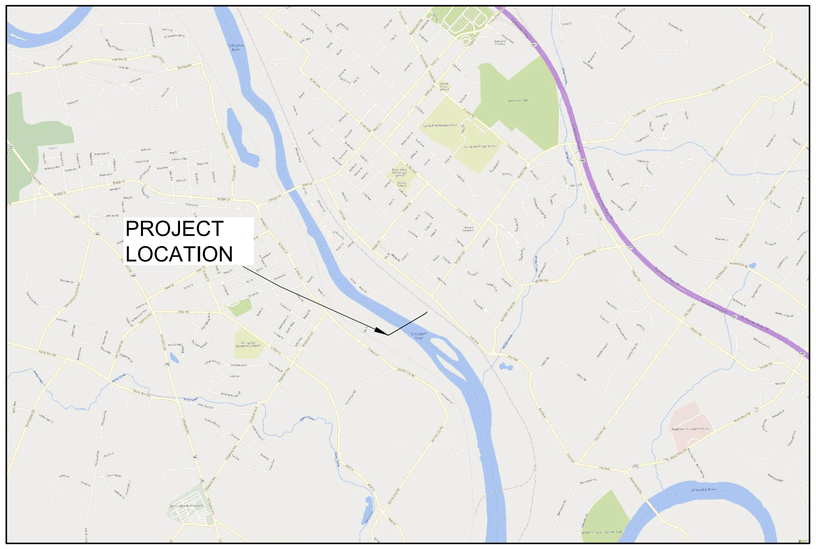
EROSION AND SEDIMENTATION CONTROL PLAN

SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

TEXAS EASTERN TRANSMISSION, LP

JANUARY 2024



VICINITY MAP

2,000 0 2,000 4,000

1"=2,000'

DRAWING INDEX		
SHEET NO.	SHEET NAME	DESCRIPTION
1	G0-001	TITLE SHEET
2	C0-001	HDD SITE PLAN
3	C0-002	HDD SITE PLAN
4	C0-003	LINE REMOVAL SITE PLAN
5	C0-004	LINE REMOVAL SITE PLAN
6	C0-005	SITE RESTORATION PLAN
7	C0-006	SITE RESTORATION PLAN
8	C5-001	E&SC PLAN-NOTES
9	C5-002	E&SC PLAN-NOTES
10	C5-003	E&SC PLAN-DETAILS
11	C5-004	E&SC PLAN-DETAILS

PERMIT BOUNDARY: 9.7 ACRES
LIMIT OF DISTURBANCE: 5.90 ACRES

JACOBS:
2301 CHESTNUT STREET
SUITE 4400
PHILADELPHIA, PA 19103
P. 215-845-6877

NO.	REVISION	DATE

Jacobs

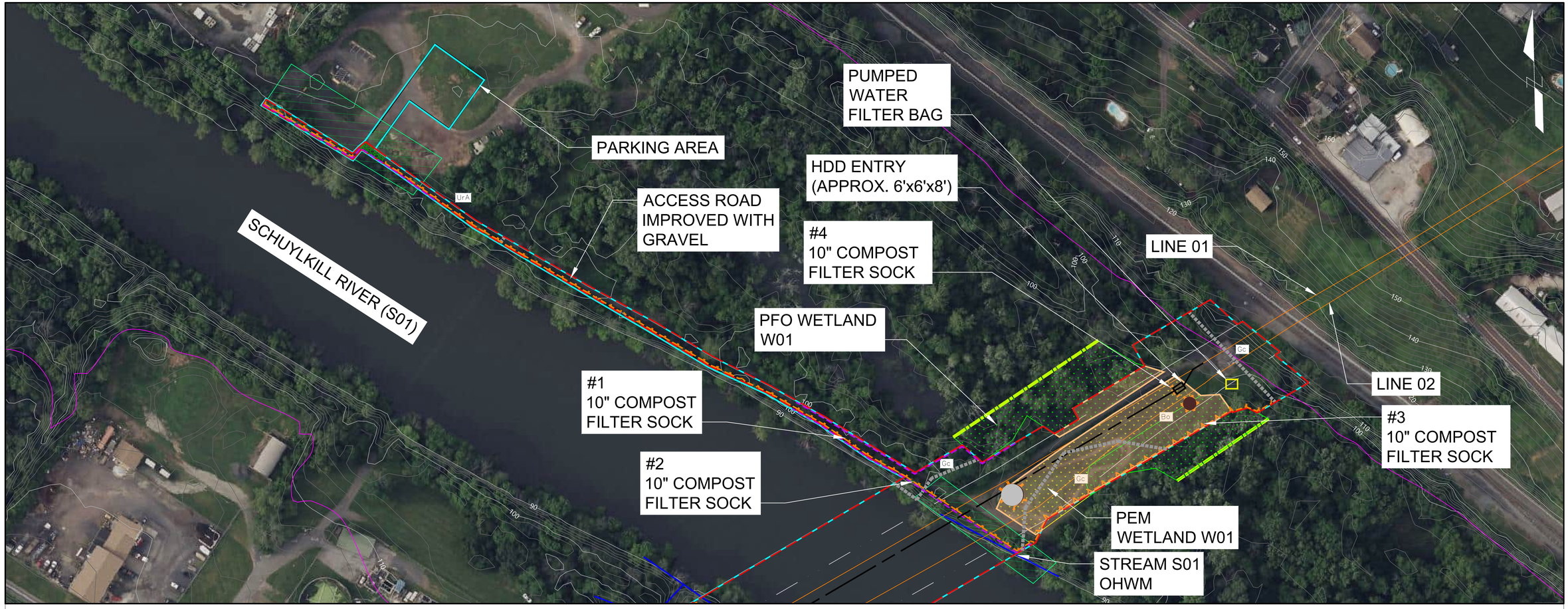
DATE 1/11/2024
SCALE AS SHOWN
DESIGNED SH
CHECKED SH
DRAWN ME
ACCEPTED

SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY,
PENNSYLVANIA

ENBRIDGE

TITLE SHEET

PROJECT IDENTIFIER D3739300
SHEET NAME G0-001
VOLUME NUMBER
SHEET NUMBER 1 OF 11



80 0 80 160

1"=80'

LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- COMPOST FILTER SOCK (APPROX. 25' SECTIONS MAX)
- ROCK CONSTRUCTION ENTRANCE
- TURBIDITY CURTAIN
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- TIMBER MATTING
- NESTING EXCLUSION ZONE
- SILT FENCE
- NEW LINE 1
- 100.00 EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- CLEAN FILL STOCKPILE
- SPOIL PILE (INCLUDES SEPARATED TOPSOIL/SUBSOIL)

NOTES:

1. Runoff from this site drains to the Schuylkill River, which is designated as a warm water fishes, migratory fishes by PA Code 93.9.
2. Access will be via existing public or private roads. Addition of gravel will be the only improvements.
3. Install erosion control blankets in all disturbed areas steeper than 3:1 slope and within 50 feet of a surface water / 100 feet of a special protection water (HQ).
4. Turtle exclusion fence should be installed during the inactive period of the turtle (October 15 - April 15) so that active turtles or their nests do not get trapped in the work zone.
5. Refer to Enbridge Best Practices Plan for HDD Operations for drill procedures and monitoring; inadvertent return monitoring, response and cleanup; and contingency plan implementation.

NO.	REVISION	DATE

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SCALE 1" = 80'
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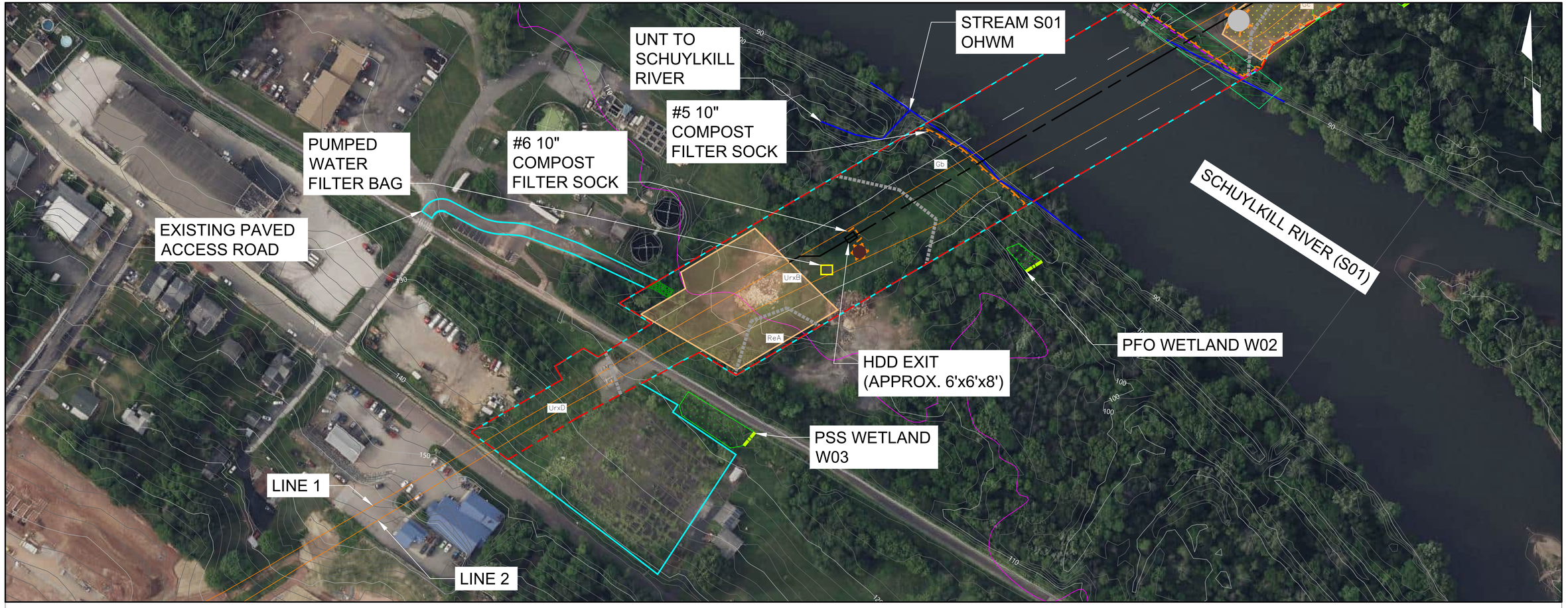
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

