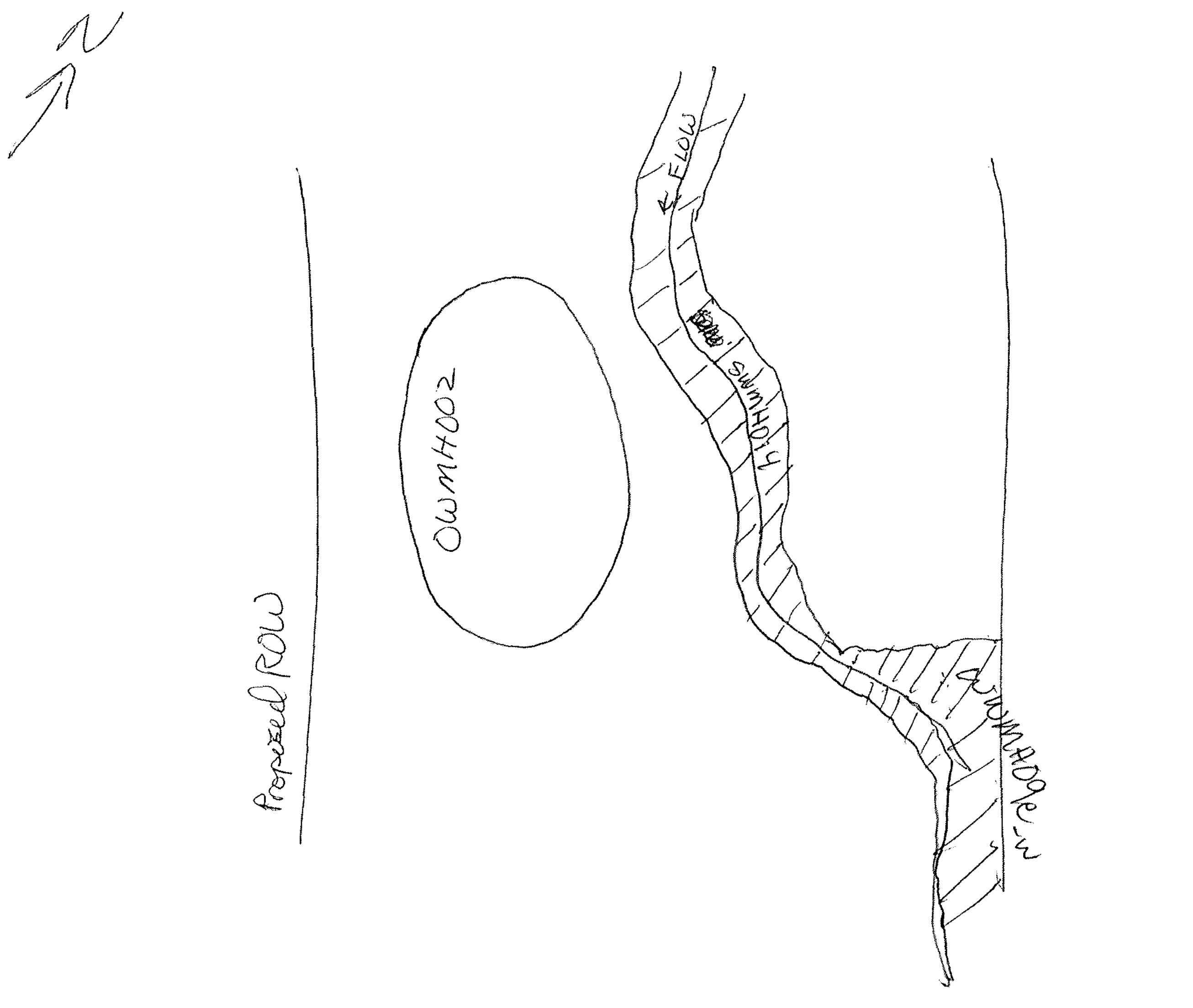
a **High Quality:** Natural, natural bank vegetation around entire waterbody; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or bank vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Waterbody Sketch (*Include north arrow, centerline, distance from centerline, data point locations, survey boundary, and IDs of associated features*)



owmh002

Waterbody owmh002 facing upstream

Waterbody owmh002 facing downstream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO STEELS RUN	SWMH016	5-14-15

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, JG	

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-009	3.25	3.25	NONE

Survey Type: *(check one)* [X] Centerline [X] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [X] Intermittent [ ] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM
Width: 2 ft.
Height: 4" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [X] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 4 ft.
Width of Waterbody - Water Edge to Water Edge at Centerline: 1 ft.
Depth of Water at Centerline: *(Approx.)* ______ ft.

Sinuosity: *(check one)* [ ] Straight [X] Meandering
Water velocity: *(Approx.)* <1 fps
Bank height Right: 2 ft. Left: 2 ft.
Bank slope Right: 90 degrees Left: 90 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: *(check all that apply)*

	Bedrock	Gravel	Sand	Silt/clay	Organic	Other:
Checked	[ ]	[X]	[X]	[X]	[ ]	[ ]
% of Substrate:	___ %	40 %	20 %	40 %	___ %	___ %

Width of Riparian Zone: >100 ft.
Vegetative Layers: *(check all that apply)* [X] Trees: [X] Shrubs: [X] Herbs
Avg. DBH of Dominants: *(approx.)* 8 in. ______ in.

Dominant Bank Vegetation: *(list)* Robinia pseudoacacia, Lindera benzoin, Senecio obovata, Eulalia viminea, Lonicer

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Riffles

Aquatic Organisms Observed: *(list)* small invertebrates

Invasive and/or T&E Species Observed: *(list)* Eulalia viminea, Lonicera

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: Logging

Stream Quality[b]: *(check one)* [ ] High [X] Moderate [ ] Low

Waterbody ID:

SWMH016

[a] *Connecting swales* are water features that *do not* meet the definition of a waterbody (*not* an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

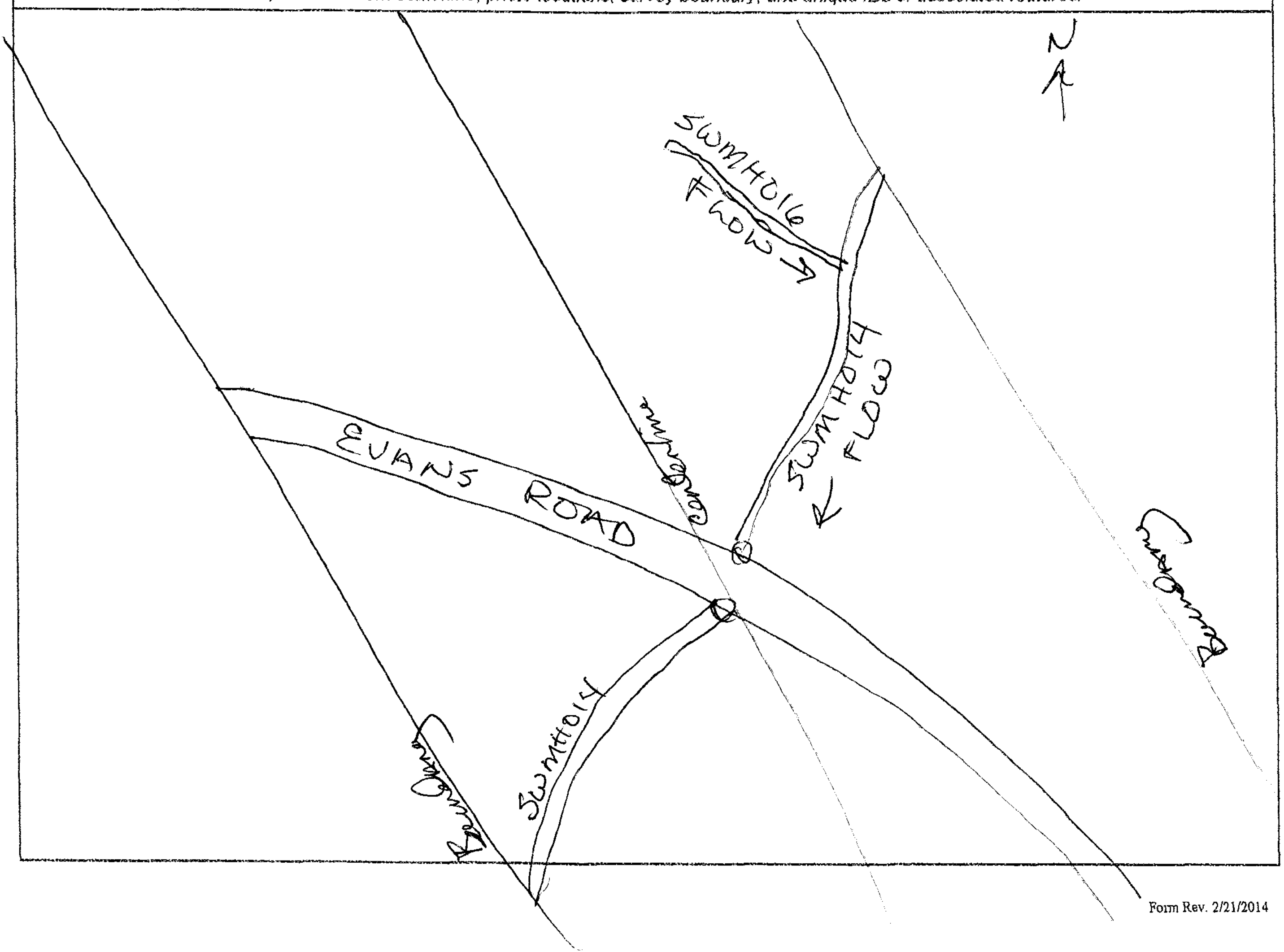
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh016

swmh016 facing upstream

swmh016 facing downstream

swmh016

swmh016 across

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO Haymakers Creek	SWMH015	11-14-15

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	JD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
35-077	0.2	0.2	WWMH010F_W

Survey Type: *(check one)* [X] Centerline [ ] Re-Route [ ] Access Road [ ] Other: ______

Physical Attributes

Stream Classification: *(check one)* [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: *(check one)* [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other: ______

OHWM Width: 5 ft. Height: 3" ft.

OHWM Indicator: *(check all that apply)* [X] Clear line on bank [ ] Shelving [X] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline:	Width of Waterbody - Water Edge to Water Edge at Centerline:	Depth of Water at Centerline: *(Approx.)*
8 ft.	3 ft.	1" ft.

Sinuosity: *(check one)*	Water velocity: *(Approx.)*	Bank height	Bank slope
[ ] Straight [X] Meandering	<1 fps	Right: 6" ft. Left: 1 ft.	Right: 10 degrees Left: 45 degrees

Qualitative Attributes

Water Appearance: *(check one)* [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other: ______

Substrate: *(check all that apply)* [X] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other: ______

% of Substrate: 30 % 30 % 10 % 30 % ___ % ___ %

Width of Riparian Zone: >100 ft.

Vegetative Layers: *(check all that apply)* [X] Trees: [X] Shrubs: [X] Herbs

Avg. DBH of Dominants: *(approx.)* 8 in. 1 in.

Dominant Bank Vegetation: *(list)* Ulmus americana, Acer rubrum, Microstegium vimineum, Onoclea sensibilis, Polygonum hydropiperoides.

