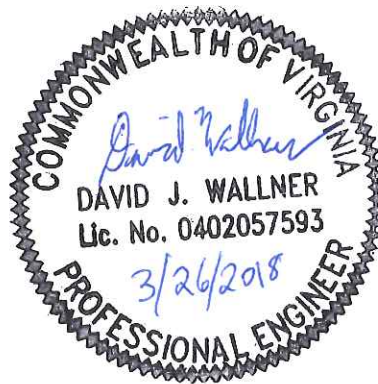


By virtue of this seal and signature, all supporting documents included in this package are accurate and support the design presented herein.



MVP PIPELINE PROJECT

MVP-LY-028

VARIANCE AND DEVIATION REQUESTS

PURSUANT OF VIRGINIA CODE 9VAC25-840-40 ET SEQ, MVP RESPECTFULLY REQUESTS VARIANCES AS OUTLINED BELOW:

THESE VARIANCE REQUESTS HAVE BEEN PREPARED IN ACCORDANCE WITH VADEQ AND VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION (VADOR) GUIDANCE DOCUMENTS. INFORMATION INCLUDED IN THESE VARIANCE REQUESTS IS INTENDED TO SUPPLY VADEQ WITH PROJECT INFORMATION, PERTINENT TO ESC, INCLUDING BUT NOT LIMITED TO: SITE CHARACTERIZATION, SOIL TYPES, CRITICAL AREAS, SOIL ERODIBILITY, AND WATERBODY/WETLAND IDENTIFICATION.

MVP IS REQUESTING THESE VARIANCES DUE TO THE LENGTH OF THE PROJECT, THE DIAMETER OF THE PIPE INVOLVED, THE EQUIPMENT REQUIRED, CONSTRUCTION TECHNIQUES UTILIZED AND THE DESIRE TO CREATE SAFE WORKING CONDITIONS FOR ALL EMPLOYEES INVOLVED IN THE PROJECT. THE VARIANCES RELATED TO THE LENGTH OF TRENCH OPEN DURING PIPELINE INSTALLATION AND THE USE OF SILT FENCE TO PREVENT "RUN-ON" OF STORMWATER FROM UPGRADIENT UNDISTURBED AREAS WHERE STEEP SIDE SLOPES ARE PRESENT AND ARE DESCRIBED BELOW.

IN ORDER TO ENSURE ALL VARIANCE STIPULATIONS ARE MET, MVP WILL HAVE ONE VADEQ CERTIFIED ESC INSPECTOR PER SPREAD (TOTAL OF FOUR) ON DUTY DURING DAYS OF ACTIVE CONSTRUCTION. ALL OTHER MVP ENVIRONMENTAL INSPECTORS WILL HAVE A VADEQ RESPONSIBLE LAND DISTURBER (RLD) CERTIFICATION.

MVP ENVIRONMENTAL INSPECTORS WILL SUBMIT REPORTS DOCUMENTING ESC-RELATED ACTIVITIES ON A WEEKLY BASIS VIA VADEQ'S E-REPORTING SYSTEM. EDUCATING CONTRACTORS ON VARIANCE AND OTHER PERMIT REQUIREMENTS WILL BE ACCOMPLISHED BY ASSIMILATING ALL RELEVANT INFORMATION INTO MVP'S PRE-CONSTRUCTION WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP) TRAINING.

THE DESIGNATION OF MVP'S VADEQ-CERTIFIED INSPECTORS FOR THE PROJECT IS PENDING, AND WILL BE PROVIDED TO VADEQ WHEN AVAILABLE. MVP WILL BE UTILIZING TWO FERC 3RD PARTY MONITORS DURING CONSTRUCTION IN ADDITION TO THE VADEQ CERTIFIED INSPECTORS AND RLDs.