HDD SITE PLAN

PROJECT IDENTIFIER D3739300
SHEET NAME C0-001
VOLUME NUMBER
SHEET NUMBER 2 OF 11



LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- COMPOST FILTER SOCK (APPROX. 25' SECTIONS MAX)
- ROCK CONSTRUCTION ENTRANCE
- TURBIDITY CURTAIN
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- TIMBER MATTING
- NESTING EXCLUSION ZONE
- SILT FENCE
- NEW LINE 1
- 100.00 — EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA — SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- CLEAN FILL STOCKPILE
- SPOIL PILE (INCLUDES SEPARATED TOPSOIL/SUBSOIL)

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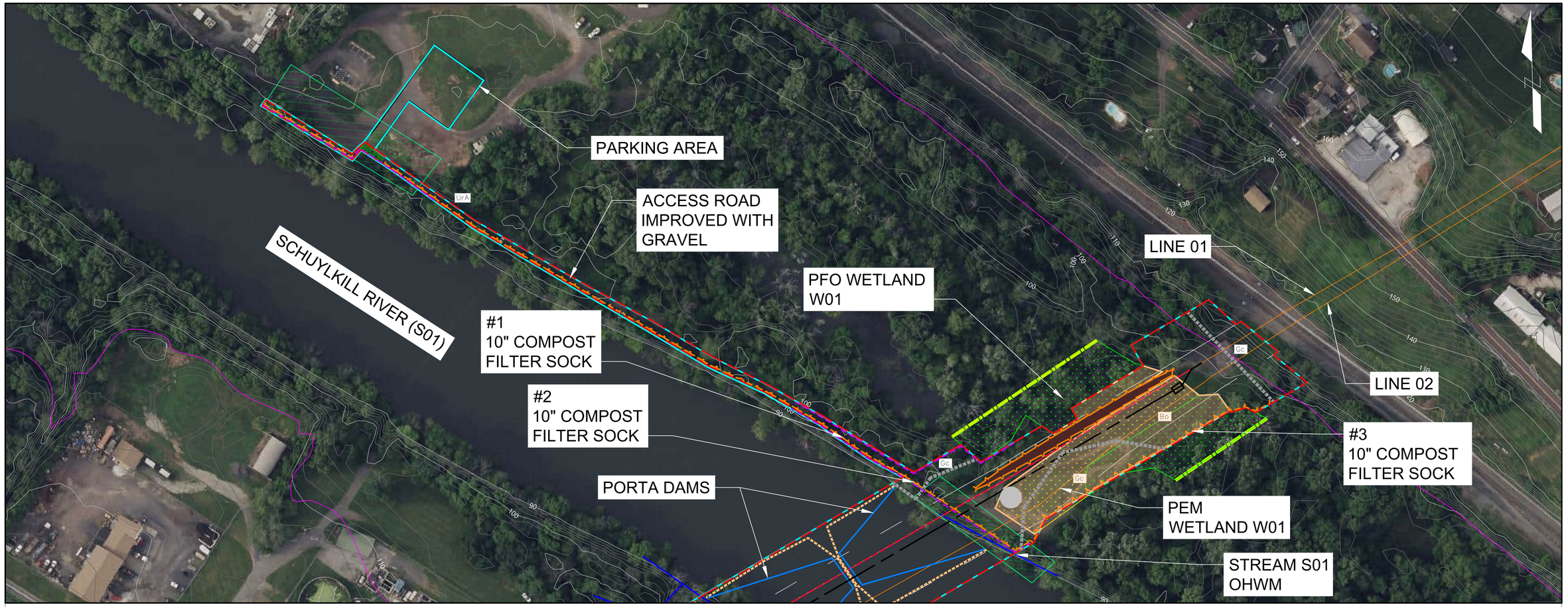
CHESTER AND MONTGOMERY COUNTY,
PENNSYLVANIA

ENBRIDGE

HDD SITE PLAN

PROJECT IDENTIFIER D3739300
SHEET NAME C0-002
VOLUME NUMBER
SHEET NUMBER 3 OF 11



LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- COMPOST FILTER SOCK (APPROX. 25' SECTIONS MAX)
- ROCK CONSTRUCTION ENTRANCE
- TURBIDITY CURTAIN
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- TIMBER MATTING
- NESTING EXCLUSION ZONE
- SILT FENCE
- NEW LINE 1
- 100.00 EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- CLEAN FILL STOCKPILE
- SPOIL PILE (INCLUDES SEPARATED TOPSOIL/SUBSOIL)
- PORTION OF LINE 1 TO BE REMOVED

80 0 80 160
1"=80'

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3. Install erosion control blankets in all disturbed areas steeper than 3:1 slope and within 50 feet of a surface water / 100 feet of a special protection water (HQ).
4. In-stream work will occur after April 15th.

NO.	REVISION	DATE

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SCALE 1" = 80'
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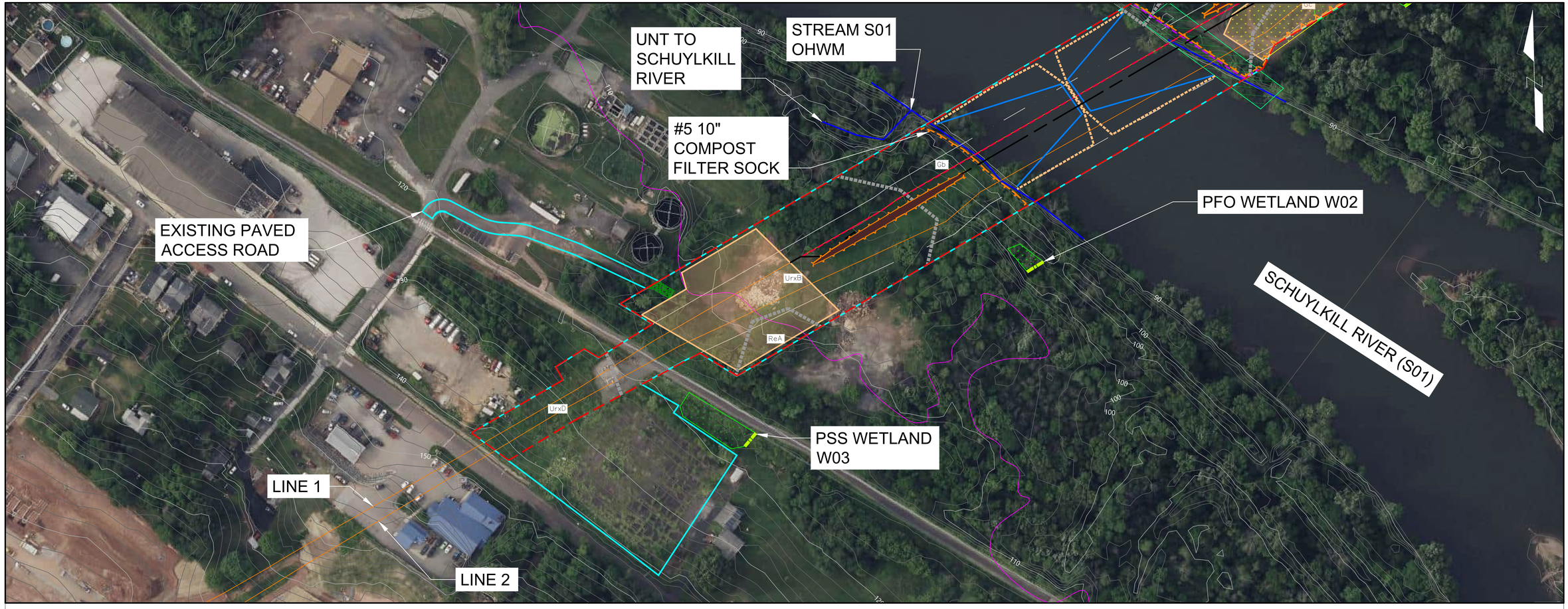
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