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): *(list)* Riffle, pools, leaf packs,

Aquatic Organisms Observed: *(list)* NONE

Invasive and/or T&E Species Observed: *(list)* Microstegium vimineum

Tributary is: *(check one)* [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: *(check all that apply)* [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [ ] Other: ______

Stream Quality[b]: *(check one)* [ ] High [X] Moderate [ ] Low

Waterbody ID:
SWMH015

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

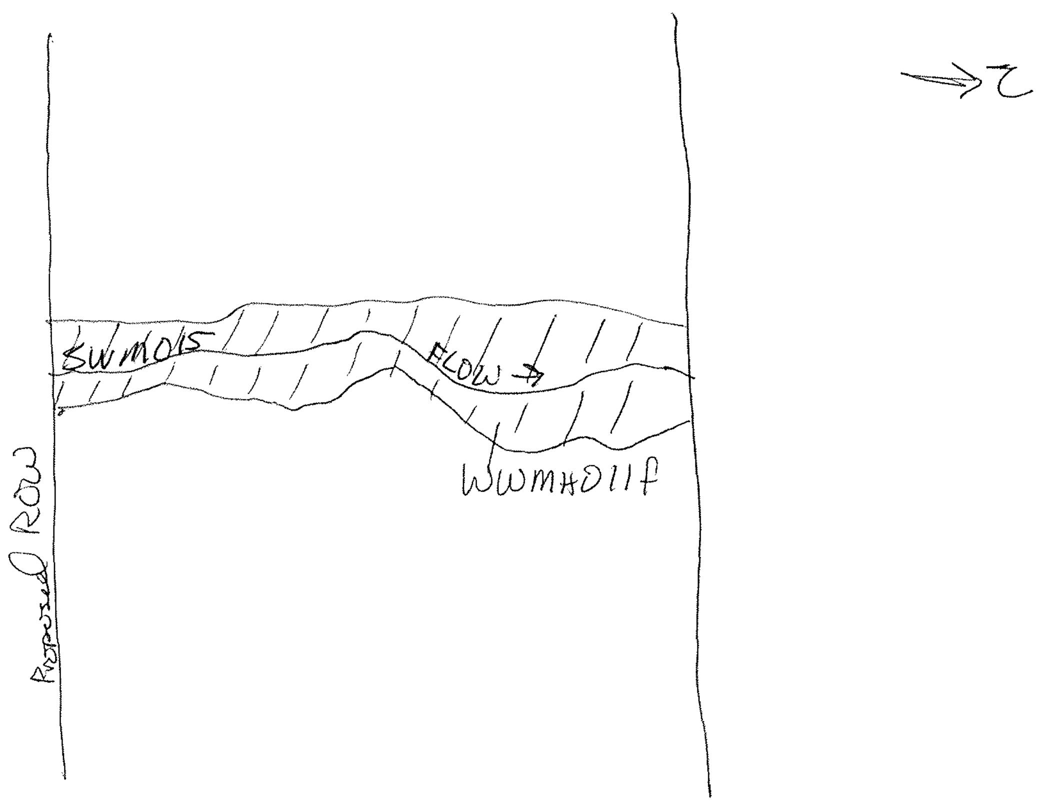
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh015

Waterbody swmh015 facing upstream

Waterbody swmh015 facing downstream

swmh015

Waterbody swmh015 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
DTI Supply Header	UNT TO HAYMAKERS RUN	SWMH011	11-14-14

State:	County:	Company:	Crew Member Initials:	Photo ID(s):
PA	Westmoreland	DDWEST	DD, DB	3

Tract Number(s):	Milepost Entry:	Milepost Exit:	Associated Wetland ID(s):
J. B Tonkin Compressor Station	—	—	NONE

Survey Type: (check one) [ ] Centerline [ ] Re-Route [ ] Access Road [X] Other: Compressor Station

Physical Attributes

Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: (check one) [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other:

OHWM
Width: 3 ft.
Height: 4" ft.

OHWM Indicator: (check all that apply)
[X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining
[X] Bent, matted, or missing vegetation [ ] Wrack line [ ] Litter and debris [ ] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 8 ft.
Width of Waterbody - Water Edge to Water Edge at Centerline: 1 ft.
Depth of Water at Centerline: (Approx.) 1" ft.

Sinuosity: (check one) [ ] Straight [X] Meandering
Water velocity: (Approx.) <1 fps
Bank height: Right: 4 ft. Left: 2 ft.
Bank slope: Right: 80 degrees Left: 30 degrees

Qualitative Attributes

Water Appearance: (check one) [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other:

Substrate: (check all that apply) [ ] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other:

% of Substrate: ___ % 30 % 10 % 60 % ___ % ___ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: (check all that apply) [ ] Trees: [ ] Shrubs: [X] Herbs
Avg. DBH of Dominants: (approx.) ___ in. ___ in.

Dominant Bank Vegetation: (list) Solidago altissima, Phalaris arundinacea, Vernonia gigantea

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) Riffle, pools

Aquatic Organisms Observed: (list) Small fish

Invasive and/or T&E Species Observed: (list) NONE

Tributary is: (check one) [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: (check all that apply) [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: maintained lawn adjacent

Stream Quality[b]: (check one) [ ] High [X] Moderate [ ] Low

Waterbody ID:
SWMH011

[a] *Connecting swales* are water features that do *not* meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

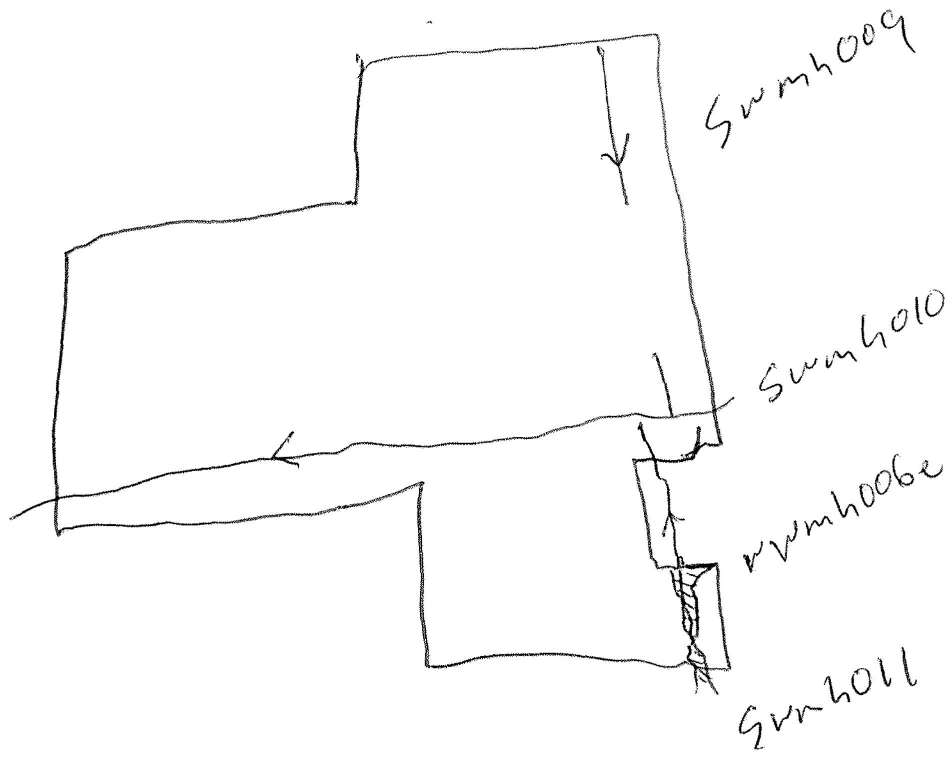
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh011

Waterbody swmh011 facing upstream

Waterbody swmh011 facing downstream

swmh011

Waterbody swmh011 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name: DTI Supply Header	Waterbody Name: Haymakers Run	Waterbody ID: SWMH010	Date: 11-14-14
State: PA	County: Westmoreland	Company: DD West	Crew Member Initials: JD, DB
Photo ID(s): 3			
Tract Number(s): J. B. Tonkin Compressor Station	Milepost Entry: —	Milepost Exit: —	Associated Wetland ID(s): NONE

Survey Type: (check one) ☐ Centerline ☐ Re-Route ☐ Access Road ☒ Other: Compressor station

Physical Attributes

Stream Classification: (check one) ☐ Ephemeral ☐ Intermittent ☒ Perennial

Waterbody Type: (check one) ☒ Stream ☐ River ☐ Ditch ☐ Pond ☐ Lake ☐ Connecting swale [a] ☐ Other:

OHWM
Width: 9 ft.
Height: 4 ft.

OHWM Indicator: (check all that apply) ☒ Clear line on bank ☒ Shelving ☒ Wrested vegetation ☐ Scouring ☐ Water staining ☒ Bent, matted, or missing vegetation ☐ Wrack line ☐ Litter and debris ☐ Abrupt plant community change ☐ Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 15 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 2 ft.

Depth of Water at Centerline: (Approx.) 1" ft.

Sinuosity: (check one) ☐ Straight ☒ Meandering

Water velocity: (Approx.) <1 fps

Bank height: Right: 2 ft. Left: 4 ft.

Bank slope: Right: 30 degrees Left: 70 degrees

Qualitative Attributes

Water Appearance: (check one) ☐ No water ☒ Clear ☐ Turbid ☐ Sheen on surface ☐ Surface scum ☐ Algal mats ☐ Other:

Substrate: (check all that apply) ☐ Bedrock ☒ Gravel ☒ Sand ☒ Silt/clay ☐ Organic ☐ Other:

% of Substrate: ___ % 60 % 10 % 30 % ___ % ___ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: (check all that apply) ☒ Trees: ☒ Shrubs: ☒ Herbs
Avg. DBH of Dominants: (approx.) 10 in. 1 in.

Dominant Bank Vegetation: (list) Liriodendron tulipifera, Rosa multiflora

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) Riffle, pools, leaf packs, overhanging vegetation

Aquatic Organisms Observed: (list) small fish

Invasive and/or T&E Species Observed: (list) Rosa multiflora

Tributary is: (check one) ☒ Natural ☐ Artificial, man-made ☐ Manipulated

Disturbances: (check all that apply) ☐ Livestock access ☐ Manure in waterbody ☐ Waste discharge pipes ☒ Other: Maintained lawn

Stream Quality[b]: (check one) ☐ High ☒ Moderate ☐ Low

8'

Waterbody ID: SWMH010

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

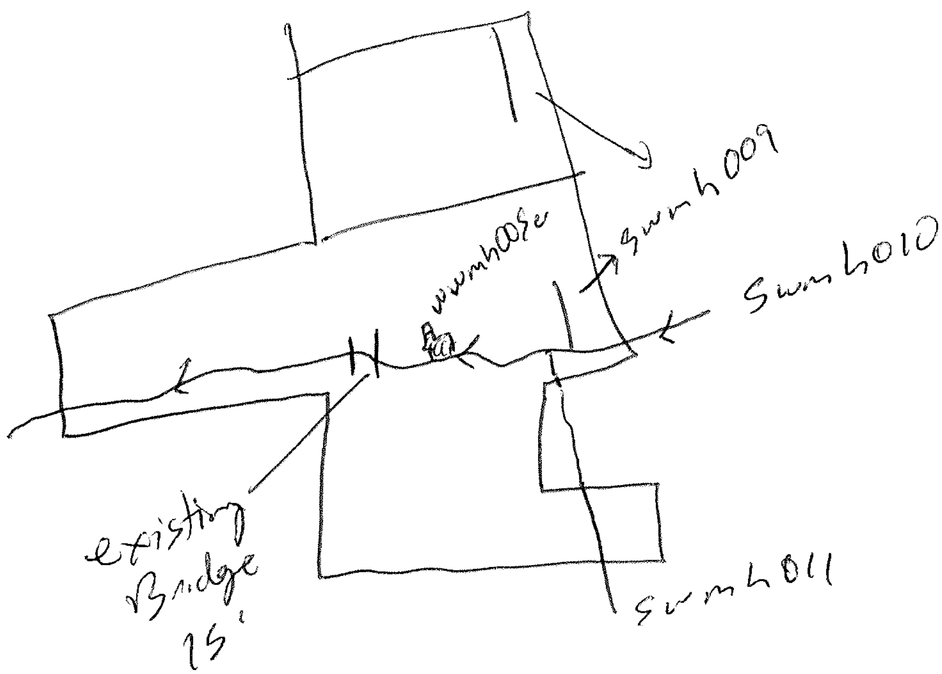
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh010

Waterbody swmh010 facing upstream

Waterbody swmh010 facing downstream

swmh010

Waterbody swmh010 facing upline cross stream

Waterbody Data Sheet

Survey Description

Project Name: ATI Supply Header

Waterbody Name: UNT TO Haymakers Run

Waterbody ID: SWMH009

Date: 11-14-14

State: PA

County: Westmoreland

Company: DDWEST

Crew Member Initials: JD, DB

Photo ID(s): 3

Tract Number(s): Compressor STATION J.B. Tonkin

Milepost Entry: —

Milepost Exit: —

Associated Wetland ID(s): WWMH004e

Survey Type: (check one) [X] Centerline [ ] Re-Route [ ] Access Road [X] Other: COMPOSSOR STATION

Physical Attributes

Stream Classification: (check one) [ ] Ephemeral [ ] Intermittent [X] Perennial

Waterbody Type: (check one) [X] Stream [ ] River [ ] Ditch [ ] Pond [ ] Lake [ ] Connecting swale [a] [ ] Other:

OHWM
Width: 8 ft.
Height: 1 ft.

OHWM Indicator: (check all that apply) [X] Clear line on bank [ ] Shelving [ ] Wrested vegetation [ ] Scouring [ ] Water staining [X] Bent, matted, or missing vegetation [X] Wrack line [ ] Litter and debris [X] Abrupt plant community change [ ] Soil characteristic change

Width of Waterbody - Top of Bank to Top of Bank at Centerline: 20 ft.

Width of Waterbody - Water Edge to Water Edge at Centerline: 3 ft.

Depth of Water at Centerline: (Approx.) 2" ft.

Sinuosity: (check one) [ ] Straight [X] Meandering

Water velocity: (Approx.) 1 fps

Bank height
Right: 5 ft.
Left: 6 ft.

Bank slope
Right: 80 degrees
Left: 40 degrees

Qualitative Attributes

Water Appearance: (check one) [ ] No water [X] Clear [ ] Turbid [ ] Sheen on surface [ ] Surface scum [ ] Algal mats [ ] Other:

Substrate: (check all that apply) [X] Bedrock [X] Gravel [X] Sand [X] Silt/clay [ ] Organic [ ] Other:

% of Substrate: 10 % 50 % 10 % 30 % ___ % ___ %

Width of Riparian Zone: 10 ft.