VARIANCE REQUEST MS-16-A LENGTH OF TRENCH

THIS VARIANCE IS REQUESTED DUE TO THE LENGTH OF THE PROJECT, THE DIAMETER OF THE PIPE INVOLVED, THE EQUIPMENT REQUIRED TO FACILITATE INSTALLATION, CONSTRUCTION TECHNIQUES UTILIZED AND THE DESIRE TO CREATE SAFE WORKING CONDITIONS FOR ALL EMPLOYEES INVOLVED IN THE PROJECT. A PROJECT OF THIS TYPE REQUIRES MULTIPLE OVERLAPPING AND SEQUENTIAL ACTIVITIES SUCH AS TREE FELLING, CLEARING, INSTALLATION OF ESC DEVICES, GRUBBING, GRADING, TRENCH EXCAVATION, PIPE STRINGING, PIPE BENDING, PIPE WELDING, PIPE INSPECTION, PIPE INSTALLATION IN THE TRENCH, TRENCH BREAKER INSTALLATION, BACKFILLING OF THE TRENCH, HYDROSTATIC TESTING OF THE PIPELINE AND RECLAMATION/FINAL CLEANUP. SINCE ALL OF THESE TASKS ARE DEPENDENT ON THE TASK BEFORE IT, A SIGNIFICANT LENGTH OF WORK AREA IS REQUIRED TO ELIMINATE THE CONFLICTS THAT OCCUR WITH WORKING IN CLOSE PROXIMITY IN ORDER TO ENSURE THE SAFE AND TIMELY COMPLETION OF THE WORK.

THE PHASE OF CONSTRUCTION THAT BEGINS THE HEART OF THE CONSTRUCTION ACTIVITIES IS THE TRENCHING PHASE. IN ORDER TO MAINTAIN THE PRODUCTION LEVELS NECESSARY TO COMPLETE THE PROJECT IN A SAFE AND TIMELY MANNER, TRENCHING NEEDS TO BE A NON-STOP ACTIVITY. ONCE TRENCHING STARTS, THE CONTRACTOR WILL FOLLOW DIRECTLY BEHIND THE EXCAVATIONS TO BEGIN THE STRINGING AND BENDING (ENGINEERING) THE PIPE. THE NEXT PHASE, WELDING, IS THE KEY COMPONENT TO THE ENTIRE CONSTRUCTION PROCESS TO MEET TIMELY COMPLETION OF THE PROJECT. THE CONTRACTORS CAN WELD UP TO 1800 FEET PER DAY. THEREFORE, IT IS NECESSARY TO HAVE ENOUGH TRENCH OPEN TO BE ABLE TO CONTINUE TO STRING, BEND AND WELD PIPE WITHOUT ANY DELAYS OR DOWN TIME TO FACILITATE IMPLEMENTATION OF THE PROJECT IN AN EFFICIENT AND SAFE MANNER. MVP PROPOSES TO HAVE A MAXIMUM OF FIVE MILES OF TRENCH OPEN AT ANY TIME DURING SPREAD 8 CONSTRUCTION. MVP WOULD ALIGN THE TRENCH EXCAVATION TO MEET THE CONDITIONS OUTLINED BELOW. THIS WILL NOT INCLUDE AREAS OF ROW PREPARATION INCLUDING CLEARING, GRUBBING, TOP-SOILING, STRINGING OF PIPE, BACKFILLING OR OTHER RESTORATION ACTIVITIES THAT ARE ONGOING ONCE THE PIPE HAS BEEN PLACED IN THE TRENCH.

SPECIALIZED CONSTRUCTION ACTIVITIES / CREWS WILL BE UTILIZED TO INSTALL THE PIPELINE AT SPECIFIC LOCATIONS SUCH AS WATERBODIES AND WETLANDS, PUBLIC ROADS, RAILROADS AND STEEP SLOPE AREAS (I.E. TYPICALLY INCLUDES SLOPES APPROACHING 30 DEGREES OR MORE AND WOULD REQUIRE WINCH TRACTORS). INSTALLATION OF THE PIPELINE AT THESE SPECIFIC LOCATIONS WILL BE CONDUCTED AS A SEPARATE AND COMPLETE CROSSING ACTIVITY AND ARE NOT INCLUDED AS PART OF THE CONSTRUCTION DISCUSSED ABOVE. THIS IS NECESSARY TO FACILITATE USE OF SPECIALIZED CONSTRUCTION METHODS REQUIRED TO COMPLETE INSTALLATION AT THESE LOCATIONS OR TO COMPLY WITH PERMITTING RESTRICTIONS THAT APPLY TO THESE CROSSINGS (I.E. TIMING RESTRICTIONS, ETC.).