LINE 1 REMOVAL

PROJECT IDENTIFIER D3739300
SHEET NAME C0-003
VOLUME NUMBER
SHEET NUMBER 4 OF 11



LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- COMPOST FILTER SOCK (APPROX. 25' SECTIONS MAX)
- ROCK CONSTRUCTION ENTRANCE
- TURBIDITY CURTAIN
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- TIMBER MATTING
- NESTING EXCLUSION ZONE
- SILT FENCE
- NEW LINE 1
- 100.00 — EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA — SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- CLEAN FILL STOCKPILE
- SPOIL PILE (INCLUDES SEPARATED TOPSOIL/SUBSOIL)
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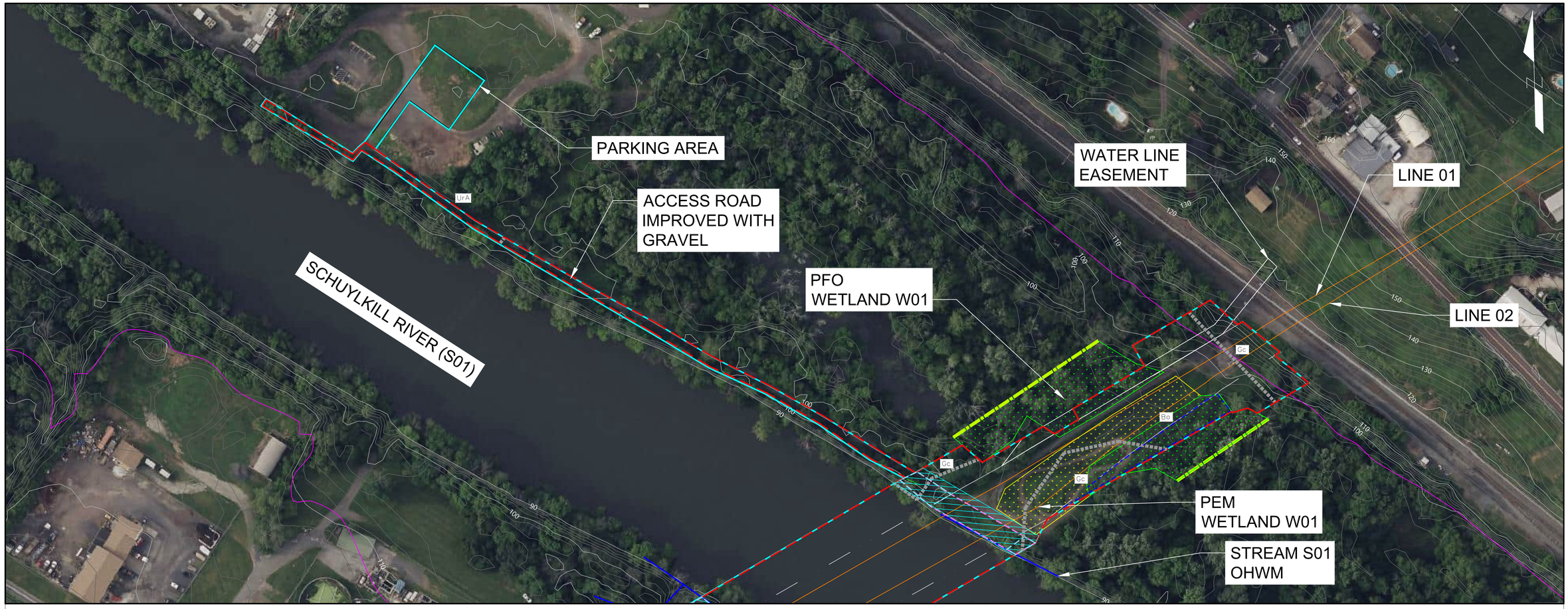
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

LINE 1 REMOVAL

PROJECT IDENTIFIER D3739300
SHEET NAME C0-004
VOLUME NUMBER
SHEET NUMBER 5 OF 11



LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- 100.00 EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- RIPARIAN SEED MIX
- RIPARIAN SHRUB PLANTING
- EROSION CONTROL BLANKET
- PFO WETLAND PLANTING ATWS

80 0 80 160
1"=80'

Riparian Planting in ATWS
Allegheny blackberry (*Rubus allegheniensis*)
River birch (*Betula nigra*)
Gray dogwood (*Cornus racemosa*)
Silky dogwood (*Cornus amomum*)

PFO Wetland Planting in ATWS
Northern Spicebush (*Lindera benzoin)*
Gray dogwood (*Cornus racemosa*)
Silky dogwood (*Cornus amomum*)

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4. Refer to Seeding Details (Sheet 10).
5. Temporary BMPs while not shown on this Restoration Plan will not be removed until the area is stabilized.

NO.	REVISION	DATE

Jacobs

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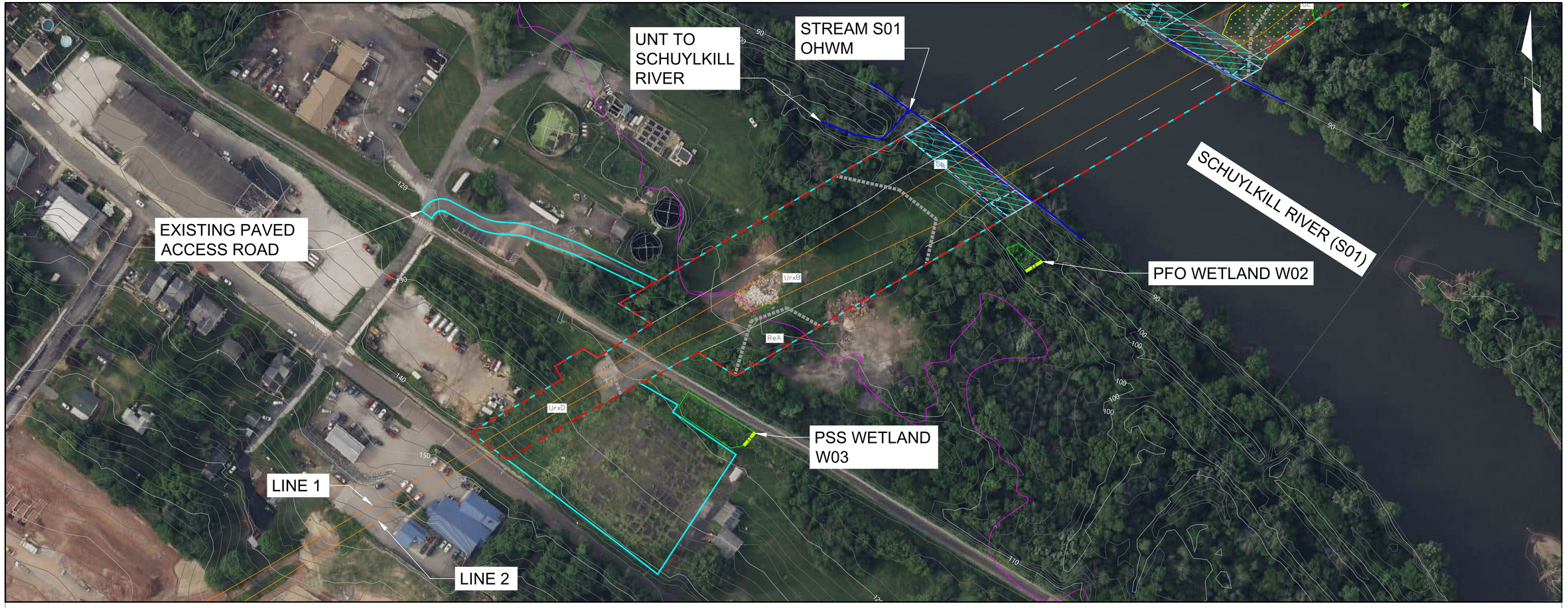
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

SITE RESTORATION PLAN

PROJECT IDENTIFIER D3739300
SHEET NAME C0-005
VOLUME NUMBER
SHEET NUMBER 6 OF 11



LEGEND:

- LIMIT OF DISTURBANCE
- PERMIT BOUNDARY
- OPEN ENDED FEATURE
- EXISTING EASEMENT
- 100.00 EXISTING CONTOUR
- SOIL TYPE BOUNDARY
- UrA SOIL TYPE
- EXISTING STREAM
- FEMA FLOODPLAIN
- PFO WETLAND
- PEM WETLAND
- RIPARIAN SEED MIX
- RIPARIAN SHRUB PLANTING
- EROSION CONTROL BLANKET
- PFO WETLAND PLANTING ATWS

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Gray dogwood (*Cornus racemosa*)
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CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

SITE RESTORATION PLAN

PROJECT IDENTIFIER D3739300
SHEET NAME C0-006
VOLUME NUMBER
SHEET NUMBER 7 OF 11

GENERAL NOTES:

1. ALL EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGE OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1-800-242-1776 SHALL BE NOTIFIED FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BEST MANAGEMENT PRACTICES (BMPS) SPECIFIED BY THE BNP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AN ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LOD BOUNDARIES SHOWN ON THE PLAN. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SIDE SLOPES MUST BE 2:1 OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BMPS TO MINIMIZE THE POTENTIAL FOR EROSION AND/OR SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR PADEP.
10. ALL BUILDING MATERIALS AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH PENNSYLVANIA'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.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE PADEP FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
14. CONSTRUCTION VEHICLES AND EQUIPMENT ARE REQUIRED TO USE THE DESIGNATED EXISTING AND TEMPORARY ACCESS ROADS SHOWN IN THE DRAWINGS.
15. UNTIL THE SITE IS STABILIZED, ALL E&S CONTROL BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL E&S CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RESEEDING, RE-MULCHING, AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF E&S CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
16. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY, OR AS NEEDED THROUGHOUT THE WORKDAY OR AS DIRECTED BY THE MUNICIPALITY OR THE CONSERVATION DISTRICT AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
18. ALL SEDIMENT REMOVED FROM BMPS DURING CONSTRUCTION WILL BE RETURNED TO UPLAND AREAS ON SITE AND INCORPORATED INTO THE SITE GRADING.
19. AREAS WHICH ARE TO BE TOP-SOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES - 6 TO 12 INCHES ON COMPACTED SOILS PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
20. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.
21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
22. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
23. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
26. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
27. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE THE DISTURBED AREAS. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS.

    DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
28. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
29. E&S CONTROL BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER E&S CONTROL BMP APPROVED BY THE PADEP.
30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY E&S CONTROL BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST-CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE E&S CONTROL BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
32. FAILURE TO CORRECTLY INSTALL E&S CONTROL BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S CONTROL BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

NRCS MAPPED SOIL UNITS WITHIN THE LOD

Map Symbol	Soil Description	Prime Farmland	Drainage Class	Hydric Soil
Bo	Bowmansville-knauers silt loams	Farmland of statewide importance	Somewhat poorly drained (Bowmansville) - Poorly drained (Knauers)	Yes (Bowmansville)-No (Knauers)
Gb /Gc	Gibraltar silt loam	Farmland of statewide importance	Well drained	No
ReA	Readington silt loam, 0 to 3% slopes	Prime farmland	Moderately well drained	No
Ura	Urban land, occasionally flooded	Not prime farmland	Excessively drained	No
UrxB / UrxD	Urban land-Penn complex, 0 to 8% slopes / 8 to 25% slopes	Not prime farmland	Well Drained	No
W	Water			

[1]DATA OBTAINED FROM HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/APP/WEBSOILSURVEY.ASPX, ACCESSED 5/2023

LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTHMOVING PROJECTS

SOIL ABBREV.	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUSIONS	LOW STRENGTH/ LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK-SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
BOWMANSVILLE	X	C/S			X	X	X	X	X	X	X	X				X
KNAUERS	X	C/S	X		X	X	X	X	X		X	X			X	X
GIBRALTAR	X	C/S		X	X	X	X	X	X	X		X				
READINGTON	X	C/S		X		X	X	X	X	X	X	X				X
PENN	X	C	X				X	X		X	X	X				

[1]DATA OBTAINED FROM PADEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2012

CUBIC YARDS OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS

Depth (in)	Per 1,000 Square Feet	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806
7	21.7	940
8	24.8	1,074

PA BMP MANUAL (2012) TABLE 11.1

SOIL LIMITATIONS AND RESOLUTIONS	
LIMITATION	RESOLUTION
CUT BANKS CAVE	TRENCHES SHALL BE EXCAVATED WITH APPROPRIATE LAYBACK BANKS TO PREVENT CAVE-INS. SPOIL WILL BE LOCATED AT A SUFFICIENT DISTANCE AWAY FROM THE TRENCH. IN THE EVENT GROUNDWATER IS ENCOUNTERED, THE CONTRACTOR SHALL EMPLOY DEWATERING MEASURES. CONTRACTOR SHALL ENSURE THAT PROPER SHORING METHODS AND SAFETY PROCEDURES ARE UTILIZED TO KEEP WORKERS SAFE.
CORROSIVE TO CONCRETE OR STEEL	STEEL PIPES SHALL BE COATED WITH CORROSION RESISTANT MATERIAL.
DROUGHTY	NO ADDITIONAL ACTION REQUIRED OTHER THAN THE APPROPRIATE EROSION AND SEDIMENT CONTROL SHOWN ON THE DRAWINGS.
EASILY ERODIBLE	ALL DISTURBED AREAS SHALL BE SEEDED IN ACCORDANCE WITH THE ESPC DOCUMENTS.
HIGH WATER TABLE	PUMPS SHALL BE UTILIZED WHERE GROUNDWATER IS ENCOUNTERED.
LOW STRENGTH	TRENCHES SHALL BE EXCAVATED WITH APPROPRIATE LAYBACK BANKS TO PREVENT CAVE-INS. SPOIL WILL BE LOCATED AT A SUFFICIENT DISTANCE AWAY FROM THE TRENCH.
SLOW PERCOLATION	APPROPRIATE BMPS WILL BE USED TO MAINTAIN EXISTING CONDITIONS AS SHOWN ON THE DRAWINGS.
PIPING	TRENCH PLUGS SHALL BE UTILIZED IN ACCORDANCE WITH THE STANDARD DETAIL IN THE DRAWINGS. WATER WILL BE DIVERTED AWAY FROM OPEN TRENCHES.
POOR TOPSOIL	TOPSOIL WILL BE REPLACED WHEN APPLYING PERMANENT SEEDING.
FROST ACTION	THE TIMEFRAME FOR CONSTRUCTION IS EXPECTED TO BE BEFORE THE FIRST FROST EVENT.
WETNESS	STABILIZATION AND/OR DEWATERING MEASURES APPLIED WHERE APPROPRIATE.
FLOODING	TIMBER MAT BRIDGING AND PUMPS SHALL BE UTILIZED DURING FLOODING EVENTS AND STABILIZATION AND/OR DEWATERING MEASURES APPLIED WHERE APPROPRIATE.
HYDRIC INCLUSIONS	NO ADDITIONAL ACTION REQUIRED OTHER THAN THE APPROPRIATE EROSION AND SEDIMENT CONTROL SHOWN ON THE DRAWINGS.
PONDING	STABILIZATION AND/OR DEWATERING MEASURES APPLIED WHERE APPROPRIATE.

NO.	REVISION	DATE

Jacobs

DATE 1/11/2024
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ACCEPTED

SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

E&SC NOTES

PROJECT IDENTIFIER D3739300
SHEET NAME C5-001
VOLUME NUMBER
SHEET NUMBER 8 OF 11

PROJECT DESCRIPTION

TEXAS EASTERN TRANSMISSION, LP (TEXAS EASTERN) IS PROPOSING THE SCHUYLKILL RIVER HDD PROJECT (PROJECT) TO MAINTAIN THEIR EXISTING NATURAL GAS PIPELINE SYSTEM. THE PROJECT IS IN SPRING CITY AND UPPER PROVIDENCE TOWNSHIPS, CHESTER AND MONTGOMERY COUNTIES, PENNSYLVANIA, AND IS WITHIN THE PHOENIXVILLE USGS 7.5 QUADRANGLE.

AT THIS LOCATION, TEXAS EASTERN HAS TWO PARALLEL EXISTING PIPELINE SYSTEMS WHICH CROSS UNDER THE SCHUYLKILL RIVER: LINE 1, A 20-INCH DIAMETER PIPELINE, AND LINE 2, A 36-INCH DIAMETER PIPELINE. THE EXISTING EASEMENT RANGES FROM APPROXIMATELY 75 FEET TO 110 FEET IN WIDTH. TEXAS EASTERN DURING ROUTINE MONITORING OF LINE 1, IDENTIFIED AN APPROXIMATELY 18-FOOT EXPOSURE OF THE LINE 1 PIPELINE IN THE SCHUYLKILL RIVER.

THE PROJECT PROPOSES TO INSTALL A NEW 20-INCH DIAMETER PIPE WITH A HORIZONTAL DIRECTIONAL DRILL (HDD) OF APPROXIMATELY 1,111 LINEAR FEET. THE NEW PIPELINE WILL BE PARALLEL AND OFFSET APPROXIMATELY 20 FEET FROM THE EXISTING LINE 1 WITHIN THE EXISTING EASEMENT. ADDITIONALLY, THE EXISTING 20-INCH DIAMETER LINE 1 PIPELINE WILL BE REMOVED. EXCAVATION WILL BE PERFORMED ON BOTH SIDES OF THE RIVER FROM TIE IN POINT TO RIVERBANK, AND THE DECOMMISSIONED SEGMENT OF PIPE REMOVED ON EITHER SIDE UP TO THE RIVER. WITHIN THE RIVER, A PORTADAM (TYPE OF COFFERDAM) WILL BE USED TO REMOVE THE EXISTING LINE 1. DUE TO THE WIDTH OF THE SCHUYLKILL RIVER, THE WORK WILL OCCUR IN TWO SEGMENTS COVERING HALF OF THE RIVER, EXECUTED ONE AT A TIME.