Vegetative Layers: (check all that apply) [X] Trees: [X] Shrubs: [X] Herbs

Avg. DBH of Dominants: (approx.) 8 in. 1 in.

Dominant Bank Vegetation: (list) Carya glabra, Carya ovata, Salix nigra, Rosa multiflora, Rubus Leucodermis

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools): (list) Riffle, pools, over hanging roots

Aquatic Organisms Observed: (list) NONE

Invasive and/or T&E Species Observed: (list) Rosa multiflora

Tributary is: (check one) [X] Natural [ ] Artificial, man-made [ ] Manipulated

Disturbances: (check all that apply) [ ] Livestock access [ ] Manure in waterbody [ ] Waste discharge pipes [X] Other: Vegetation

Stream Quality[b]: (check one) [ ] High [X] Moderate [ ] Low

Waterbody ID:
SWMH009

[a] *Connecting swales* are water features that do not meet the definition of a waterbody (not an ephemeral waterbody) in that there is not a defined bed, bank, and ordinary high water mark, however, it is a water conveyance feature that is characterized by flow volume, frequency, and duration to make it more than just an erosional feature and connects two potential waters of the U.S. and thereby may be subject to Section 404 permitting.

[b] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

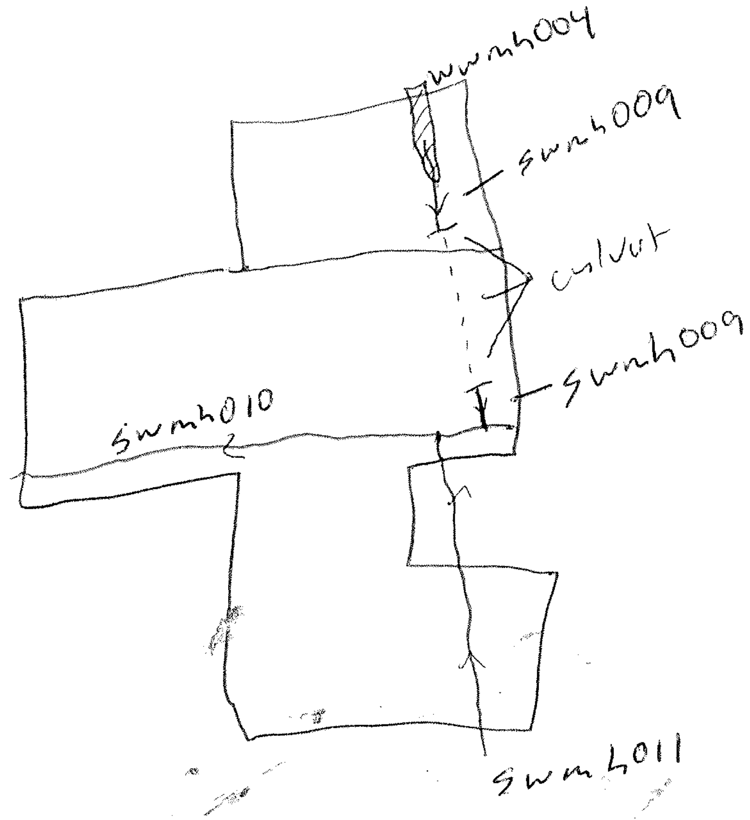
Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes

Waterbody Sketch

Include north arrow, centerline, distance from centerline, photo locations, survey boundary, and unique IDs of associated features.



swmh009

Waterbody swmh009 facing upstream

Waterbody swmh009 facing downstream

swmh009

Waterbody swmh009 facing upline cross stream

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX D –PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) CLEAN FILL CERTIFICATION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

FORM FP-001 - CERTIFICATION OF CLEAN FILL

Prior to completing this form and signing this certification, please review the entire Management of Fill policy (#258-2182-773), including the certification requirements. Please note that historic fill, as defined in the Management of Fill policy, may meet the definition of clean fill if the material is limited to uncontaminated soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such.

Instructions: Sections 1 and 2 of this form must be completed by the person making the determination of clean fill at the site of origin. Section 3 must be completed by the person using the material as clean fill. Both the person determining clean fill and the user of the clean fill are responsible for maintaining copies of this completed form on site for a period of five (5) years for Department inspection.

Section 1: Person Determining Clean Fill

Name (Print): ______________ Title: ______________ Date: ______

Company Name: ______________________________

Street Address: ______________ City: __________ State: ____ Zip Code: ______

Telephone Number: ______________ E-mail Address: ______________

Clean Fill Material originated on the following property:

Site Name: ______________________________

Street Address: ______________ City: __________ State: ____ Zip Code: ______

Section 2: Site Characterization

Check the following that applies:

☐ **A. IF the site of origin for the fill material has undergone or is undergoing cleanup or remediation pursuant to a local state or federal regulatory program that requires site characterization, provide the following information along with a copy of the entire site characterization and laboratory analysis for the material to be used as clean fill.**

Name of local, state, or federal agency: ______________________

Identification number assigned to the project: ______________________

Name of the local, state, or federal contact person: ______________________

Telephone Number: ______________ E-mail Address: ______________

Name of the Laboratory that conducted the analysis: ______________________

Laboratory Accreditation Number: ______________________

☐ **B. IF the material proposed to be used as clean fill has otherwise been subject to analytical testing or other procedure identified in the definition of "environmental due diligence" contained in the Management of Fill policy, provide or attach the following:**

Copies of **ALL** lab analytical testing performed as part of environmental due diligence (see Management of Fill policy, #258-2182-773).

Name of the Laboratory that conducted the analysis: ______________________

Laboratory Accreditation Number: ______________________

☐ **C. IF the proposed material to be used as clean fill was subject to environmental due diligence procedures as defined in the Management of Fill policy other than those listed in A and B, describe those procedures.**

____

____

I, the undersigned, certify under penalty of law (18 Pa. C.S.A. §4904) that the information provided in Sections 1 and 2 of this form is true and correct to the best of my knowledge, information and belief.

Signature: ____

Section 3: Person Receiving or Placing Clean Fill

Name and address of person completing this form:

Name (Print): ______________________________ Date: ____________________

Mailing Address: ____________________ City: ________________ State: ______ Zip Code: ________

Telephone Number: ______________________ E-mail Address: ______________________

Fill material that has been determined to be clean fill will be placed on the following property solely for property improvement or construction purposes:

Property Address: ____________________ City: ____________ State: ______ Zip Code: __________

Current Owner of Property: ____

Telephone Number: ____________________ E-mail Address: ________________________

The quantity of clean fill to be placed on the property is:

☐ <3,000 cubic yards ☐ 3,000 cubic yards to 20,000 cubic yards ☐ >20,000 cubic yards

I, the undersigned, certify under penalty of law (18 Pa. C.S.A. §4904) that the information provided is true and correct to the best of my knowledge, information and belief.

Signature: ____

*** * * * ***

Prior to placement of the clean fill, the owner of the property receiving fill material shall provide a copy of this completed form and attachments to the DEP Regional Office serving the county in which the receiving site is located. If a property receives fill from multiple sources, a separate Form FP-001 is required for each source.

DOMINION TRANSMISSION, INC.

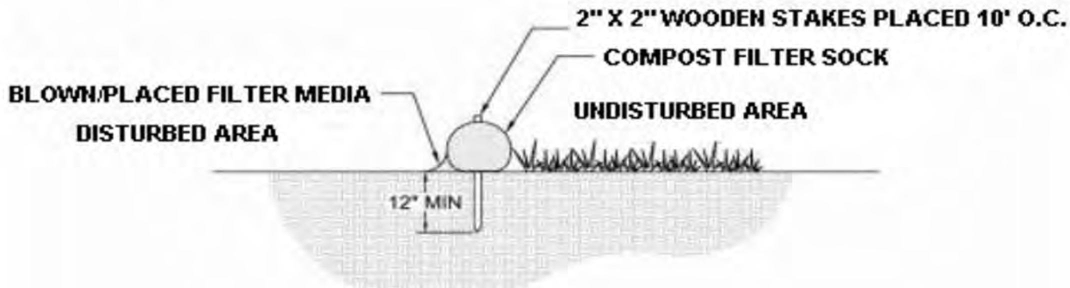
SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX E – EROSION & SEDIMENT CONTROL DESIGN CALCULATIONS

STANDARD E&S WORKSHEET #1
Compost Filter Socks

PROJECT NAME: Supply Header Project
LOCATION: Murrysville, PA
PREPARED BY: Danielle Trefz DATE: 3/23/17
CHECKED BY: Stephen Lindsay DATE: 3/23/17



Barrier #	Design Diameter	Location	Slope %	Slope Length (ft)
2.01	12 in	South side of SWMH001	7%	46
2.02	24 in or equivalent	North side of SWMH001	30%	100
2.03	12 in	Barland Farm Road Crossing	12%	85
2.04	12 in	Access Road 35-255-AR01	13%	80
2.05	12 in	Station 16+75	10%	78
2.06	12 in	Station 19+00 to 24+00	4%	238
2.07	12 in	Station 26+00	8%	150
2.08	12 in	East side of SWMH003	7%	191
2.09	24 in or equivalent	West side of SWMH003	23%	156
2.10	24 in or equivalent	Station 37+25 to 41+50	30%	100
2.11	12 in	Italy Road crossing	2%	250
2.12	12 in	Access Road 35-250-AR01	7%	150
3.01	18 in or equivalent	Station 57+00 to 59+00	19%	150
3.02	24 in or equivalent	Surrounding Wetland WWMH002E	30%	100
3.03	12 in	Station 64+00 to 68+00	18%	80
3.04	12 in	Access Road 35-245-AR01	2%	114
3.05	12 in	South side of SWMH005	6%	157
3.06	12 in	North side of SWMH005	3%	124
3.07	12 in	Kemerer Hollow Road crossing	12%	120
3.08	12 in	Station 78+25 to 81+00	8%	150
3.09	18 in or equivalent	Station 83+25 to 85+50	20%	150
3.10	18 in or equivalent	South Side of SWMH012	20%	150
3.11	18 in or equivalent	North side of SWMH012	20%	130
3.12	24 in or equivalent	Station 96+00	27%	110
3.13	18 in or equivalent	Station 97+00 to 100+00	15%	160
3.14	32 in or equivalent	Southeast side of SWMH013	46%	70
3.15	12 in	Northwest side of SWMH013	0%	180
3.16	18 in or equivalent	North side of Wetland WWMH007E	24%	143
3.17	18 in or equivalent	Station 109+00	17%	70
4.01	24 in or equivalent	Station 114+50 to 119+00	28%	100
4.02	18 in or equivalent	Southeast side of SWMH006	10%	230
4.03	12 in	Northwest side of SWMH006	10%	100
4.04	12 in	Southeast side of SWMH006	3%	316
4.05	18 in or equivalent	Northwest side of SWMH007	11%	150
4.06	12 in	Impoundment Area	5%	204
4.07	12 in	Station 140+00 to 144+00	3%	186
4.08	18 in or equivalent	Westertown Road Crossing	7%	268
4.09	12 in	Surrounding Wetland WWMH008E	3%	322
4.10	12 in	South side of SWMH014	8%	124
4.11	12 in	North side of SWMH014	3%	130
4.12	18 in or equivalent	Station 158+75 to 167+00	21%	126
4.13	12 in	Access Road 35-230-AR01	5%	230
5.01	18 in or equivalent	Station 167+00 to SWMH014	12%	164
5.02	18 in or equivalent	West side of SWMH014	11%	147
5.03	18 in or equivalent	Evans Road Crossing	10%	161
5.04	24 in or equivalent	Station 176+50 to 180+00	28%	108

5.05	18 in or equivalent	Station 181+00 to 187+00	20%	140
5.06	18 in or equivalent	Station 188+50 to 191+00	19%	115
5.07	18 in or equivalent	East side of SWMH015	20%	88
5.08	18 in or equivalent	West side of SWMH015	34%	70
5.09	12 in	Station 194+00 to 199+25	11%	122
5.10	12 in	Station 199+25	12%	115
5.11	18 in or equivalent	East side of SWMH001	12%	175
5.12	18 in or equivalent	West side of SWMH001	13%	150
6.01	18 in or equivalent	Access Road 35-257-AR01	9%	180
6.02	12 in	Access Road 35-255-AR02	7%	92
6.03	12 in	Access Road 35-255-AR02	7%	150
8.01	18 in or equivalent	Access Road 35-234-AR01	16%	124
T.01	32 in or equivalent	North of Haymakers Run	8%	400
T.02	18 in or equivalent	South of Haymakers Run	7%	275
T.03	18 in or equivalent	Surrounding a tributary north of Haymakers Run	7%	275
T.04	32 in or equivalent	North of Mamont Road	29%	112
T.05	32 in or equivalent	Surrounding a tributary to Haymakers Run North of Mamont Road	32%	100
L.01	32 in or equivalent	North edge of the site	19%	175

Notes:

1. Per a PaDEP document, when large diameter socks are needed to meet slope length requirements, socks may be stacked in pyramid fashion to reach equivalent sock heights. This stacked configuration is included in the phrase "or equivalent" written above.
2. Three 12" socks = one 18" sock
3. Three 18" socks = one 24" sock
4. Three 24 socks = one 32" sock

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX F – PADEP VISUAL SITE INSPECTION REPORT FORM

3150-FM-BWEW0083 2/2012

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERWAYS ENGINEERING AND WETLANDS

VISUAL SITE INSPECTION REPORT

Note: It is a condition of National Pollutant Discharge Elimination System and Erosion and Sediment permits that a maintenance program be conducted to provide for the operation and maintenance of all BMPs to be inspected on a weekly basis and after each stormwater event. Please list in the space provided comments to note if repairs or replacement are needed or have been made for BMPs as a result of the inspection. Failure to conduct the required inspection may result in permit suspension or the imposition of civil penalties. If supplemental monitoring is required as part of a permit condition this form may be used to meet those monitoring requirements.