MVP PROPOSES A TOTAL LENGTH OF TRENCH OPEN AT ANY ONE TIME FOR SPREAD 8 WOULD BE FIVE (5) MILES (CUMULATIVE) FOR MAINLINE CONSTRUCTION AND ONE (1) ADDITIONAL MILE (CUMULATIVE) OF TRENCH OPEN ASSOCIATED WITH AREAS OF SPECIALIZED CONSTRUCTION ACTIVITIES. AREAS OF SPECIALIZED CONSTRUCTION ACTIVITIES INCLUDE:

- ROAD CROSSINGS - CONVENTIONAL BORE METHODS,
- STREAM/WETLAND CROSSINGS
- EXISTING BURIED UTILITY CROSSINGS
- STEEP SLOPE (WINCH HILL) CONSTRUCTION
- OTHER AREAS DETERMINED BY MVP AS REQUIRING SPECIALIZED CONSTRUCTION ACTIVITIES (BIOLOGICAL OR CULTURAL RESOURCE MONITORS, ETC.).

IN ADDITION, MVP PROPOSES TO IMPLEMENT THIS VARIANCE REQUEST BASED ON A TIERED APPROACH THAT WILL LIMIT CONTIGUOUS TRENCH LENGTH BASED ON SLOPE CONDITIONS. MVP PROPOSES TO LIMIT THE CONTIGUOUS LENGTH OF TRENCH OPEN WITHIN THE CUMULATIVE 5 MILE SPREAD LIMIT BASED ON A THREE-TIER SYSTEM , SO THAT AS THE STEEPNESS OF THE SLOPE INCREASES, THE ALLOWABLE LENGTH OF CONTINUOUS TRENCH OPEN DECREASES. MVP PROPOSES THE FOLLOWING:

MVP Proposed Tier Structure	Slope Conditions ¹	Continuous trench length not to exceed (ft) ^{2,3}
Tier I	0 to <10%	7,000
Tier II	10% to <33%	5,000
Tier III	>33%	2,500

- SLOPE PERCENT IS DETERMINED BASED ON THE PRE-EXISTING SITE CONDITIONS.
- ANY BREAK IN CONTINUOUS TRENCH LENGTH WILL CONSTITUTE RESET OF THE CONTINUOUS TRENCH FOOTAGE.
- CONTINUOUS TRENCH LENGTH MAY BE EXCEEDED WHERE SAFETY CONCERNS ARE IDENTIFIED FOLLOWING CONSULTATION WITH THE ONSITE DEQ, FERC AND MVP (ENVIRONMENTAL AND SAFETY) INSPECTORS.

ACTIVITIES THAT WILL BE CONSIDERED AS A BREAK IN CONTINUOUS TRENCH LENGTH INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

- ROAD CROSSINGS (CONVENTIONAL BORE METHODS)
- STREAM AND/OR WETLAND CROSSINGS
- STOVEPIPE CONSTRUCTION ACTIVITIES
- NATIVE (UNDISTURBED) SOIL PLUG TO REMAIN IN PLACE UNTIL IMMEDIATELY BEFORE PIPE INSTALLATION
- EXISTING UTILITY LINE CROSSINGS THAT WILL UTILIZE SPECIALIZED CONSTRUCTION CREW OR BE CONDUCTED SEPARATE FROM THE MAIN CONSTRUCTION EFFORT
- WINCH HILL CONSTRUCTION (I.E. WHERE EQUIPMENT IS REQUIRED TO BE ANCHORED TO ANOTHER STATIONARY OBJECT DUE TO STEEPNESS OF SLOPE)
- BREAK IN SLOPE CATEGORIES IDENTIFIED IN THIS REQUEST
- TRANSITION OF TRENCH LINE ACROSS RIDGELINES BREAKING THE DIRECTION OF CONTINUOUS FLOW