WORK WILL OCCUR WITHIN THE EXISTING, MAINTAINED PIPELINE EASEMENT AND ADDITIONAL TEMPORARY WORKSPACE PARALLEL TO THE EASEMENT. FOLLOWING CONSTRUCTION, THE IMPACTED AREA WILL BE RESTORED TO PRE-CONSTRUCTION CONTOURS, SEEDED, AND MULCHED. ACCESS TO THE SITE WILL BE ALONG EXISTING ROADS. ONE WETLAND (EMERGENT AND FORESTED) WILL BE TEMPORARILY IMPACTED FOR THE WORK. THE LIMITS OF DISTURBANCE (LOD) ASSOCIATED WITH THIS PROJECT ENCOMPASS 6.4 ACRES.

THE PAST AND PRESENT LAND USES FOR THE PROJECT AREA ARE EXISTING, MAINTAINED PIPELINE EASEMENT, GRAVEL ROAD, FORESTED AREA, AND COMMERCIAL/INDUSTRIAL AREAS. NO NEW IMPERVIOUS SURFACES WILL BE CREATED AS PART OF THIS PROJECT. THE ENTIRE SITE WILL BE RESTORED TO PRE-CONSTRUCTION LAND COVERS AND CONDITIONS AS NEAR AS PRACTICABLE. THE VOLUME, RATE, AND QUALITY OF STORMWATER RUNOFF FROM THE PROJECT WILL BE EQUAL TO PRE-CONSTRUCTION CONDITIONS. NO THERMAL IMPACTS ARE ANTICIPATED FROM THE PROJECT. NO KNOWN SOIL CONDITIONS OR GEOLOGIC FORMATIONS ARE ANTICIPATED TO RESULT IN POLLUTION DURING EARTH DISTURBANCES.

THE PROJECT DRAINS TO THE SCHUYLKILL RIVER, WHICH IS CLASSIFIED AS WARM WATER FISHES (WWF) AND MIGRATORY FISHES (MF) BY PA CODE §93.9. EROSION AND SEDIMENT CONTROLS / BEST MANAGEMENT PRACTICES (BMPS) WILL BE USED DURING CONSTRUCTION TO MINIMIZE THE POTENTIAL FOR SEDIMENT LADEN RUNOFF TO EXIT THE SITE.

CONSTRUCTION SEQUENCE

1. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
2. AN ON-SITE PRE-CONSTRUCTION MEETING IS REQUIRED TO OCCUR NO LESS THAN 7-DAYS PRIOR TO ANY EARTH DISTURBANCE UNLESS NOTIFIED OTHERWISE BY SERO DEP OR THE CHESTER OR MONTGOMERY COUNTY CONSERVATION DISTRICT. PERMITTEES, CO-PERMITTEES, OPERATORS, ALL APPROPRIATE MUNICIPAL OFFICIALS, REPRESENTATIVES FROM THE CHESTER AND MONTGOMERY COUNTY CONSERVATION DISTRICT AND THE SERO DEP, AND LICENSED PROFESSIONALS OR DESIGNEES RESPONSIBLE FOR THE EARTH DISTURBANCE ACTIVITY, INCLUDING IMPLEMENTATION OF E&S AND PCSM PLANS AND CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN, SHALL ATTEND A PRE-CONSTRUCTION MEETING.
3. SURVEYING AND FLAGGING THE RIGHTS-OF-WAY (ROW), LIMITS OF DISTURBANCE (LOD), AND WETLANDS. INSTALLATION OF NESTING AREA EXCLUSION SILT FENCE.
4. INSTALLATION OF BMPS PER THE E&S DRAWINGS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITY INCLUDING ROCK CONSTRUCTION ENTRANCES, TIMBER MATS, AND PERIMETER COMPOST FILTER SOCKS. ACCESS TO THE SITE WILL BE VIA EXISTING ROADS, ROAD IMPROVEMENTS WILL BE LIMITED TO ADDING GRAVEL.
5. CLEARING WITHIN THE LOD WILL BE LIMITED TO THAT NEEDED TO SAFELY AND EFFICIENTLY COMPLETE THE WORK.
6. EXCAVATION OF HDD ENTRY / EXIT PITS AND MOBILIZATION OF HDD EQUIPMENT. TOPSOIL WILL BE SEGREGATED IN WETLANDS. HDD ACTIVITIES INCLUDING PIPE STRINGING AND BENDING, WELDING AND WELD INSPECTION, PULLING OF THE PIPE, TIE-IN WITH EXISTING SYSTEM, AND HYDROSTATIC TESTING OF PIPE. ANY CESSATION OF ACTIVITY FOR 4 DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. WATER PUMPED FROM EXCAVATED AREAS MUST BE FILTERED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGE INTO SURFACE WATERS.
7. PIPELINE REMOVAL ACTIVITIES INCLUDING CLEANING/PURGING OF EXISTING PIPELINE, EXCAVATION OF TRENCH AND REMOVAL OF PIPE FROM TIE IN POINT TO RIVERBANK, CLEAN FILL WILL BE BROUGHT IN TO BRING TRENCH UP TO GRADE. INSTALLATION OF TURBIDITY CURTAIN AND PORTADAM ON ONE SIDE OF RIVER, EXCAVATION OF TRENCH AND REMOVAL OF PIPE WITHIN PORTADAM, BACKFILL OF TRENCH ADDING CLEAN FILL AS NEEDED AND REMOVAL OF PORTADAM AND TURBIDITY CURTAIN. SEQUENCE REPEATED ON SECOND SIDE OF RIVER.
8. RESTORATION AND CLEAN-UP OF LOD INCLUDING RETURNING AREAS TO PRECONSTRUCTION CONTOURS AND PERMANENT STABILIZATION ACCORDING TO THE SEEDING SPECIFICATIONS TABLE. INSTALL EROSION CONTROL BLANKET WITHIN 50 FEET OF REGULATED WATERS / 100 FEET OF SPECIAL PROTECTION WATERS. THE SITE ENGINEER WILL CONDUCT CRITICAL STAGE INSPECTION(S) FOR THE SITE RESTORATION.
9. FOLLOWING PERMANENT STABILIZATION OF A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION, E&S BMPS MUST BE REMOVED FROM THE STIE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE PA DEP'S WASTE MANAGEMENT REGULATIONS AT 25 PA CODE 260.1 ET SEQ., 271.1 AND 287.1 ET SEQ.

   ANY EARTH DISTURBANCE ASSOCIATED WITH REMOVAL OF BMPS MUST BE IMMEDIATELY REPAIRED AND PERMANENTLY STABILIZED IN ACCORDANCE WITH SEEDING SPECIFICATIONS TABLE.
10. A FINAL CRITICAL STAGE INSPECTION BY THE SITE ENGINEER WILL BE COMPLETED TO VERIFY SITE RESTORATION IS COMPLETE.
11. SUBMITTAL OF THE NOTICE OF TERMINATION TO CLOSE OUT THE ESCG PERMIT.

BMP DESCRIPTIONS

TEMPORARY CONTROL MEASURES FOR SHORT-TERM PROTECTION

COMPOST FILTER SOCK

COMPOST FILTER SOCK IS A TUBULAR PRODUCT INSTALLED PARALLEL TO THE CONTOURS ON THE DOWNHILL SIDE OF THE WORK AREA IN ORDER TO PREVENT SEDIMENT LADEN RUNOFF FROM EXITING THE WORKSPACE. INSTALL COMPOST FILTER SOCK AS INDICATED ON THE E&S DRAWINGS

TEMPORARY VEGETATIVE SURFACE STABILIZATION

TEMPORARY VEGETATION HELPS STABILIZE DISTURBED SOILS AND REDUCES THE OCCURRENCE OF EROSION AND HELPS FILTER RUNOFF FROM ADJACENT DISTURBED AREAS. PLACE VEGETATIVE SURFACE STABILIZATION ON DISTURBED AREAS. SEE SECTION 8 AND THE DRAWINGS.

PUMPED WATER FILTER BAG

PUMPED WATER FILTER BAGS ARE USED TO FILTER AND DISPERSE WATER PUMPED FROM EXCAVATIONS. INSTALL PUMPED WATER FILTER BAG AS INDICATED ON THE E&S DRAWINGS.

ROCK CONSTRUCTION ENTRANCE

ROCK CONSTRUCTION ENTRANCES ARE UTILIZED TO PREVENT TRACKING OF SEDIMENT AT THE ENTRANCES AND EXITS FROM THE WORKSPACE. INSTALL ROCK CONSTRUCTION ENTRANCE AS INDICATED ON THE E&S DRAWINGS.

EROSION CONTROL BLANKETS

EROSION CONTROL BLANKETS HELP HOLD SEED AND SOIL IN PLACE ON DISTURBED AREAS THAT ARE BEING STABILIZED. INSTALL EROSION CONTROL BLANKETS IN ALL AREAS WITH STEEPER THAN 3:1 SLOPES AND WITHIN 50 FEET OF A SURFACE WATER / 100 FEET OF A SPECIAL PROTECTION WATER.

TEMPORARY WETLAND CROSSING

TEMPORARY WETLAND CROSSINGS ARE UTILIZED TO MINIMIZE COMPACTION AND DAMAGE TO WETLAND SOILS AND VEGETATION. INSTALL WETLAND CROSSING AS INDICATED ON THE DRAWINGS.