Project Site Name: ________________________ Date: ____________ Inspection #: __________

Time: ______________ Weather: ______________________________________

Permit #: ____________________ Photos Taken: Yes ☐ No ☐

Inspector/Title: ____

Municipality(s): ____

County(s): ____

Inspection Type (check one): Weekly ☐ Stormwater Event ☐

		Y	N
1.	Are the approved (Stamped) E & S plan and PCSM plan present on site?	☐	☐
2.	Are there activities occurring outside of the limits of disturbance shown on the plan drawings? (If yes, notify conservation district and explain.)	☐	☐

____

____

		Y	N
3.	Is Construction Sequence being followed? (If No, notify conservation district and explain.)	☐	☐

____

____

4. E & S BMPs (List BMPs and note if installed and maintained as per the plan.)

	Y	N		Y	N
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐
____________	☐	☐	____________	☐	☐

Were repairs/maintenance/replacement BMPs necessary (if so, describe): ____________________

____

____

____

5. **Site Conditions** — **Y** / **N**
   - Sediment Discharge is occurring to waters or wetlands from earth disturbance activity? ☐ ☐
   - **Stabilization** of inactive disturbed areas, stockpiles, or at final grade? (exceeding 4 days inactive) ☐ ☐
   - Are slopes 3:1 and greater stabilized with appropriate BMPs? ☐ ☐

6. **PCSM BMPs**
   - **Are areas intended for PCSM BMPs being protected from compaction?** ☐ ☐
   - **PCSM BMPs (List BMPs and note if installed and maintained as per the plan.)**

BMP	Y	N	BMP	Y	N
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐
________	☐	☐	________	☐	☐

   Were repairs/maintenance/replacement BMPs necessary (if so, describe): ____________________

   ____

   ____

   ____

7. **Department/Conservation District has been notified within 24 hours of non-compliance, including discharge to waters or wetlands?** ☐ ☐

8. **Identify all remedial measures that have been taken or will be taken on this site.**

   ____

   ____

   ____

   ____

Inspector's Signature: ______________________ Date: ______________

Company Name: ____

Attach additional sheets for comments/repairs/remedial measures if necessary.

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 4 – EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX G – TRAINING RECORD

Training Record
Storm Water, Sediment, and Erosion Control Training

Project Name: ______________________

Instructor's Name: ______________________

Location: ______________________

Date: ______________________

Length: ______________________

Topics:

- ☐ Erosion Control BMPs
- ☐ Sediment Control BMPs
- ☐ Non-Storm Water BMPs
- ☐ Emergency Procedures
- ☐ Good Housekeeping BMPs
- ☐ SWPPP Provisions
- ☐ Conducting Inspections
- ☐ Turbidity Monitoring
- ☐ Other (Specify): ______________________

Attendee Roster: (attach additional pages as necessary)

Name of Attendee	Company/Agency

Inspector's Signature: ______________________

Title: ______________________

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 5 – POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN/SITE RESTORATION (PCSM/SR) PLAN

- Post-Construction Stormwater Management /Site Restoration Plan
- PCSM/SR Plan Drawings
- Stormwater Runoff Calculations
- Drainage Area Maps
- Infiltration Testing Results
- PCSM Inspection Form

DOMINION TRANSMISSION, INC.

SUPPLY HEADER PROJECT

SECTION 5 – POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN/SITE RESTORATION (PCSM/SR) PLAN

POST-CONSTRUCTION STORMWATER MANAGEMENT /SITE RESTORATION PLAN NARRATIVE

Site Restoration/Post-Construction Stormwater Management Plan

Dominion Transmission, Inc.
Supply Header Project
Murrysville and Salem Township,
Westmoreland County, Pennsylvania

March 31, 2017

Submitted By: Dominion Transmission, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060
(804) 335-4923

Prepared By: Environmental Resources Management, Inc.
15 Park Row West
Suite 104
Providence, RI 02903
(401) 278-4308

Dominion℠

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF DEFINITIONS

ABACT	antidegredation best available combination of technologies
BMP	best management practice
CFR	Code of Federal Regulations
DTI	Dominion Transmission, Inc.
E&SCP	Erosion and Sediment Control Plan
EPA	U.S. Environmental Protection Agency
ERM	Environmental Resources Management, Inc.
ESCGP-2	Erosion and Sediment Control General Permit
FERC	Federal Energy Regulatory Commission
HQ-CWF	High Quality Watershed-Cold Water Fishes
LOD	limit of disturbance
MP	milepost
NRCS	Natural Resources Conservation Service
NOT	Notice of Termination
NRCS	Natural Resources Conservation Service
P.S.	Pennsylvania Statutes
Pa. Code	Pennsylvania Code
PADEP	Pennsylvania Department of Environmental Protection
PaGEODE	Pennsylvania Geologic Data Exploration web-mapping application
PFBC	Pennsylvania Fish and Boat Commission
Project	Supply Header Project
SCS	Soil Conservation Service
SR/PCSM Plan	Site Restoration/Post-Construction Stormwater Management Plan
SSURGO database	Soil Survey Geographic database
TL-636	TL-636 Pipeline Loop
TMDL	total maximum daily load
UNT	unnamed tributary
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

This Site Restoration/Post-Construction Stormwater Management Plan (SR/PCSM Plan) has been developed to maximize replication of the natural hydrologic cycle, protect the structural integrity of receiving waters, and to protect and maintain existing and designated uses of the Commonwealth waters. The Plan consists of this written narrative and the attached appendices including plan drawings and design calculations. It was developed to be in accordance with the requirements of Title 25 Pennsylvania Code (Pa. Code) Chapters 102, as well as the Clean Streams Law (Title 35 Pennsylvania Statutes [P.S.] Section 691.1001), as amended, utilizing guidelines and best management practices (BMP) information provided in the Pennsylvania Stormwater Best Management Practices Manual. This SR/PCSM Plan complements the Erosion and Sediment Control Plan (E&SCP) prepared for this Project and was planned and designed to be consistent with the E&SCP under Pa. Code § 102.4(b). An up-to-date copy of this SR/PCSM Plan (including this narrative and appendices) shall be maintained and available at the Project site during all stages of earth disturbance activity.

This SR/PCSM Plan was prepared by Environmental Resources Management, Inc. (ERM) personnel, under the direct supervision of a Pennsylvania licensed Professional Engineer trained and experienced in stormwater management design methods and techniques applicable to the size and scope of the proposed Project. The SR/PCSM Plan has been designed to minimize the threat to human health, safety and the environment to the greatest extent practicable. Staff involved in preparation of the SR/PCSM Plan have attended a Pennsylvania Department of Environmental Protection (PADEP)-sponsored oil and gas industry training class for erosion and sediment control and stormwater management for oil and gas activities.

1.0 PROJECT OVERVIEW

Dominion Transmission, Inc. (DTI) is proposing to construct and operate approximately 37.5 miles of pipeline loop and modify existing compression facilities in Pennsylvania and West Virginia, known as the Supply Header Project (Project). The Project will enable DTI to provide firm transportation service to various customers, including Atlantic Coast Pipeline, LLC, which is proposing to construct the Atlantic Coast Pipeline. DTI has hired ERM as the primary environmental consultant for the Project. ERM is assisting DTI with construction planning, environmental surveys, and acquisition of environmental permits necessary for the Project. The overall Project is being reviewed and authorized through the Federal Energy Regulatory Commission (FERC), Docket No. CP15-555-000.

The Pennsylvania segment of the Project includes 3.9 miles of 30-inch-diameter natural gas pipeline loop (TL-636) adjacent to DTI’s existing LN-25 pipeline in Westmoreland County and modifications at DTI’s existing JB Tonkin Compressor Station in Westmoreland County. The Project will utilize temporary contractor yards in Salem Township, Westmoreland County.

The typical construction right-of-way for the TL-636 loop will be 100 feet wide in non-agricultural upland areas and 125 feet wide in agricultural areas, where full width topsoil segregation will be implemented. In accordance with the FERC Wetland and Waterbody Construction and Mitigation Procedures (Procedures), the width of the construction right-of-way will be reduced to 75 feet in wetlands. In addition to the construction right-of-way, additional temporary workspace will be required to stage construction activities and store equipment, materials, and temporary side cast at wetland, waterbody, and road crossings. Following construction, a 50-foot-wide permanent easement will be maintained for operation of the pipeline. A 30-foot-wide permanent easement will be maintained for permanent access roads.

In Westmoreland County, modifications at the JB Tonkin Compressor Station will include the addition of one new gas-driven turbine which will provide 20,500 horsepower of additional compression. The modifications will include one new compressor building and additional auxiliary structures within the existing and new chain-link security fenced-in site. Equipment at the station will include gas filter/separators, gas coolers, inlet air filters, exhaust silencers, tanks, blowdown silencers, heaters, and auxiliary generators. Workspace outside the existing fence line will be required for construction activities such as welding, coating, and storing construction materials, as well as activities associated with the new pipeline interconnects. With the exception of valves and other aboveground facilities that will be installed at the pipeline interconnects, these areas will be restored to pre-construction conditions. The proposed improvements at the JB Tonkin Compressor Station will include conversion of currently vegetated surfaces to gravel and rooftop, resulting in the addition of 0.27 acre of impervious area.

In addition, DTI will install valves and pig launcher/receiver facilities at each end of the pipeline loop. The valves, which will allow DTI to segment the pipelines for safety, operations, and maintenance purposes, will be installed below grade with aboveground valve operators, risers, blowdown valves, and crossover piping connected on each side of the valve. The pig launchers/receivers will be used to run pipeline inspection tools, called pigs, through the pipeline system. The Project includes the addition of 18 permanent access roads with 7 new access roads and the use and modification of 9 existing access roads for the construction and operation of the Project. DTI anticipates that construction in Pennsylvania will be complete and placed in service by fall 2019.

The Project location is shown on the U.S. Geological Survey (USGS) Quad included in Section 3 of the Erosion and Sediment Control General Permit (ESCGP-2) permit application package. In addition, this SR/PCSM includes drawings that show the location and limit of construction activities described above in Appendix A. The proposed construction activities are expected to disturb approximately 75.49 acres within the 82.49-acre construction site. All construction activities will occur within the limit of disturbance (LOD) delineated on the Project plans.

2.0 EXISTING CONDITIONS

The E&SCP drawings included in the Appendix A of the E&SCP and the SR/PCSM drawings in Appendix A of this plan depict the relevant existing site features. The existing features include the topography of the Project site and the surrounding area, mapped soil boundaries, municipal and county boundaries, known property, easement and right-of-way boundaries, roadways, streams, watercourses, existing structures, existing ground cover (including tree lines and other significant vegetative features), utilities, and other identifiable underground utilities.

2.1 SOIL CHARACTERISTICS

The location of mapped soil types are shown on the SR/PCSM Plan drawings. These soil boundaries and associated information were obtained from the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database. In addition to this soil mapping data, the USDA, Natural Resources Conservation Service (NRCS) "Web Soil Survey" website (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm) was used to generate an "NRCS Custom Soils Resources Report" for this Project.

The NRCS Custom Soils Resources Report is included in Appendix B of the E&SCP and contains the types, depth, slope, and limitations of the soils within the Project area. Additional information in the soil report includes data on the physical characteristics of the soils, such as their texture, resistance to erosion and suitability for the intended use. The limitation of soils pertaining to earthmoving projects, and the means to address the identified soils limitations are included on the plan drawings.