MVP WILL ADHERE TO THE TIERS IDENTIFIED ABOVE. IN THE EVENT DURING CONSTRUCTION SAFETY CONCERNS ARISE DUE TO SITE CONDITIONS (SLOPE, ADJACENT RESOURCES OR OTHER UTILITY INFRASTRUCTURE) THAT WOULD BE ALLEVIATED BY A MINOR EXCEEDANCE OF THE TRENCH LIMITATIONS, MVP WOULD COORDINATE ANY EXCEEDANCE WITH THE APPLICABLE AGENCY REPRESENTATIVES. INSTANCES WHERE THIS CONDITION MAY APPLY WOULD BE BUT NOT LIMITED TO THE FOLLOWING:

- AREAS OF WINCH HILL CONSTRUCTION
- AREAS THAT WOULD REQUIRE PIPELINE TO BE DEAD MANNED (ANCHORED) DURING WELDING OF PIPE SEGMENTS ON STEEP SLOPE AREAS PRIOR TO BACKFILLING OF THE TRENCH. EXCEEDING THE TRENCH LENGTH IN THESE CONDITIONS WOULD ALLEVIATE THE NEED FOR PERSONNEL TO BE WORKING IN THE DITCH AND RESULT IN REDUCED SAFETY CONCERN FOR WORKERS.

EXCEEDANCE OF THE TRENCH LENGTH IN THESE CONDITIONS WILL BE DISCUSSED WITH APPROPRIATE ONSITE REPRESENTATIVES FROM DEQ, FERC AND MVP (I.E. CONSTRUCTION, ENVIRONMENTAL AND SAFETY STAFF) PRIOR TO IMPLEMENTING ANY INCREASE IN THE TIER TO THE TRENCH LENGTH. EACH INSTANCE WILL BE REVIEWED ON A CASE BY CASE BASIS AND REPORTED IN THE WEEKLY INSPECTION REPORT.

FOLLOWING INSTALLATION OF THE PIPELINE WITHIN THE TRENCH AND ONCE PERSONNEL CAN SAFELY ENTER THE TRENCH, MVP CONTRACTORS WILL INSTALL PERMANENT TRENCH BREAKERS IN ACCORDANCE WITH MVP TYPICAL CONSTRUCTION DETAIL MVP-20 (TYPICAL TRENCH BREAKER DETAIL). FOLLOWING INSTALLATION OF THE PERMANENT TRENCH BREAKERS, A SEPARATE CONSTRUCTION CREW WILL BEGIN PADDING AND BACKFILLING OF THE PIPELINE. TRENCH EXCAVATION WILL CONTINUE AS BACKFILLING ACTIVITIES PROGRESS. AT NO TIME, SHALL TOTAL TRENCH EXCAVATION EXCEED 5 CUMULATIVE MILES FOR MAIN CONSTRUCTION ACTIVITIES ON SPREAD 8.