PERMANENT CONTROL MEASURES FOR LONG-TERM PROTECTION

VEGETATIVE SURFACE STABILIZATION

USE VEGETATIVE SURFACE STABILIZATION TO PERMANENTLY CONTROL EROSION ON NON-PAVED SURFACES. SEE SECTION 8 AND THE E&S DRAWINGS FOR PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.

MAINTENANCE PROGRAM

BMPS SHALL BE MAINTAINED UNTIL GROUND DISTURBING ACTIVITIES CEASE AND UNTIL A REPRESENTATIVE OF THE PA DEP OR COUNTY CONSERVATION DISTRICT DETERMINES THE PROJECT AREA HAS BEEN STABILIZED. STABILIZATION IS DEFINED AS A UNIFORM, 70%, PERENNIAL VEGETATIVE COVER OVER THE ENTIRE DISTURBED AREA. UNTIL THE SITE IS STABILIZED, E&SC BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL E&SC BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RESEEDING, AND/OR RE-MULCHING, MUST BE PERFORMED IMMEDIATELY. IF E&SC BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.

RECORDS OF THE MAINTENANCE INSPECTIONS SHALL BE LOGGED ONTO THE PADEP FORM 3150-FM-BWEW0083, OR EQUIVALENT, AND KEPT ON SITE AT ALL TIMES. SEDIMENT REMOVED FROM BEHIND SEDIMENT CONTROL BMPS WILL BE DEPOSITED IN UPLAND AREAS. MATERIAL SHALL BE PROTECTED FROM EROSION BY UTILIZING THE SAME METHODS USED TO PREVENT EROSION OF PROJECT EMBANKMENTS.

THE SPECIFIC CRITERIA FOR MAINTENANCE OF THE E&S CONTROL DEVICES SHALL BE AS FOLLOWS:

COMPOST FILTER SOCK

COMPOST FILTER SOCK SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. RESULTS OF SUCH INSPECTIONS MUST BE REVIEWED WITH THE INSPECTOR. IMMEDIATELY CLEAN, REPAIR, OR REPLACE SOCK THAT IS IN UNSATISFACTORY CONDITION (LOOSE OR BROKEN STAKES, DETERIORATED FABRIC, ETC.) OR IS BEYOND THE LIFE EXPECTANCY RECOMMENDED BY THE MANUFACTURER. REPAIR ANY UNDERCUTTING OR EROSION OF THE TOE ANCHOR WITH A ROCK FILTER OUTLET. REMOVE ACCUMULATED SEDIMENT AS REQUIRED, NOT ALLOWING THE SEDIMENT TO EXCEED ONE-HALF (1/2) THE HEIGHT OF THE SOCK. SEDIMENT REMOVED FROM BEHIND SEDIMENT CONTROL BMPS WILL BE DEPOSITED IN UPLAND AREAS.

PUMPED WATER FILTER BAG

FILTER BAGS SHALL BE INSPECTED DAILY AND AFTER EACH RUNOFF EVENT. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED. THE FILTER BAG AND/OR SEDIMENT WITHIN THE BAG SHALL BE DISPOSED OF APPROPRIATELY.

ROCK CONSTRUCTION ENTRANCE

ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING STONE. ENTRANCES SHOULD BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. A STOCKPILE SHALL BE MAINTAINED ON-SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50-FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

EROSION CONTROL BLANKETS

BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

TEMPORARY WETLAND CROSSING

TEMPORARY WETLAND CROSSINGS SHALL BE INSPECTED ON A DAILY BASIS AND AFTER EACH RUNOFF EVENT. DAMAGED CROSSINGS SHALL BE REPAIRED IMMEDIATELY BEFORE ANY SUBSEQUENT USE. SEDIMENT DEPOSITS ON THE CROSSING OR ITS APPROACHES SHALL BE REMOVED WITHIN 24 HOURS OF THE INSPECTION. AS SOON AS THE TEMPORARY CROSSING IS NO LONGER NEEDED, IT SHALL BE REMOVED. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY AND DISTURBED AREAS STABILIZED.

NO.	REVISION	DATE

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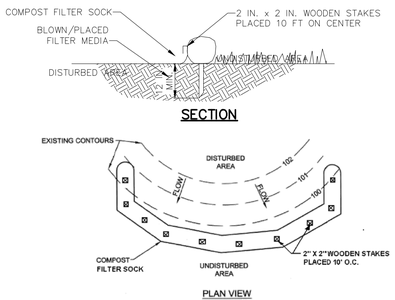
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY,
PENNSYLVANIA

ENBRIDGE

E&SC NOTES

PROJECT IDENTIFIER D3739300
SHEET NAME C5-002
VOLUME NUMBER
SHEET NUMBER 9 OF 11

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK



Filtrexx NTS

Sock fabric shall meet standards of Table 4.1. Compost shall meet the standards of Table 4.2.

Compost filter sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment (Figure 4.1). Maximum slope length above any sock shall not exceed that shown on Figure 4.2. Stakes may be installed immediately downslope of the sock if so specified by the manufacturer.

Traffic shall not be permitted to cross filter socks.

Accumulated sediment shall be removed when it reaches half the aboveground height of the sock and disposed in the manner described elsewhere in the plan.

Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection.

Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.

Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

SEE TABLE 4.1 AND 4.2 ON THIS SHEET FOR SPECIFICATION AND SIZING

1 - COMPOST FILTER SOCK
NTS

TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	HDPE biaxial net Continuously wound Fusion-welded junctures 3/4" X 3/4" Max. aperture size				
Outer Filtration Mesh	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch) 3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

Filtrexx & JMD

Compost should be a well decomposed, weed-free organic matter derived from agriculture, food, stump grindings, and yard or wood/bark organic matter sources. The compost should be aerobically composted. The compost should possess no objectionable odors and should be reasonably free (<1%

minimum specs to be used for the Project

TABLE 4.2
Compost Standards

Organic Matter Content	25% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.5
Moisture Content	30% - 60%
Particle Size	30% - 50% pass through 3/8" sieve
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

(f) Add Filtrexx FilterMedia$_{TM}$ (or equivalent) to be used for the Project the maximum allowable slope length for the entire slope.

SEEDING SPECIFICATIONS

PERMANENT SEEDING

UPLAND AREAS
TALL FESCUE, 15 LB/ACRE
BIRDSFOOT TREFOIL, 7.5 LB/ACRE
KENTUCKY BLUEGRASS, 15 LB/ACRE
PERENNIAL RYEGRASS, 15 LB/ACRE

RIPARIAN CORRIDOR
PA RIPARIAN MIX - ERNST SEEDS, ERNMX-263, 20 LBS/ACRE
PREDOMINANT SPECIES INCLUDE BIG BLUESTEM, INDIANGRASS, LITTLE BULESTEM, RIVERBANK WILDRYE, VIRGIIA WILDRYE. MIX FORMULATIONS ARE SUBJECT TO CHANGE DEPENDING ON AVAILABILITY OF EXISTING AND NEW SPECIES. FORMULATION MAY CHANGE, THE GUIDING FUNCTION OF THE MIX WILL NOT.

TEMPORARY SEEDING

ANNUAL RYEGRASS, 48 LB/AC

SOIL AMENDMENT PER ACRE

PERMANENT SEEDING APPLICATION RATE*

AGRICULTURE LIME	6 TONS
10-10-20 FERTILIZER	1000 LBS

TEMPORARY SEEDING APPLICATION RATE

AGRICULTURE LIME	1 TON
10-10-20 FERTILIZER	500 LBS

*OR AS PER SOIL TEST

PA BMP Manual (2012)

MULCH DISTURBED AREAS

STRAW MULCH APPLIED AT 3 TONS/ACRE

WETLAND SEEDING

TOPSOIL REPLACEMENT WILL PROVIDE SEED STOCK.

IF TEMPORARY STABILIZATION IS NEEDED, ANNUAL RYEGRASS 48 LB/ACRE (DO NOT EXCEED).

DO NOT APPLY LIME OR FERTILIZER IN WETLANDS.

IF OVERSEEDING IS REQUIRED FOLLOWING GROWING SEASONS, ERNST SEEDS, ERNMX-261

RECOMMENDED SEEDING DATES

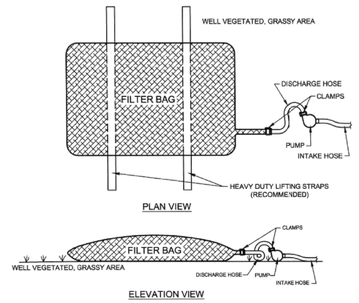
SPRING: MARCH 15-MAY 30
FALL: AUGUST 1-OCTOBER 15

SOIL COMPACTION MITIGATION

SOIL COMPACTION IDENTIFIED DURING RESTORATION SHOULD BE MITIGATED IN ORDER TO APPROXIMATE PRECONSTRUCTION CONDITIONS. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES AND SHOULD ONLY BE PERFORMED WHEN THE SOIL CONDITIONS ARE DRY.