2.2 EXISTING LAND USE AND LAND COVER

The proposed Project is located on private land and the current land use is oil- and gas-related industrial activity. Prior to the existing industrial development, the land use was rural residential. The existing land cover within the permit boundary for aboveground facilities is a mixture of impervious roof and asphalt, gravel surface, and meadow. The existing land use at the compressor station includes pastureland, upland forest, and developed area. The existing land at the proposed pipeline location includes agricultural land, upland forest, developed land, and wetlands. The land disturbed during construction of the pipeline will be restored to meadow or similar land use resulting in an equivalent or better hydrologic condition and will not result in the addition of impervious area. The pipeline will be installed within existing rights-of-way. The modifications at the existing compressor station will result in approximately 0.27 acre of additional impervious area.

2.3 RECEIVING WATERS

ERM conducted a wetland and waterbody delineation of the proposed Project area. The onsite wetland delineation was conducted using procedures described in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2012 Regional Supplement to the U.S. Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region. Other waters were assessed using the definitions in Title 33 Code of Federal Regulations (CFR) Part 328.3. Impact assessments to potential waters of the United States, including wetlands, were evaluated within the proposed Project construction work area. Fourteen waterbodies and 11 wetlands are crossed by the JB Tonkin Compressor Station and TL-636 project activities. Some wetlands and waterbodies are crossed more than once for a total of 18 waterbody crossings and 14 wetland crossings. Wetlands and waterbodies crossed by the project are included in Section 2 of the ESCGP-2 application and identified on the drawings in Appendix A. There are nine U.S. Environmental Protection Agency (EPA) Section 303(d) impaired streams within the Project area: unnamed tributary (UNT) to Turtle Creek (milepost (MP) 0.2); UNT to Turtle Creek (MP 0.6); UNT to Kemerer Hollow (MP 1.2); Kemerer Hollow (MP 1.3); UNT to Kemerer Hollow

(MP 1.7); UNT to Kemerer Hollow (MP 1.9); UNT to Steels Run (MP 2.5); Steels Run (MP 2.6); and UNT to Steels Run (MP 2.9). The impairment cause for all of these streams is listed as aquatic life.

The JB Tonkin Compressor Station and the TL-636 Pipeline are located within the Haymakers Run-Turtle Creek watershed. The Project will cross Steels Run and associated unnamed tributaries, Haymakers Run and associated unnamed tributaries, Kemerer Hollow and associated unnamed tributaries, and unnamed tributaries to Turtle Creek. The waterbodies crossed by the Project are not listed as Pennsylvania Fish and Boat Commission (PFBC) "Approved Trout Waters" or "Wild Trout Waters". Turtle Creek is listed as a PFBC "Trout Stocked Fisheries".

Steels Run and its associated tributaries have a Pa. Code, Title 25, Chapter 93 designated protected use of High-Quality Cold Water Fishes (HQ-CWF) and are special protection waters. According to the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the receiving waters for this Project are listed as siltation impaired in Category 5. Steels Run was listed in 2006 and has a total maximum daily load (TMDL) date of 2019.

Haymakers Run and its associated tributaries have a Pa. Code, Title 25, Chapter 93 designated protected use of HQ-CWF and are special protection waters. According to the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the receiving waters for this Project are not listed as siltation impaired in Category 4 or Category 5.

Kemerer Hollow and its associated tributaries have a Pa. Code, Title 25, Chapter 93 designated protected use of HQ-CWF and are special protection waters. According to the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the receiving waters for this Project are not listed as siltation impaired in Category 4 or Category 5.

Turtle Creek and its tributaries do not have a Pa. Code, Title 25, Chapter 93 designated protected use and are not special protection waters. According to the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, the receiving waters for this Project are listed as siltation impaired in Category 4a and Category 5. Turtle Creek was listed as a Category 4a in 2004 with a TMDL date of 2013. Turtle Creek was listed as a Category 5 in 2006 with a TMDL date of 2019.

2.4 EXISTING WATER RESOURCES / RIPARIAN BUFFERS

Riparian buffers are an area of permanent vegetation situated along any surface water(s). When this vegetation is predominantly native trees, shrubs, and forbs that are maintained in a natural state or sustainably managed to protect and enhance water quality, it is considered a riparian forest buffer.

Construction of TL-636 is anticipated to include 18 separate waterbody crossings of Turtle Creek, Kemerer Hollow, Steels Run, and Haymakers Run, and their unnamed tributaries, in Westmoreland County with a total area of 0.52 acres of temporary waterbody impacts. Impacts to approximately 0.31 acre of floodways are anticipated from temporary construction and permanent development classified as high quality-cold water fisheries streams. Areas that will involve removal of trees from riparian buffers will be revegetated in accordance with DTI's post-construction management practices such that the proposed installation of TL-636 will have minimal impacts to existing riparian buffers and minimal thermal impact to streams within the action area. Riparian buffer locations are included in the PCSM/SR drawings for the JB Tonkin Compressor Station, Appendix A. As outlined in Section 5.2.3, the Project is applying for a riparian waiver/exemption per Pa. Code §102.14(d) and does not include the riparian buffer on the alignment sheets for linear features.

Construction of the TL-636 pipeline will result in temporary and permanent impacts to wetlands. A list of wetland crossings is included in Section 2 of the ESCGP-2 application. Permitting under sections 401 and 404 of the Clean Water Act is ongoing through the PADEP and COE for wetland crossings. Mitigation measures for permanent impacts on wetlands will be coordinated with PADEP and the COE. Impacts to palustrine forest (PFO) wetlands have been minimized to the extent possible. Following construction, areas outside of the permanent 50-foot right of way will be allowed to revegetate to natural conditions, including tree canopy closure. A 30-foot right of way will be maintained for access roads.

Existing access roads are used, where possible, along the existing and proposed right-of-way, which minimizes further vegetative removal. Where new access roads are constructed in proximity to streams or wetlands, vegetation removal will be minimized and roads will be designed to avoid removal of riparian buffer areas where possible. Access roads have been designed to cross perpendicular to streams.

Construction at the JB Tonkin Compressor Station in Westmoreland County is anticipated to result in impacts to Haymakers Run, unnamed tributaries to Haymakers Run, along with an associated wetland and floodway. A palustrine emergent wetland of approximately 0.02 acre will be permanently impacted from installation of new equipment at the JB Tonkin Compressor Station. Vegetation within the action area portion of the Haymakers Run floodway consists primarily of maintained grasses and shrubs, with a few trees; therefore, impacts to vegetation within the floodway of Haymakers Run will not significantly alter existing riparian buffers or increase thermal impacts

2.5 NATURALLY OCCURING GEOLOGIC FORMATIONS

2.5.1 JB Tonkin Compressor Station

General Geology

The bedrock unit beneath the JB Tonkin Compressor Station is comprised of the Glenshaw Formation of the Conemaugh Group. The Glenshaw Formation is comprised of repeated sequences of sandstone, siltstone, shale, claystone, limestone, and coal. The claystone layers of the Glenshaw Formation include red bed clays. The Glenshaw Formation generally thickens in a northeasterly direction, ranging from 280 feet to 410 feet.

Regionally, the water table varies based on topographic setting and water-bearing zone head. The water levels in valleys and upland are shallow and become deeper with increasing elevation to hilltops. The depth to water varies with rock type, physiography, and precipitation. The median well depth in the Glenshaw Formation is 118.0 feet below ground surface. The minimum casing length of these wells is 5.60 feet. The median static water level for the wells within the Glenshaw Formation is 45.0 feet. The median specific capacity for wells in this formation is 2.50 feet and the minimum specific capacity is 0.07 feet. The median water yield for wells in the Glenshaw formation is 10.0 gallons per second.

A geotechnical study was run for the JB Tonkin Compressor Station in 2016 by a third party consultant for DTI. This study conducted six test borings totaling 162.6 linear feet (82.8 feet of soil and 79.8 feet of bedrock) in July 2016. The test borings were performed using a track-mounted drill rig equipped with an automatic hammer and represent the subsurface conditions at the location of the test borings only. A summary of test boring is included as Table 2.5-1 and infiltration test results and mapping are included as Appendix D.

Table 2.5-1: Test Boring Summary

Test Boring	**Approximate Existing Ground Elevation (ft)**	**Total Depth (ft)**
BH-1	1,096	20.5
BH-2	1,058	19.5
BH-3	1,051	35.7
BH-4	1,052	26.5
BH-5	1,042	31.6
BH-6	1,040	28.8
Totals:		**162.6**
Note: Ground surface elevation was based on existing topography Source: Geotechnical Report JB Tonkin Compressor Station, CEC Inc., July 2016		

Surficial Geology

According to the Murrysville, Pennsylvania USGS 7.5 Minute Quadrangle Map, the JB Tonkin Compressor Station is approximately 1,030 to 1,160 feet above mean sea level near the township of Murrysville. The topography consists of very hilly with narrow hilltops and steep-sloped narrow valleys that have been modified by fluvial erosion and periglacial mass wasting.

A complete soil report for the Project is available in Appendix B of the E&SCP.

Landslide Susceptibility

The USGS Preliminary Landslide Overview Map of the Conterminous United States, 2014, indicates the proposed area is in an area of high landslide incidence. This hazard can be further mitigated implementing proper sloping and drainage controls. DTI is implementing a comprehensive Geohazards Analysis Program to assess potential geohazards, including slope failures, along the proposed pipeline route and at aboveground facility sites.

Earthquake Probability

Westmoreland County, Pennsylvania has a very low earthquake risk. According to the Pennsylvania Geologic Data Exploration web-mapping application (PaGEODE) online services, the nearest earthquake to the JB Tonkin Compressor Station occurred in 1965, at magnitude 3.3. The largest known earthquake to occur in Pennsylvania, the Pymatuning Earthquake, had an epicenter in Jamestown, approximately 80 miles northwest of the JB Tonkin Compressor Station. The Pymatuning Earthquake had a magnitude of 5.2, causing light property damage.

The USGS maintains a database containing information on surface and subsurface faults and folds in the United States that are believed to be sources of earthquakes of greater than 6.0 magnitude during the past 1.6 million years. The proposed Project pipeline route and associated aboveground facilities will not cross any of the surface or subsurface faults identified in the USGS database.

Potential Geologic Hazards

According to the available coal resource information, there has been no underground mining at the proposed site area, however, mined areas are located near the site, with the closest active mine over two miles to the south. Two abandoned mines are also located approximately two miles south of the site, along with two inactive mines and one reclaimed mine. Although there has not been any mining at the site-specific location, the proposed compressor station is close to areas of bedrock with potentially acid-producing sulfide minerals. Coal beds in the Glenshaw Formation are sporadically mined, and include Harlem, Bakerstown, Wilgus, Brush Creek, Mahoning, and Upper Freeport coal seams. Active or historic underground operations may exist in the area, and as such, acidic drainage could be a potential hazard. Acidic drainage will adversely affect ecological receptors in any stream receiving such discharges from the site.

The primary mitigation of this potential geologic hazard will be avoidance. The maximum depth of excavation for the proposed Project is 12 feet below existing grade, with the majority of the proposed earth moving activities occurring at much shallower depths. At these relatively shallow depths, it is possible that the proposed construction activities will encounter the noted bedrock with potentially significant acid-producing sulfide minerals. Nonetheless, if the coal layers or rocks with acid producing minerals are encountered during construction activities, it will be a small amount.

There are no karst features within the area of the JB Tonkin Compressor Station and TL-636 Pipeline.

In the event that bedrock with potentially significant acid-producing sulfide minerals is encountered during excavation for the proposed facilities, the following mitigation measures are to be followed:

- Material with the potential to provide significant acid-producing sulfide minerals encountered during construction is not to be used as fill material on-site. This material shall be exported off-site and disposed of in the proper manner.

- Material with the potential to provide significant acid-producing sulfide minerals exposed during construction is to be addressed through site-specific analysis and design of appropriate mitigation measures. Possible mitigation measures for small quantities could be blending the materials with acid-neutralizing materials, such as limestone; covering the material with soil or glacial till and layering with lime or limestone.

2.5.2 TL-636 Pipeline

General Geology

The bedrock unit beneath the northern approximately 2.5 mile section of the TL-636 pipeline is comprised of the Glenshaw and Casselman Formations of the Conemaugh Group. The Glenshaw Formation is comprised of repeated sequences of sandstone, siltstone, shale, claystone, limestone, and coal. The claystone layers of the Glenshaw Formation include red bed clays. The Casselman Formation is characterized by locally persistent red beds, calcareous claystones, freshwater limestones, thin sandstones, shales, siltstones, and thin, economically insignificant, coal beds. The Glenshaw Formation generally thickens in a northeasterly direction, ranging from 280 to 410 feet. The Casselman Formation thickens in a southeasterly direction, ranging from 230 to 575 feet. The bedrock unit beneath the southern approximately 1.4 mile section of the TL-636 pipeline is the Pittsburgh Low Plateau Section. The Pittsburgh Low Plateau Section is comprised of smooth to irregular, undulating surfaces, with narrow, shallow valleys with interspersed strip mines and reclaimed lands. Specifically, the station is located within the Monongahela Group of the Pittsburgh Low Plateau Section, which consists of cyclic sequences of limestone, shale, sandstone, and coal. The Monongahela Group ranges in thickness from about 275 to 410 feet.