DEVIATION REQUEST 24-IN SLOPE DRAIN PIPE SIZE FOR CLEAN WATER DIVERSIONS

THIS DEVIATION REQUEST IS REQUIRED FOR THE USE OF 24-INCH CLEAN WATER DIVERSION PIPE FOR DRAINAGE AREAS UP TO 5 ACRES WHERE TABLE 3.15-A IN VESCH STD & SPEC 3.15 SPECIFIES A 30-INCH DIAMETER. MVP COMPLETED PEAK FLOW CALCULATIONS FOR THE 10-YEAR EVENT USING THE RATIONAL METHOD ASSUMING A DRAINAGE AREA OF 5-ACRES (I.E., THE MAXIMUM ALLOWABLE DRAINAGE AREA FOR TEMPORARY DIVERSION DIKES PER VESCH STD & SPEC 3.09) AND A CONSERVATIVE RUNOFF COEFFICIENT (C=0.35 FOR "LAWNS, HILLY" LAND USE CONDITION), RAINFALL INTENSITIES CORRESPONDING TO TRAVEL TIMES FOR SLOPES RANGING FROM 10-40% WERE USED TO CALCULATE A RANGE OF PEAK FLOWS REPRESENTATIVE OF THE VARIABLE SLOPES ACROSS THE PIPELINE. TO DETERMINE THE MOST CONSERVATIVE RANGE OF PEAK FLOWS, THE I-D-F CURVE FOR PITTSYLVANIA COUNTY WHICH HAS THE HIGEST RAINFALL INTENSITY ACROSS THE PROJECT FROM THE VA SWM HANDBOOK VOLUME II HAS BEEN APPLIED ACROSS THE PROJECT. PIPE FLOW CAPACITY WAS THEN EVALUATED FOR THE SAME RANGE OF SLOPES. ASSUMING A PIPE FLOW CAPACITY OF 0.5 TIMES THE CAPACITY CALCULATED WHEN FLOWING HALF-FULL, TO ENSURE NO BUILDUP OF WATER BEHIND THE DIVERSION DIKE, IT WAS DETERMINED THAT ONE (1) 24-IN DIAMETER PIPE COULD PASS THE 10-YEAR PEAK FLOW FOR THE SLOPE CONDITIONS. THE SUMMARY TABLE SPECIFYING NUMBER OF SIZED PIPES REQUIRED TO PASS THE DESIGN STORM PER 5 ACRE AREA IS INCLUDED BELOW.

	12" PIPE	18" PIPE	24" PIPE
10%	4	2	1
20%	3	1	1
30%	3	1	1
40%	2	1	1

¹ MAXIMUM ALLOWABLE DRAINAGE AREA OF 5-ACRES ASSUMED FOR SIZING PURPOSES PER VESCH STD & SPEC 3.15 - TEMPORARY SLOPE DRAIN.

² TEMPORARY SLOPE DRAINS DESIGNED FOR THE 10-YR STORM USING THE RATIONAL METHOD IN LIEU OF THE VESCH STD & SPEC 3.15 SLOPE DRAIN SIZING TABLE (TABLE 3.15-A).

³ PIPE FLOW CAPACITY TAKEN AS 1/2 OF THE CAPACITY WHEN FLOWING HALF FULL TO ENSURE NO BUILDUP OF WATER WITHIN DIVERSION DIKE.