IF A SOIL AMENDMENT IS USED:
1. DO NOT PLACE WITHIN THE DRIP LINE OF TREES OR TREE LINE.
2. DO NOT PLACE OVER UTILITY INSTALLATIONS WITHIN 30 INCHES OF THE SURFACE.
3. DO NOT PLACE WHERE TRENCHING/DRAINAGE LINES ARE INSTALLED.
4. DO NOT PLACE WHERE COMPACTION OF THE SOILS BY DESIGN IS REQUIRED.

STANDARD CONSTRUCTION DETAIL # 3-16
Pumped Water Filter Bag



PA DEP

Low volume 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. High volume filter bags shall be made from woven geotextiles that meet the following standards:

Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

A suitable means of accessing the bag with machinery required for disposal purposes shall be provided. Filter bags shall be replaced when they become ½ full of sediment. Spare bags shall be kept available for replacement of those that have failed or are filled. Bags shall be placed on straps to facilitate removal unless bags come with lifting straps already attached.

Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and non-polluting material may be placed under the bag to reduce slope steepness.

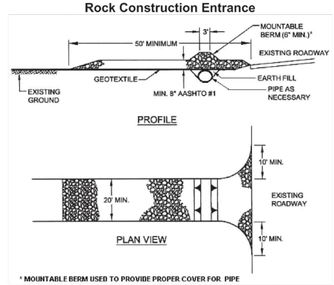
No downslope sediment barrier is required for most installations. Compost berm or compost filter sock shall be installed below bags located in HQ or EV watersheds, within 50 feet of any receiving surface water or where grassy area is not available.

2 - PUMPED WATER FILTER BAG
NTS

Sediment deposited on public roadways should be removed and returned to the construction site immediately. **Note: Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.**

Rock construction entrances are not effective sediment removal devices for runoff coming off the roadway above the entrance. Surface runoff should be directed off the roadway by means of appropriate drainage devices described later in this chapter. Where these devices do not discharge to a suitable vegetative filter strip, an appropriately sized sediment trap should be provided. For locations not having sufficient room for a conventional sediment trap, consideration should be given to use of a compost sock sediment trap. Compost sock traps may also be used instead of conventional sediment traps at other points of discharge. Where used, care should be taken to provide continuous contact between the sock and the underlying soil in order to prevent undermining. It is also important to properly anchor the sock (Standard Construction Detail #3-1).

STANDARD CONSTRUCTION DETAIL # 3-1
Rock Construction Entrance



Modified from Maryland DOE

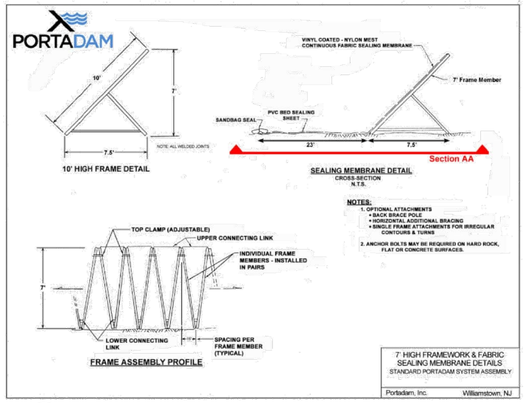
Remove topsoil prior to installation of rock construction entrance. Extend rock over full width of entrance.

Runoff shall be diverted from roadway to a suitable sediment removal BMP prior to entering rock construction entrance.

Mountable berm shall be installed wherever optional culvert pipe is used and proper pipe cover as specified by manufacturer is not otherwise provided. Pipe shall be sized appropriately for size of ditch being crossed.

MAINTENANCE: 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. All sediment deposited on paved roadways shall be removed and returned to the construction site immediately. If excessive amounts of sediment are being deposited on roadway, extend length of rock construction entrance by 50 foot increments until condition is alleviated or install wash rack. Washing the roadway or sweeping the deposits into roadway ditches, sewers, culverts, or other drainage courses is not acceptable.

3 - ROCK CONSTRUCTION ENTRANCE
NTS



4 - PORTADAM TYPICAL DESIGN
NTS

NO.	REVISION	DATE

Jacobs

DATE 1/11/2024
SCALE AS SHOWN
DESIGNED SH
CHECKED SH DRAWN ME
ACCEPTED

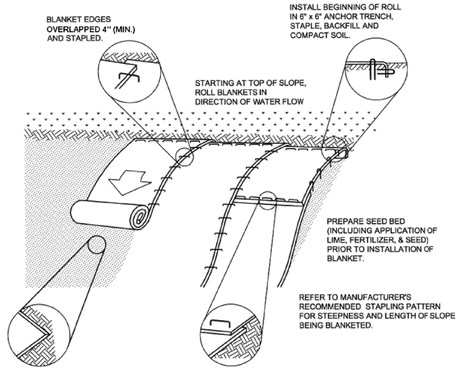
SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

E&SC DETAILS

PROJECT IDENTIFIER D3739300
SHEET NAME C5-003
VOLUME NUMBER
SHEET NUMBER 10 OF 11

STANDARD CONSTRUCTION DETAIL # 11-1
Erosion Control Blanket Installation



Source Unknown

Seed and soil amendments shall be applied according to the rates in the plan drawings prior to installing the blanket.

Provide anchor trench at toe of slope in similar fashion as at top of slope.

Slope surface shall be free of rocks, clods, sticks, and grass.

Blanket shall have good continuous contact with underlying soil throughout entire length. Lay blanket loosely and stake or staple to maintain direct contact with soil. Do not stretch blanket.

The blanket shall be stapled in accordance with the manufacturer's recommendations.

Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 70% coverage throughout the blanketed area. Damaged or displaced blankets shall be restored or replaced within 4 calendar days.

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5 - EROSION CONTROL BLANKET
NTS

EROSION CONTROL BLANKET SPECIFICATIONS

Product Evaluation Data and Test Results

EXCEL R-1 ALL NATURAL™

Test Methods

A variety of test methods are utilized to determine performance and conformance values for Rolled Erosion Control Products (RECPs). Information within this document is presented to provide conformance values and recommended design values. Test results obtained for the Excel R-1 All Natural Temporary Erosion Control Blanket (ECB) and general design values are presented in Tables 1-4. For specific information detailing testing protocols, results and application of design values, refer to document number WE_EXCEL_PERF_GEN.

Test Results

Table 1 - Bench Scale Testing (NTPEP)

Test Method	Test Condition	Results	Units
ECTC Test Method 2 - Rainfall	2 in. per hour	10.43	Soil Loss Ratio
	4 in. per hour	10.77	
	6 in. per hour	11.12	
ECTC Test Method 3 - Shear Resistance	2.65 psf	0.5	Soil Loss (in.)
ECTC Test Method 4 - Germination	Top Soil, Fescue, 21 day Incubation	549	% Improvement

Table 2 - Texas Transportation Institute (TTI)

Rainfall Testing			
Class	Slope Gradient	Soil Type	Result
A	< 3H : 1V	Clay	N/A
B	< 3H : 1V	Sand	N/A
C	> 3H : 1V	Clay	N/A
D	> 3H : 1V	Sand	N/A

Channelized Testing		
Class	90 Day Partially Vegetated Shear Stress Threshold	Result
E	2.0 lb/ft²	N/A
F	4.0 lb/ft²	N/A
G	6.0 lb/ft²	N/A
H	8.0 lb/ft²	N/A
I	10.0 lb/ft²	N/A
J	12.0 lb/ft²	N/A

Recommended Design Values

Table 3 - Unvegetated Design Values

Maximum Permissible Velocity*	Soil Loss
5.5 ft/s	0.5 inches
Maximum Permissible Shear Stress*	**Soil Loss**
1.6 lb/ft²	0.5 inches
Resistance to Flow*	
HEC 15 Shear Relationship	**Manning's n**
0.4 lb/ft² (Tau_{max})	0.062
0.8 lb/ft² (Tau_{max})	0.038
1.6 lb/ft² (Tau_{max})	0.035
RUSLE Cover Factor*	**Slope Gradient***
0.08	2 H : 1V

Table 4 - Vegetated Design Values

Maximum Permissible Velocity*
N/A
Maximum Permissible Shear Stress*
N/A

*Recommended Design Values provided herein are based on results of standardized industry testing and may not be applicable for all field conditions. Values provided herein are intended for use with the state of the practice design procedures.

Document # WE_EXCEL_R1AN_PERF. This document has been developed to provide information regarding the bench scale and/or performance testing conducted on the Excel R-1 All Natural ECB. For questions or installation recommendations, contact Western Excelsior Technical Services Division at 800-967-4009 or wexcotech@westernexcelsior.com. Updated 06/07.

Material Properties and Dimensions

EXCEL R-1 ALL NATURAL™

Description

Western Excelsior manufactures a full line of Rolled Erosion Control Products (RECPs). Excel R-1 All Natural temporary Erosion Control Blanket (ECB) is composed of a 100% High Altitude Rocky Mountain Aspen Excelsior matrix mechanically (stitch) bonded on two inch centers to a single biodegradable, jute/scrim net. The excelsior matrix consists of curled, machine produced fibers with greater than eighty percent longer than six inches. Stiching is comprised of cotton thread. Excel R-1 All Natural blanket is available in natural color or dyed green and is recommended for use in channels or slopes requiring erosion protection for a period up to twelve months. Actual field longevity is dependent on soil and climatic conditions.