Regionally, the water table varies based on topographic setting and water-bearing zone head. The water levels in valleys and upland are shallow and become deeper with increasing elevation to hilltops. The depth to water varies with rock type, physiography, and precipitation. The 3.9-mile stretch of pipeline associated with the TL-635 pipeline is situated across 3 different geologic formations: Glenshaw, Casselman, and Monongahela.

The median well depth in the Glenshaw Formation is 118.0 feet below ground surface. The minimum casing length of these wells is 5.60 feet. The median static water level for the wells within the Glenshaw Formation is 45.0 feet. The median specific capacity for wells in this formation is 2.50 feet and the minimum specific capacity is 0.07 feet. The median water yield for wells in the Glenshaw formation is 10.0 gallons per second.

The median well depth in the Casselman Formation is 135.0 feet below ground surface. The minimum casing length of these wells is 9.0 feet. The median static water level for the wells within the Casselman Formation is 40.0 feet. The median and minimum specific capacity for wells in this formation is 0.00 feet. The median water yield for wells in the Casselman Formation is 10.0 gallons per second.

The median well depth in the Monogahela Formation is 126.0 feet below ground surface. The minimum casing length of these wells is 9.0 feet. The median static water level for the wells within the Monogahela Formation is 35.0 feet. The median and minimum specific capacity for wells in this formation is also 0.00 feet. The median water yield for wells in the Monongahela Formation is 5.0 gallons per second.

Surficial Geology

According to the Murrysville and Slickville Pennsylvania USGS 7.5 Minute Quadrangle maps, the TL-636 pipeline is proposed along elevations of approximately 1,020 to 1,280 feet above mean sea level near the township of Murrysville. The topography consists of very hilly with narrow hilltops and steep-sloped narrow valleys that have been modified by fluvial erosion and periglacial mass wasting. Detailed NRCS soil reports are included in Appendix B.

Earthquake Probability

Westmoreland County has a very low earthquake risk. According to the PaGEODE online services, the nearest earthquake to the TL-636 pipeline occurred in 1965, at magnitude 3.3. The largest known earthquake to occur in Pennsylvania, the Pymatuning Earthquake, had an epicenter in Jamestown, approximately 80 miles northwest of the JB Tonkin Compressor Station. The Pymatuning Earthquake had a magnitude of 5.2, causing light property damage.

The USGS maintains a database containing information on surface and subsurface faults and folds in the United States that are believed to be sources of earthquakes of greater than 6.0 magnitude during the past 1.6 million years. The proposed TL-636 pipeline route and associated aboveground facilities would not cross any of the surface or subsurface faults identified in the USGS database.

Potential Geologic Hazards

According to the available coal resource information, there has been no underground mining at the proposed site area, however, there are two active, two inactive, two abandoned, and two reclaimed mine sites within approximately two miles of the proposed pipeline, located primarily northeast and southwest of the southern portion of the pipeline. The Delmont Mine is an abandoned mine located between MP 0.0 and 0.3 of the proposed pipeline. The proposed pipeline is close to areas of bedrock with potentially acid-producing sulfide minerals. The Pittsburgh Coal, which marks the base of the Monongahela Group, can range in depth from surface to 2,000 feet below ground surface. Coal beds in the Glenshaw Formation are sporadically mined, and include Harlem, Bakerstown, Wilgus, Brush Creek, Mahoning, and Upper Freeport coal seams. Coal seams in the Casselman Formation are not typically considered economically viable. Active or historic underground operations may exist in the area, and as such, acidic drainage could be a potential hazard. Acidic drainage would adversely affect ecological receptors in any stream receiving such discharges from the site.

The primary mitigation of this potential geologic hazard will be avoidance. The maximum depth of excavation for the proposed Project is 12 feet below existing grade, with the majority of the proposed earth moving activities occurring at much shallower depths. At these relatively shallow depths, it is possible that the proposed construction activities will encounter the noted bedrock with potentially significant acid-producing sulfide minerals. Nonetheless, if the coal layers or rocks with acid producing minerals are encountered during construction activities, it would be a small amount.

In the event that bedrock with potentially significant acid-producing sulfide minerals is encountered during excavation for the proposed facility, the following mitigation measures are to be followed:

- Material with the potential to provide significant acid-producing sulfide minerals encountered during pad construction is not to be used as fill material on-site. This material shall be exported off-site and disposed of in the proper manner.
- Material with the potential to provide significant acid-producing sulfide minerals exposed during pad construction is to be addressed through site-specific analysis and design of appropriate mitigation measures. Possible mitigation measures for small quantities could be blending the materials with acid-neutralizing materials, such as limestone; covering the material with soil or glacial till and layering with lime or limestone.

There are five known oil and gas wells within 0.25 miles of the T-636 pipeline, four of which are active. The closest well is 475.8 feet west of MP 3.8, and is an active CNX Gas Co., LLC well.

3.0 PROPOSED CONDITIONS

The proposed land use is utility right-of-way, access roads, storage, compressor station and related equipment to be used for compression, and measurement and regulation. Earth disturbance will be restricted to the LOD delineated on the E&SCP drawings and SR/PCSM drawings. The total proposed area of disturbance resulting from installation of the proposed facilities is approximately 75.49 acres. This includes the proposed topography, areas of cuts and fills, the limits of earth disturbance, the locations of proposed access roads, the location of existing and proposed structures and the location of proposed BMPs.

3.1 PROPOSED LAND USE AND LAND COVER

The proposed land cover will change throughout the duration of the proposed Project. During the initial construction stage of the Project, much of the area will be bare earth. Once the facilities are constructed the site will be stabilized with vegetative cover, gravel cover, pavement and equipment as indicated on the SR/PCSM drawings. Upon completion of construction, the temporary workspace facilities will be restored to meadow or similar land use resulting in an equivalent or better hydrologic condition and will not result in the addition of impervious area.. Previously forested areas within the proposed 30-foot right of way will be maintained as meadow.

The approximate construction area at the JB Tonkin Compressor Station is 13.97 acres, consisting s of pasturelands, upland forests, and developed lands.. The proposed improvements at the JB Tonkin Compressor Station will include conversion of currently vegetated surfaces to gravel and rooftop, resulting in the addition of 0.27 acres of impervious area. Approximately 0.02 acre of a palustrine emergent (PEM) wetland will be filled within the JB Tonkin Compressor Station site.

Construction of the 3.9-mile pipeline and associated additional temporary workspace associated with the ROW will result in 61.52 acres of earth disturbance, consisting of agricultural land (cultivated crop), agricultural land (pastureland), agricultural land (harvested forest/tree plantation), upland forest, developed land, wetlands.. The land disturbed during construction of the pipeline will be restored to meadow or similar land use resulting in an equivalent or better hydrologic condition and will not result in the addition of impervious area. The land disturbed during pipeline construction will be restored to meadow or better conditions following finalization of construction.

Construction of the contractor yards in Salem Township include 7.0 acres of previously disturbed land. The contractor yards will be used during pipeline construction. The contractor yards have previously been developed and only minor improvements (e.g. replenishing the gravel surface) are anticipated, thus no new disturbance will occur at these areas.

3.2 PROPOSED SITE DRAINAGE CHARACTERISTICS

An assessment of the Project site's natural features was completed at the initial stage of Project planning. The proposed facilities have been sited to protect sensitive natural resources by avoiding these areas whenever possible. The site has also been planned and designed to maintain pre-development drainage patterns to the maximum extent practicable. A conscious effort has been made to maintain existing vegetation where possible and limit the extents of earth disturbance to the area necessary to construct the proposed facilities. Where possible, site drainage will be directed to previously established drainage features. The location of the proposed drainage features is shown on the SR/PCSM Plan drawings in Appendix A.

3.3 RIPARIAN BUFFER

Under Pa. Code, §102.14(d) this Project qualifies for an exemption/ waiver for riparian forest buffers. The Project has taken into account existing riparian buffers within the Project area and has designed construction measures to minimize disturbance to the existing riparian buffers to the extent practicable.

4.0 DESCRIPTION OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES

The erosion and sediment control BMPs for the Project have been planned to minimize the extent and duration of the proposed earth disturbance, maximize protection of existing features, minimize soil compaction, and employ measures and controls that minimize the generation of increased runoff. Specific BMPs have been selected for this site in order to achieve these broad goals. The location of each proposed BMP is shown on the E&SCP drawings in Appendix A of the E&SCP and are discussed further in the E&SCP in section 4.0 of this application.

5.0 DESCRIPTION OF STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES

The stormwater management BMPs for this Project have been planned to minimize the extent of the proposed earth disturbance, maximize protection of existing drainage features and vegetation, minimize soil compaction, and employ measures and controls that minimize the generation of increased stormwater runoff. Specific BMPs have been selected for this site in order to achieve these broad goals. The location of each proposed stormwater management BMP is shown on the SR/PCSM Plan drawings in Appendix A. Each planned stormwater management BMP is specified for implementation to address a specific aspect of the proposed development. The various BMPs were chosen based on their effectiveness for the planned use and the feasibility of implementation at the Project site.

Stormwater management site planning techniques were used throughout the site design process to preserve natural systems and hydrologic functions to the maximum extent possible with non-structural BMPs. These self-crediting BMPs (i.e., BMPs that minimize or avoid increases in runoff volume or peak discharge) were utilized to the extent possible to prevent stormwater generation and reduce the overall impact of the proposed facilities on stormwater runoff. Non-structural BMPs used on the site are discussed in detail in Section 5.1.

Stormwater conveyance along the access roads will be managed by aggregate-stabilized channels. The channels will convey runoff to culverts with outlets stabilized with riprap aprons. Infiltration testing at the compressor station site indicated that infiltration is not possible at this site (see Appendix D).

5.1 NON-STRUCTURAL BEST MANAGEMENT PRACTICES

Stormwater management site planning techniques were used throughout the site design process to preserve natural systems and hydrologic functions to the maximum extent possible with non-structural BMPs. These self-crediting BMPs were utilized to the extent possible to prevent stormwater generation and reduce the overall impact of the proposed facilities on stormwater runoff. Stormwater runoff calculations are included in Appendix B. Non-structural BMPs are also employed to minimize impacts on water quality, specifically in controlling nitrate. The proposed non-structural stormwater BMPs are described in the following sections.

5.1.1 Protect Sensitive/Special Value Features

To minimize the stormwater impacts of the proposed site features and facilities, the site design was planned to avoid encroachment upon, disturbance of, and alteration to natural features that provide valuable stormwater functions or are very sensitive to stormwater impacts. The site planning process involved early identification of floodplains, wetlands, natural flow pathways/drainage ways, steep slopes, and historic and natural resources and avoidance of these features to the maximum extent possible. The stormwater functions of this BMP include very high volume reduction, recharge, peak rate control, and water quality.

5.1.2 Protect/Utilize Natural Flow Pathways

The site's natural drainage features were identified early in the design process so these valuable features could be protected and utilized as part of the overall stormwater management system. Existing drainage areas and natural flow paths were identified, preserved, and incorporated into the site design to the extent possible. The entire alignment will be restored to existing contours where possible to maintain the existing natural flow paths. In addition, existing drainage ditches along existing access roads and ditches on the JB Tonkin Compressor Station site will be enhanced and utilized as part of the PCSM plan. This design technique helps to reduce the impact of the proposed facilities by maintaining the established hydrologic patterns of the site. The stormwater functions of this BMP include low to medium volume reduction, low recharge, and medium to high peak rate control, and medium water quality.

5.1.3 Minimize Total Disturbed Area

Minimizing the total disturbed area to the area necessary to construct the proposed facilities is a simple and effective BMP. The LOD delineated on the plan drawings has been established to restrict construction activities to the minimum area needed to effectively and efficiently construct the proposed facilities and maximize conservation of existing site vegetation. The stormwater functions of this BMP include high volume reduction, recharge, peak rate control, and water quality. The construction activities at the JB Tonkin Compressor Station and contractor yards in Salem Township, Pennsylvania will predominantly be located within already developed areas.

5.1.4 Revegetate Disturbed Areas

Vegetative stabilization of disturbed areas is a central component of the SR/PCSM Plan. The seed mixtures specified for the site were selected to mimic natural meadows and provide sufficient stabilization while not requiring significant chemical maintenance by fertilizers, herbicides, and pesticides. In addition to restoring the alignment to meadow condition, this plan proposes the establishment of a 25 foot vegetated stream buffer on an existing developed site. The stormwater functions of this BMP include low to medium volume reduction, recharge and peak rate control and medium very high water quality.

5.1.5 Disconnect Impervious Area

Where feasible, runoff from impervious surfaces is directed to rain cisterns, where possible. This practice reduces runoff volume and peak discharge, as well as improves water quality by slowing runoff, allowing for filtration, and providing opportunity for infiltration and evapotranspiration as the water is used for irrigation. The stormwater functions of this BMP include high volume reduction, recharge, peak rate control, and water quality.