DEVIATION REQUEST CLEAN WATER PIPE PLUNGE POOL OUTLET DESIGN

THIS DEVIATION REQUEST IS TO REQUEST USE OF COMBINED TECHNIQUES TO PROVIDE ADEQUATE ENERGY MANAGEMENT OF STORMWATER EXITING THE CLEAN WATER DIVERSION. THIS DEVIATION REQUEST IS PRESENTED DUE TO THE LIMITED AREA AVAILABLE AND STEEP SLOPE CONDITIONS AT THE OUTLET THAT INHIBIT THE ABILITY TO UTILIZE TYPICAL TECHNIQUES (I.E. RIPRAP OUTLET PROTECTION). MVP CALCULATED THE MAXIMUM 10-YEAR PEAK FLOW DURING DESIGN OF THE CLEAN WATER PIPES, USING THE METHODS DESCRIBED IN THE SLOPE DRAIN PIPE SIZE FOR CLEAN WATER DIVERSIONS DEVIATION REQUEST, AND ASSUMED A CONSERVATIVE PIPE SIZE OF 24-IN. USING THESE PARAMETERS, A STANDARD PLUNGE POOL OUTLET WAS DESIGNED IN ACCORDANCE WITH NRCS DESIGN GUIDE MD #6. A STANDARD SPREADSHEET DEVELOPED BY THE NRCS THAT IS AVAILABLE FOR DOWNLOAD ONLINE (HTTPS://WWW.NRCS.USDA.GOV/INTERNET/FSE_DOCUMENTS/NRCS142P2_007673.XLS) WAS USED TO SIZE THE PLUNGE POOL APPROPRIATELY BASED ON THE DESIGN DISCHARGE (I.E., THE MAXIMUM 10-YEAR PEAK FLOW), PIPE DIAMETER (24-IN), AND SLOPE OF THE PIPE OUTLET (AGAIN, SLOPES RANGING FROM 10-40% WERE EVALUATED). ADDITIONAL CALCULATIONS WERE ALSO COMPLETED TO SUPPORT THAT DISCHARGE FROM THE PLUNGE POOL WEIR OUTLET IS NON-EROSIVE WITH A 0.1-FOOT HEAD ON THE WEIR AT THE OUTLET OF THE PLUNGE POOL. MVP PLANS TO UTILIZE THE SINGLE PLUNGE POOL OUTLET DESIGN FOR ALL PIPE SIZES, WHICH IS DESIGNED FOR THE CONSERVATIVE CONDITIONS OF 40% SLOPE, MAXIMUM OF 5 ACRES AND 24-INCH CLEAN WATER DIVERSION PIPE DIAMETER. THE PLUNGE POOL OUTLET DIMENSIONS ARE SHOWN ON GENERAL DETAILS MVP-ES51 AND MVP-ES51.1.

DEVIATION REQUEST STD & SPEC 3.11 TEMPORARY RIGHT-OF-WAY DIVERSIONS

MVP PROPOSES TO UTILIZE BOTH TEMPORARY AND PERMANENT RIGHT-OF-WAY DIVERSIONS (ROW DIVERSIONS) ON THIS PROJECT. AS THE VESCH DOES NOT HAVE A STANDARD FOR PERMANENT RIGHT-OF-WAY DIVERSIONS (ROW DIVERSIONS), MVP REQUESTS APPROVAL TO IMPLEMENT THE MVP STANDARD SPECIFICATIONS FOR BOTH TEMPORARY AND PERMANENT ROW DIVERSIONS INSTALLATIONS. MVP DEVELOPED THE DIVERSION SPECIFICATIONS (PRESENTED ON MVP TYPICAL CONSTRUCTION DETAIL MVP-17 INCLUDED IN APPENDIX B OF THE PSS&S) BASED ON EXPERIENCE FROM CONSTRUCTING AND OPERATING PROJECTS IN SIMILAR TERRAIN IN NEIGHBORING STATES IN THE APPALACHIAN MOUNTAINS REGION. WHILE THE SPACING AND SLOPE REQUIREMENTS DIFFER FROM THE VESCH STANDARD 3.11, TEMPORARY ROW DIVERSIONS WILL BE SUPPLEMENTED WITH ADDITIONAL Bmps (I.E. TEMPORARY DIVERSION DIKES, TEMPORARY CLEAN WATER SLOPE DRAINS, ETC.) DURING CONSTRUCTION IN ORDER TO INCREASE SEDIMENT REMOVAL EFFICIENCY. ROW DIVERSIONS WILL BE CONSTRUCTED WITH A MAXIMUM CROSS-SLOPE NOT TO EXCEED 5% TO MINIMIZE POTENTIAL FOR EROSION VELOCITIES AS RUNOFF LEAVES THE ROW. DURING TRENCH EXCAVATION, TOPSOIL AND SUBSOIL SPOIL PILES WILL BE LOCATED ALONG THE ROW TO SLOW RUNOFF VELOCITY FROM ADJACENT AREAS. SPOIL PILES WILL BE TEMPORARILY SEEDED AND MULCHED IN ACCORDANCE WITH MS-1. TRENCH BREAKERS WILL BE INSTALLED TO SLOW RUNOFF FROM THE TRENCH. PERIMETER (DOWNSLOPE) ESC MEASURES (I.E. TEMPORARY SEED AND MULCH, SILT FENCE, SUPER SILT FENCE, COMPOST FILTER SOCK, BELTED SILT RETENTION FENCE, ETC.) WILL BE INSTALLED TO COLLECT AND FILTER RUNOFF AS NECESSARY. THE MVP SPACING WILL FUNCTION AS INTENDED BY VESCH STANDARD 3.11 AND WILL PROVIDE ADEQUATE PROTECTION TO ADJACENT AREAS DURING CONSTRUCTION. MVP WILL MONITOR THE INSTALLATION OF ALL ESC Bmps IN ACCORDANCE WITH MVP'S APPROVED PSS&S INSPECTION FREQUENCIES FOR NON-TMDL AND TMDL WATERSHEDS.