Specifications

Each roll of EXCEL R-1 All Natural is manufactured under Western Excelsior's Quality Assurance Program to ensure a continuous distribution of fibers and consistent thickness. Verified values are provided in Table 1 and product characteristics are provided in Tables 2 and 3. Values provided in Tables 1, 2 and 3 represent expected values at the time of manufacture. Installation instructions and performance data are available from Western Excelsior's Technical Support Division.

Table 1 - Verified Values

Tested Property	Test Method	Value	Units
Tensile Strength	ASTM D6818	6.3 (MD) 6.3 (TD)	lb/in
Elongation	ASTM D6818	5.0 (MD) 5.0 (TD)	%
Mass per Unit Area	ASTM D6566	11.5	oz/yd²
Thickness	ASTM D1777	10.0	mm
Light Penetration	ECTC TASC 00197	50	% open
Water Absorption	ASTM D1117	375	%

Table 2 - Netting

Top Net	Bio-Degradable Jute/Scrim (Leno Weave)
Bottom Net	N/A
Top Net Opening	0.50 in x 0.50 in (Nominal)
Bottom Net Opening	N/A

Table 3 - Roll Dimensions

Style	Narrow	Wide
Roll Width	N/A	8 ft
Roll Length	N/A	90 ft
Coverage	N/A	80 yd²
Roll Weight	N/A	65 lbs

Document # WE_EXCEL_R1AN_SPEC. This document has been developed to provide the characteristic properties of the product described. For questions, to request performance data or installation recommendations, contact Western Excelsior at 800-967-4009 or wexcotech@westernexcelsior.com. Updated 06/07.

ABASCO Type 3 Barrier

Application: Open water exposed to moderate wind, waves and moving water
Depth Range: 3' – 130'

Type 3	Fabric	Float	Chain	Cable	Options
Regular Duty	22oz	8", 10", 12"	3/8" – 1/2"	5/16"	Float, Chain
Heavy Duty	22oz or greater	10" – 24"	3/8", 1/2"	5/8" Dual	5/16" Float, Chain, Skirt Fabric
Filter Fabric	Skirt Woven or Nonwoven	8" – 24"	5/16" – 5/8"	Dual	5/16" Float, Chain, Skirt Fabric

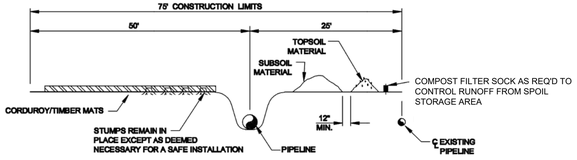
Type 3 Heavy Duty Turbidity Curtain Specifications

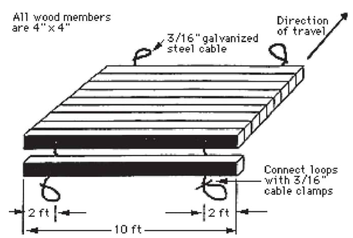
Fabric for float and chain pockets	22 oz/sq yd PVC-coated polyester
Fabric for skirt area	As above, or woven/nonwoven filter fabric
Flotation	8-in to 12-in diameter (depending on skirt depth) expanded polystyrene (EPS) foam contained in individually sealed float pockets
Top tension	Two 5/16-in galvanized steel cable (9,800 lb breaking strength) contained in polyethylene tubes; one above and one below the float
Bottom tension and ballast	3/8-in galvanized steel chain (10,600 lb breaking strength); 1.41 lb/ft weight
End connectors	High-tensile-strength aluminum universal connector at float and top tension cable. ASTM 3/8-in stainless steel locking pins. Lacing grommets on reinforced fabric on skirt. Chain ends shackled section-to-section on the type III turbidity curtains. Tool-free connections. All corners reinforced with 40-oz PVC fabric. Aluminum stress plates at bottom corners.
Section length	50 ft and 100 ft, standard
Skirt depth	To 100 ft; Can be tapered to conform to bottom profile.
Furling lines	Available on request
Available accessories	Anchor systems, ropes, marker buoys, solar-powered lights, repair kits.

Type 3 Medium Duty Turbidity Curtain Specifications

Fabric for float and chain pockets	22 oz/sq yd PVC-coated polyester
Fabric for skirt area	As above, or woven/nonwoven filter fabric
Flotation	8-in to 12-in diameter (depending on skirt depth) expanded polystyrene (EPS) foam contained in individually sealed float pockets
Top tension	A 5/16-in galvanized steel cable (9,800 lb breaking strength) contained in polyethylene tubes; located above the float
Bottom tension and ballast	3/8-in galvanized steel chain (10,600 lb breaking strength); 1.41 lb/ft weight
End connectors	High-tensile-strength aluminum universal connector at float and top tension cable. ASTM 3/8-in stainless steel locking pins. Lacing grommets on reinforced fabric on skirt. Chain ends shackled section-to-section on the type III turbidity curtains. Tool-free connections. Aluminum stress plates at bottom corners.
Section length	50 ft and 100 ft, standard
Skirt depth	To 100 ft; Can be tapered to conform to bottom profile.
Furling lines	Available on request
Available accessories	Anchor systems, ropes, marker buoys, solar-powered lights, repair kits.

7 - TYPICAL TURBIDITY CURTAIN
NTS

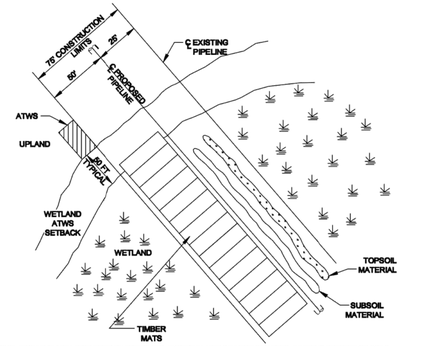




UNIVERSITY OF MINNESOTA FS 07009

A GEOTEXTILE UNDERLAYMENT SHALL BE USED UNDER THE WOOD MAT.

6 - TYPICAL WOOD MAT FOR WETLAND CROSSING
NTS



NOTES:
1. SEGREGATE TOPSOIL FROM THE AREA DISTURBED BY TRENCHING, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.
2. RE-SEED W/ANNUAL RYEGRASS @ 40 LBS/ACRE (NOT TO EXCEED 48 LBS. PLS/ACRE) IN ALL AREAS W/O STANDING WATER UNLESS ALTERNATIVES HAVE BEEN APPROVED BY MANAGING AGENCY.
3. NO FERTILIZER OR LIME SHALL BE USED.
4. INSTALL TRENCH PLUGS & WATERBAR ON BOTH SIDES OF WETLAND IF THE HYDROLOGICAL CONDITIONS WOULD DRAIN THE WETLAND.
5. DO NOT USE LIQUID MULCH BINDERS WITHIN 100 FEET OF WETLANDS OR WATERBODIES.
6. IT IS ACCEPTABLE FOR E&S BMPS TO BE TEMPORARILY REMOVED FROM EQUIPMENT CROSSING PATHWAYS DURING PERIODS OF ACTIVE CONSTRUCTION IF THESE CONTROLS WILL BE PROPERLY REINSTALLED AT THE END OF EACH WORK DAY. TEMPORARY SEDIMENT BARRIERS LOCATED AT EQUIPMENT CROSSINGS WILL BE TIED IN TO ADJACENT TIMBER MATTING.
7. WETLAND MATS WILL BE PERMANENTLY REMOVED AFTER CLEAN UP/RESTORATION
8. MATS WILL BE A MINIMUM OF 12' WIDE AND LENGTH IS DEPENDENT ON THE WETLAND CROSSING LENGTH FROM START TO END. THE EI MAY REQUIRE THE CONTRACTOR TO EXTEND THE LENGTH OF THE MATS TO MINIMIZE THE POTENTIAL TRACKING OF UPLAND SEDIMENT INTO THE WETLAND.

8 - TYPICAL WETLAND CONSTRUCTION
NTS

RECEIVING STREAM DESIGNATION

RECEIVING STREAM NAME	MUNICIPALITY	CHAPTER 93 DRAINAGE LIST	STREAM ZONE DESCRIPTION(1)	CHAPTER 93 WATER QUALITY STANDARD(1,2)
SCHUYLKILL RIVER	UPPER PROVIDENCE, SPRING CITY BOROUGH	SCHUYLKILL RIVER BASIN	MAIN STEM, LITTLE SCHUYLKILL RIVER TO VALLEY CREEK	WWF, MF

1 DESIGNATED WATER USES AND WATER QUALITY CRITERIA AS DEFINED BY PA CODE §93.9
2 HQ: HIGH QUALITY; CWF: COLD WATER FISHES

NO.	REVISION	DATE

Jacobs

DATE 1/11/2024
SCALE AS SHOWN
DESIGNED SH
CHECKED SH
DRAWN ME
ACCEPTED

SCHUYLKILL RIVER HDD PROJECT
CHESTER AND MONTGOMERY COUNTY, PENNSYLVANIA

ENBRIDGE

E&SC DETAILS

PROJECT IDENTIFIER D3739300
SHEET NAME C5-004
VOLUME NUMBER
SHEET NUMBER 11 OF 11