5.2 STRUCTURAL BEST MANAGEMENT PRACTICES

Stormwater management site planning techniques were used throughout the site design process to preserve natural systems and hydrologic functions to the maximum extent possible with structural BMPs. These BMPs were utilized to the extent possible to minimize stormwater generation and minimize the overall impact of the proposed facilities on stormwater runoff. Structural BMPs are also employed to treat some currently untreated stormwater runoff at existing facilities without an existing stormwater management system. The proposed structural stormwater BMPs are described in the following sections. Construction details and placement locations of each BMP are included in the SR/PCSM drawings in Appendix A.

5.2.1 Vegetated Swale

A Vegetated Swale is a broad, shallow channel densely planted with a variety of grasses. It is designed to attenuate runoff volume from adjacent impervious surfaces, allowing some pollutants to settle out in the process. In steeper slope situations, check dams are used to further enhance attenuation and infiltration opportunities. Vegetated Swales will be utilized at the JB Tonkin Compressor Station and some proposed access roads along the pipeline alignment. Calculations for vegetated swales are included in Appendix B.

5.2.2 Rooftop Runoff – Capture and Reuse

Capture and Reuse encompasses the use of storage devices to capture a portion of the small, frequent storm events, hold it for a period of time, and reuse the water. Heavy rainfall may require slow release over time. Capture and reuse will be utilized at JB Tonkin Compressor Station. Calculations for capture and reuse are included in Appendix B.

5.2.3 Filter Strip

Filter strips are gently sloping, densely vegetated areas that filter, slow, and infiltrate sheet flowing stormwater. Filter Strips are primarily designed to reduced TSS levels, however pollutant levels of hydrocarbons, heavy metals, and nutrients may also be reduced. Pollutant removal mechanisms include sedimentation, filtration, absorption, infiltration, biological uptake, and microbial activity. Depending on hydrologic soil group, vegetative cover type, slope, and length, a filter strip can allow for a modest reduction in runoff volume through infiltration.

6.0 BEST MANAGEMENT PRACTICE INSTALLATION SEQUENCE

The following is a general narrative description of the planned sequence of BMP installation and removal. The entire construction sequence listing the steps to be taken from initial site clearing through final stabilization is included on the SR/PCSM Plan drawings. Refer to the SR/PCSM Plan drawings for additional site-specific installation information.

Upon completion of the earth disturbance as described in the E&SCP, all other temporary erosion and sediment control BMPs necessary for implementation of the SR/PCSM Plan shall remain functional through execution of the plan. In no cases, except when replaced by another BMP approved by the PADEP or conservation district, shall any erosion and sediment control BMPs be removed prior to all areas tributary to them achieving permanent stabilization. After final stabilization has been achieved, temporary erosion and sediment control BMPs may be removed if they are not necessary for implementation of the SR/PCSM Plan.

Areas disturbed during removal or conversion of any temporary erosion and sediment control BMPs to SR/PCSM BMPs must be stabilized immediately. In order to ensure rapid revegetation of disturbed areas, such removal\conversions should be done only during the germinating season. When final stabilization has been achieved after implementation of the SR/PCSM Plan, the remaining temporary erosion and sediment BMPs may be removed. Areas disturbed during removal of the temporary erosion and sediment control BMPs must be stabilized immediately.

7.0 STORMWATER RUNOFF ANALYSIS

The following section presents calculations associated with control of peak stormwater discharge rates and management of runoff volume. These calculations pertain to the JB Tonkin Compressor Station launcher facilities, and access roads as shown in the SR/PCSM Plan drawings. The proposed pipeline right-of-way will be restored to the approximate original contour and land cover, therefore no stormwater management calculations have been completed for this portion of the Project.

The stormwater analysis performed for this Project was completed in a manner to be consistent with the design standards contained in the Pennsylvania Stormwater BMP Manual (2006). The following is a general description of the methods used to complete the stormwater analysis and a summary of the results. Detailed runoff calculations are included in Appendix B with: runoff volume and HydroCAD printouts.

7.1 HYDROLOGIC ANALYSIS METHODS

The precipitation data used for the hydrologic analysis was obtained from the Point Precipitation Frequency Estimates from National Oceanic and Atmospheric Administration (NOAA) Atlas 14. The data was obtained for a geographic coordinate near the proposed Project. A rainfall depth of 2.39 inches was used for this analysis. This is the value for the 90 percent confidence interval of the 2-year, 24-hour duration storm obtained from NOAA Atlas 14. The Soil Conservation Service (SCS) 24-hour duration distribution was used to interpolate incremental precipitation values for the computation time interval and time period specified.

Time	1 year	2 year	5 year	10 year	25 year	50 year	100 year
24 hr	2.01	2.38	2.92	3.35	3.95	4.44	4.96

Hydrology calculations were performed to determine existing conditions and analyze the impacts of the proposed facilities.

"HydroCAD Stormwater Modeling System, Version 8, developed by HydroCAD Software Solutions LLC, was used to model the existing and proposed hydrology in order to calculate peak runoff flows. This software computes SCS runoff hydrographs by convoluting a rainfall hyetograph through a unit hydrograph. This method is also used in SCS TR-20.

Time of concentration values were calculated using the velocity method, also referred to as the segmental method, as described in the National Engineering Handbook and HyrdoCAD. When channel routing was deemed necessary, hydrographs were routed through proposed channels using the Modified Att-Kin routing method as described in TR-20.

7.2 SITE CONDITIONS

Stormwater runoff calculations were not completed for the length of the TL-636 Pipeline ROW since it will be restored to existing or meadow conditions resulting in hydrologic conditions equivalent to or better than pre-development conditions. The site currently contains buildings and equipment related to the existing compressor station. The surfaces consist of asphalt pavement, grass, and gravel. The compressor station upgrade will result in the addition of impervious surface in the form of a new compressor building, auxiliary building, and gravel. While most of the site is not technically defined as an impervious surface, the areas that will be graveled will generate increased runoff. The proposed upgrade will not increase the current site boundaries, but it will convert areas of grass into asphalt and gravel along with the construction of a new compressor building and auxiliary building.

The JB Tonkin Compressor Station and the TL-636 Pipeline are located in the Haymakers Run-Turtle Creek Watershed. The Turtle Creek watershed drains an area of approximately 148 square miles that includes forest, farmland, industry, abandoned mined lands, and urban and suburban residential communities. Turtle Creek flows west and enters the Monongahela River. Steels Run, Haymakers Run, and Turtle Creek (upper, middle, lower) are subwatersheds within the Turtle Creek Watershed that are potentially impacted by the proposed Project. Coal mining in the general area has contributed to major pollutant loads to several streams in the Turtle Creek Watershed.

The Haymakers Run drainage areas consist of forest, meadow, cultivated land, and a few residences. Most the land is undeveloped. According to a 2002 study commissioned by the Pennsylvania Department of Conservation and Natural Resources, about 3 percent of the Haymakers Run watershed is impervious surface. Land uses in the watershed are 75.2 percent forested/herbaceous, 17.8 percent planted/cultivated, 5.5 percent residential/urban, 0.5 percent transitional, 0.2 percent industrial/transportation, and 0.1 percent mines/barren areas. These land use fractions were used to determine the subwatershed curve numbers. According to NRCS, the main soil types present on-site are Ernest Silt Loam and Gilpin-Weikert channery silt loam with hydrologic soil group C. Runoff calculations used 24-hour NRCS storm data for Westmoreland County.

Land use within the Steels Run subwatershed is comprised of 60.9 percent forested/herbaceous, 34.5 percent planted/cultivated, 2.1 percent mines/barren areas, 1.2 percent transitional 0.4 percent residential/urban, and 0.2 percent industrial/transportation. The subwatershed is composed of only 0.4 percent impervious cover (the lowest in the Turtle Creek watershed), classifying Steels Run as a sensitive stream. There is no abandoned mine land in the Steels Run subwatershed. Approximately 21.4 percent of the subwatershed has been mined for the Pittsburgh Coal.

Land use within the Lower Turtle Creek subwatershed is comprised of 51.5 percent forested/herbaceous, 26.5 percent residential/urban, 9.8 percent industrial/ transportation, 1.1

percent mines/barren areas, 4.7 percent planted/cultivated and 1.2 percent transitional. The subwatershed is composed of 22.8 percent impervious cover, classifying Lower Turtle Creek as an impacted stream. There are 1.35 square miles of abandoned mine land areas in the Lower Turtle Creek subwatershed, and 62.1 percent of the subwatershed has been mined for the Pittsburgh Coal.

Land use within the Middle Turtle Creek subwatershed is comprised of 69.4 percent forested/herbaceous, 20.9 percent residential/urban, 5.2 percent industrial/ transportation, 3.2 percent planted/cultivated, 0.7 percent mines/barren areas, and 0.5 percent transitional. The subwatershed is composed of 16.2 percent impervious cover, classifying Middle Turtle Creek as an impacted stream. There are no abandoned mine land areas in the Middle Turtle Creek subwatershed, and only 0.1 percent of the subwatershed has been mined for the Pittsburgh Coal.

Land use within the Upper Turtle Creek subwatershed is comprised of 59.1 percent forested/herbaceous, 19.0 percent planted/cultivated, 11.2 percent residential/urban, 1.9 percent industrial/transportation, 0.3 percent mines/barren areas, and 0.2 percent transitional. The subwatershed is composed of only 8.1 percent impervious cover, classifying Upper Turtle Creek as a sensitive stream. There are 1.78 square miles of abandoned mine land areas in the Upper Turtle Creek subwatershed, and 56.3 percent of the subwatershed has been mined for the Pittsburgh Coal.

Haymakers Run crosses the southern portion of the JB Tonkin Compressor Station site from east to west. Two unnamed tributaries join Haymakers Run near the southeastern portion of the site. One tributary flows north to south, and the other flows south to north. The site is in the Haymakers Run-Turtle Creek watershed. Generally, drainage enters the site from the north and the south and via Haymakers Run on the east. Most of the runoff from the site enters Haymakers Run, which flows to the west. The upstream drainage area of the site was estimated using USGS topographic maps for Westmoreland County. A listing of waterbodies within the construction footprint for the Project is provided in Section 2 of the ESCGP-2 application.

The TL-636 Pipeline crosses waterbodies that are within the Haymakers Run-Turtle Creek watershed. Generally, drainage crosses the proposed pipeline from the east to the southwest. The proposed pipeline crosses two high-quality drainage basins and one non-high quality drainage basin. Tributaries drain to Turtle Creek, which flows to the west. The upstream drainage area of the site was estimated using USGS topographic maps for Westmoreland County. A listing of waterbodies within the construction footprint for the Project is provided in Section 2 of the ESCGP-2 application.

7.3 DRAINAGE AREAS AND CURVE NUMBER RUNOFF METHOD ASSUMPTIONS

The site is part of a set of drainage areas that were determined by analyzing pre-development and post-development flow paths within the watershed. Drainage maps that illustrate drainage area boundaries, time of concentration calculation flow paths, existing contours, and proposed features are provided in Appendix C. Data provided on the drainage maps was used to complete runoff volume calculations and peak flow calculations as discussed herein. The drainage areas were split into subareas based on the BMPs they are tributary to and their existing and proposed land cover complex for use in the stormwater analysis.

7.4 PEAK FLOW CALCULATIONS

Peak stormwater runoff flow rates were analyzed for the 1-year, 2-year, 5-year, 10-year, 25-year, 50-year and 100-year (24-hour duration) design storms. These design storms were analyzed to be consistent with the recommendations of the PA Stormwater BMP Manual (2006). The analysis was performed using HydroCAD software to model the existing and proposed conditions using the methodologies described previously in this section. Drainage area runoff hydrographs were routed through the proposed stormwater management facilities to determine the impact of these facilities on anticipated future stormwater runoff volumes and peak flow rates. Peak flow rate calculations are included in Appendix B.

Peak flow for the launcher at the southern end of the pipeline was not calculated since it is exempt under Worksheet 6 for Small Site/Small Impervious Area Exception for Peak Rate Mitigation Calculations. The launcher is exempt because it meets the increase in 2-year/24-hour runoff with structural BMPs, site impervious area and site area is less than one acre, no impervious area is being added (only gravel), no credits are being added for non-structural BMPs and the infiltration trenches will infiltrate at least 0.5 inch/hour.

7.5 RUNOFF VOLUME CALCULATIONS

Runoff volume calculations were completed for the JB Tonkin Compressor Station, the launcher facilities, and the permanent access roads. The 2, 10, 50, and 100-year storm event runoff volumes were calculated for each land cover / hydrologic soil group combination in each drainage area. These runoff volumes were added to determine the total runoff volume for each drainage area. This was calculated using Worksheet 4 contained in the PA Stormwater BMP Manual (2006). Runoff volume was calculated for each type of land cover and hydrologic soil group. The summary tables contained in Appendix B summarize the difference in 2-year design storm runoff volume between existing conditions and the proposed conditions for each drainage area. PCSM worksheets are available in Appendix B.

JB Tonkin Compressor Station			
Design storm frequency: 2-year Rainfall Amount: 2.38 inches	Pre-construction	Post-construction	Net Change
Impervious area (acres)	1.390	2.020	0.63
Volume of Stormwater Runoff (acre-feet) without planned stormwater BMPs	0.677	0.960	0.283
Volume of stormwater runoff (acre-ft) stored by BMPs	-	0.600	
Stormwater discharge rate for the design frequency storm			
1) 2-year/24-hour	10.34	15.17	4.83
2) 10-year/24-hour	20.35	26.37	6.02
3) 50-year/24-hour	32.92	39.76	6.84
4) 100-year/24-hour	39.22	46.24	7.02

Pipe Yard			
Design storm frequency: 2-year Rainfall Amount: 2.38 inches	Pre-construction	Post-construction	Net Change
Impervious area (acres)	0	0	0
Volume of Stormwater Runoff (acre-feet) without planned stormwater BMPs	0.095	0.120	0.025
Volume of stormwater runoff (acre-ft) with planned stormwater BMPs	-	TBD pending infiltration testing	
Stormwater discharge rate for the design frequency storm			
1) 2-year/24-hour	2.44	3.22	
2) 10-year/24-hour	5.93	7.02	
3) 50-year/24-hour	10.62	11.98	
4) 100-year/24-hour	13.02	14.48	

Access Roads			
Design storm frequency: 2-year Rainfall Amount: 2.38 inches	Pre-construction	Post-construction	Net Change
Impervious area (acres)	0	0	0
Volume of Stormwater Runoff (acre-feet) without planned stormwater BMPs	0.114	0.296	0.182
Volume of stormwater runoff (acre-ft) with planned stormwater BMPs	-	0.296	0.182
Stormwater discharge rate for the design frequency storm			
1) 2-year/24-hour	2.91	3.11	0.2
2) 10-year/24-hour	6.31	5.69	-0.62
3) 50-year/24-hour	11.78	8.8	-2.98
4) 100-year/24-hour	12.94	10.33	-2.61

A site investigation, in accordance with the protocols of the Pennsylvania Stormwater BMP Manual, was performed at the JB Tonkin Compressor Station in August 2016. Infiltration testing was completed by Civil and Environmental Consultants, Inc. (CEC) to determine the ability of on-site soils to support infiltration. Based on the test results (included in Appendix D) it was concluded that, due to the presence of shallow groundwater and weathered rock, infiltration of stormwater runoff at the site is not feasible.

At this time infiltration is not proposed at the launcher facility or the access roads so no infiltration testing had been conducted in this area.

8.0 STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICE MAINTENANCE

A maintenance program that provides for routine inspection, as well as repair and replacement as necessary, is essential to effective and efficient operation of the proposed stormwater BMPs. Implementation of the following maintenance plan is a key component in achieving the intent of this SR/PCSM Plan and minimizing negative impacts of stormwater runoff from the proposed facilities. The permittee and any co-permittees shall be responsible for long-term operation and maintenance of the stormwater BMPs unless a different person is identified in the Notice of Termination and has agreed to long-term operation and maintenance of the stormwater BMPs. Specific maintenance procedures for BMPs are discussed below in Section 8.3. A Professional Engineer will be present for critical stages of BMP construction (i.e., installation of structurally engineered BMPs) or other BMPs as deemed appropriate by the PADEP or the Conservation District.

8.1 INSPECTIONS

The responsible party (as identified in the previous paragraph) shall inspect all stormwater BMPs semi-annually, using the inspection form in Appendix E, or as specified in Section 8.3. This inspection shall include a general review of the performance of all stormwater management facilities as well as an examination of each individual BMP noting when maintenance (e.g., cleanout, repair, replacement, regrading, re-stabilizing, etc.) is required, when specific deficiencies exist, and/or signs of potential future problems are present. The inspections shall be documented in a written report summarizing each inspection and shall include a schedule for repair of noted deficiencies. Any required preventive and remedial maintenance work, including cleanout, repair, replacement, regrading, or reseeding, must be scheduled for immediate corrective action. If any installed stormwater BMPs are identified as failing to perform as expected, corrective modifications or replacement BMPs shall be scheduled for installation. The PCSM Inspection Form is available in Appendix E.

8.2 GENERAL MAINTENANCE

The Owner, or a designated representative, shall be responsible for general operation and maintenance of stormwater management BMPs for the life of the facility. General maintenance shall include preventive and remedial maintenance work, including cleanout, repair, replacement, regrading, or reseeding. All items included as PCSM BMPs will be recorded in an easement document at the County Courthouse.

Areas void of vegetation shall promptly be reseeded and mulched to establish protection. Any device found to be clogged, damaged, half-full of silt, or not fully operational shall be cleaned of debris. BMPs will be repaired or replaced (as necessary) to ensure effective and efficient operation. The disposal of any solid waste is the responsibility of the party performing the maintenance and shall be conducted in accordance with the Recycling/Disposal of Materials procedures identified in this plan. Necessary repairs will be made immediately after any deficiencies have been observed.

8.3 SPECIFIC MAINTENANCE

The Owner, or a designated representative, shall be responsible for the following specific maintenance activities throughout the life of the facilities.

8.3.1 Culvert Maintenance

Inspect culvert for flow obstructions, scour at the inlet and outlet, and damage to the culvert.

Flow obstructions shall be removed immediately; suitable inlet and/or outlet protection should be provided where scour is observed; and, damaged culverts shall be repaired, or replaced immediately.

8.3.2 Riprap Apron Maintenance

Inspect riprap on the back side of aprons at pipe discharges for scour around the pipe. The specified stone depth shall be maintained at all times. Replace displaced riprap within the apron immediately.

The riprap apron shall be maintained free of sediment deposits and other debris. When present, remove sediment and debris to the extent possible. In the event the apron becomes too clogged with sediment and debris to remain effective, the apron shall be removed and replaced.

8.3.3 Seeding and Mulching Maintenance

Inspect seeded and mulched area for evidence of erosion, immediately repair and reseed areas disturbed by erosion or slope movement. Identify vegetated areas in need of additional erosion control measures until permanent vegetative cover is established.

Inspect seeded and mulched areas for displaced mulch cover and uneven vegetative growth. For displaced mulch, replace mulch at the original application rate or greater. Reseed bare areas at original seed application rates.

8.3.4 Vegetative Swale Maintenance

In general, maintenance strategies for swales focus on sustaining the hydraulic and pollutant removal efficiency of the channel, as well as maintaining a dense vegetative cover. Maintenance activities will be done annually and within 48 hours after every major storm event (greater than 1 inch rainfall depth):

- Inspect and correct erosion problems, damage to vegetation, and sediment and debris accumulation (address when greater than 3 inches at any spot or covering vegetation).

- Inspect vegetation on side slopes for erosion and formation of rills or gullies, correct as needed.

- Inspect for pools of standing water; dewater and discharge to an approved location and restore to design grade.

- Mow and trim vegetation to ensure safety, aesthetics, proper swale operation, or to suppress weeds and invasive vegetation; dispose of cuttings in a local composting facility; mow only when swale is dry to avoid rutting.

- Inspect for litter; remove prior to mowing.

- Inspect for uniformity in cross-section and longitudinal slope, correct as needed.

- Inspect swale inlet (curb cuts, pipes, etc.) and outlet for signs of erosion or blockage, correct as needed.

Maintenance activities will be done as needed:

- Plant alternative grass species in the event of unsuccessful establishment.

- Reseed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.

- Rototill and replant swale if draw down time is more than 48 hours.

- Inspect and correct check dams when signs of altered water flow (channelization, obstructions, erosion, etc.) are identified.

- Water during dry periods, fertilize, and apply pesticide only when absolutely necessary.

8.3.5 Runoff Reuse and Recapture Maintenance

Flush cisterns to remove sediment. Brush the inside surfaces and thoroughly disinfect. Do not allow water to freeze in devices.

8.3.6 Check Dam Maintenance

Inspect and correct check dams when signs of altered water flow (channelization, obstructions, erosion, etc.) are identified.

9.0 RECYCLING/DISPOSAL OF MATERIALS

Building materials and other construction site wastes shall be properly managed and disposed of to reduce potential for pollution to surface and ground waters as per 25 Pa. Code § 102.4(b)(5)(xi). All building materials and wastes shall be removed from the site and recycled or disposed of in accordance with the PADEP's Solid Waste Management Regulations at 25 Pa. Code 260.1 et seq., 271.1 and 287.1 et. Seq. No building materials or wastes or unused building materials shall be burned, buried, dumped, or discharged at the site. No off-site disposal area has been identified as part of this plan. Construction waste will be disposed of properly by the contractor at a PADEP-approved facility or recycled.

The contractor shall develop and implement procedures that will detail the proper measures for disposal and recycling of materials associated with or from the Project site in accordance with PADEP regulations. Construction wastes include, but are not limited to, excess soil materials, building materials, concrete wash water, and sanitary wastes that could adversely affect water quality. The contractor shall inspect the Project area weekly and properly dispose of construction wastes. Measures will be planned and implemented for housekeeping materials management and litter control. Wherever possible, re-useable wastes will be segregated from other waste and stored separately for recycling.

The contractor shall be responsible for submitting an E&SCP for any borrow or waste areas required to complete the work. Appropriate BMPs will be implemented at disposal locations for excess soil/rock waste. The disposal locations shall be verified with the PADEP to show compliance with wetland and floodplain regulations. If an off-site location is used for borrow or disposal, the contractor is responsible for developing and implementing an adequate E&SCP(s) and submitting the plan(s) to the PADEP for review and approval. The contractor shall immediately stabilize the waste site upon completion of any stage or phase of earth disturbance activity at the waste site.

10.0 THERMAL IMPACTS ANALYSIS

The proposed Project was analyzed for potential thermal impacts associated with the planned activities and how potential impacts could be avoided, minimized, or mitigated. Thermal impacts resulting from activities similar to the proposed Project are primarily due to the negative impacts of increased impervious area. The following opportunities for negative thermal impacts exist for projects similar to the one being proposed:

- Heat transfer from impervious cover to surface runoff;
- Solar heat gain in ponded surface water;
- Increased surface temperatures caused by removal of vegetation;
- Reduced thermal buffering of stormwater due to reduction in site's infiltration capacity; and
- Increased stream temperatures due to reduced base flow caused by reduction in site's infiltration capacity.

Siting of the proposed facilities was limited by the location of the existing facilities and pipelines which they will service, surface restrictions such as regulatory setbacks from building and waterways, and existing property boundaries. From this perspective, the potential to limit thermal impacts by altering the location of the Project is limited. However, Table 10.0-1 shows several site layout criteria that were used for the proposed Project and how they help prevent or minimize thermal impacts to receiving waters.

Table 10.0-1: Thermal Impact Benefits of Site Layout Criteria

Site Layout Criteria	**Thermal Impact Benefits**
Avoid impacts to surface waters and wetlands to the maximum extent possible	Maintain existing hydrology and encourage natural thermal buffering
Locate proposed facilities as close as possible to existing facilities	Minimize proposed impervious cover
Choose areas with minimal existing tree cover	Reduce removal of existing tree canopy

In addition to the above site selection criteria, several BMPs will be used to help mitigate negative thermal impacts from the proposed Project. Minimizing the LOD and the limit of tree clearing to the minimum area necessary to construct the proposed facilities will preserve existing vegetative cover and maintain the infiltration and evapotranspiration capacity of undisturbed areas to the maximum extent practicable. Also, disturbed areas will be immediately revegetated to help cool runoff prior to discharge.

11.0 ANTIDEGRADATION ANALYSIS

As some of the streams within the action area are classified as high quality-cold water habitats, ABACT standards will be applied to this Project. To reduce impacts to water quality from stormwater runoff associated with Project activities, the following ABACT nondischarge alternative standards will be applied to this Project, as necessary, in addition to the BMPs outlined throughout the E&SCP:

- The site layout has taken into account the preservation of riparian buffers and natural watercourses where possible. Additionally, the use of cuts and fills has been minimized.

- Access to the site has been limited to the use of construction entrances that were designed to use existing roads and avoid stream and wetland crossings where possible.

- Sediment barriers proposed for use during construction primarily include compost type BMPs and are selected and designed based on site-specific conditions, including slope and soil type. Temporary slope breakers and waterbars will divert stormwater from the ROW to well vegetated areas and sediment barriers. Temporary stream and wetland crossings were designed according to the E&SCP to minimize impacts from construction and vehicular traffic.

- Upon completion or temporary cessation of earth disturbance activities, disturbed areas will be stabilized; soil stabilizers and blanketing will be used as necessary. Disturbed areas will be revegetated in accordance with DTI’s post-construction management plan.

These BMPs, in conjunction with additional BMPs outlined in the E&SCP, serve to minimize or eliminate increased storm water discharges to all waters of the state of Pennsylvania, including high quality-cold water streams.