IF DURING CONSTRUCTION MVP'S LEI/EI OR AN AGENCY REPRESENTATIVE DETERMINES THE TEMPORARY ROW DIVERSION SPACING IS NOT FUNCTIONING AS INTENDED AT A SPECIFIC LOCATION, INSTALLATIONS WILL BE FIELD ADJUSTED AS NECESSARY TO ADDRESS SITE-SPECIFIC CONDITIONS AND CONCERNS. ALL CHANGES WILL BE NOTED ON THE SPREAD 8 RED-LINE ESC PLAN SET AND ASSOCIATED RED-LINE LOG DESCRIBED IN THE PSS&S (PAGE 6).

RECOMMENDED MINIMUM SPACING FOR PERMANENT SLOPE BREAKERS	
PIPELINE GRADE	DISTANCE (FEET)
<2%	1-2
2-5%	400
6-15%	200
16-30%	100
>31%	50 ³

- PERMANENT SLOPE BREAKERS WILL BE INSTALLED AS NEEDED BASED ON FIELD CONDITIONS.
- PERMANENT SLOPE BREAKERS WILL BE INSTALLED 25 FEET FROM EACH WATERBODY BOUNDARY REGARDLESS OF SLOPE CONDITIONS.
- SLOPES GREATER THAN 65% MAY REQUIRE SITE SPECIFIC STABILIZATION MEASURES BASED ON FIELD CONDITIONS AS APPROVED BY MVP DESIGN ENGINEERING AND MVP ENVIRONMENTAL INSPECTOR.

AS NOTED ABOVE, ALL OTHER SPECIFICATIONS FOR STD & SPEC 3.11 WILL BE IMPLEMENTED IN ACCORDANCE WITH THIS VADEQ STANDARD.

DEVIATION TO STD AND SPEC 3.31 TEMPORARY SEEDING AND 3.32 PERMANENT SEEDING

THIS DEVIATION IS NECESSARY TO COMPLY WITH PROJECT MITIGATION ACTIVITIES THAT ARE BEING PREPARED IN COORDINATION WITH THE US FISH AND WILDLIFE SERVICE, US FOREST SERVICE AND WILDLIFE HABITAT COUNCIL, TO MINIMIZE PROJECT IMPACTS TO SENSITIVE SPECIES. THIS WILL INCLUDE USE OF POLLINATOR SEED MIXES FOR THE PERMANENT ROW AREAS AND WOODLAND HABITAT SEED MIXES / PLANTINGS IN DESIGNATED AREAS. MVP WILL IMPLEMENT THE SEED MIXES SPECIFIED IN THE USFWS MITIGATION PLAN FOR ALL AREAS OF THE PROJECT UNLESS OTHER REQUIREMENTS ARE SPECIFIED BY THE AFFECTED LANDOWNER. MVP REQUESTS A DEVIATION IN REGARD TO STD & SPEC 3.31 (TEMPORARY SEEDING) AND 3.32 (PERMANENT SEEDING) TO ALIGN THESE REQUIREMENTS WITH THE PROJECT'S VEGETATION AND HABITAT MITIGATION PLAN.

AS NOTED IN THE APPROVED PSS&S, MVP DEVELOPED THE PROJECT-SPECIFIC SEED MIXES IN COORDINATION WITH THE US FISH AND WILDLIFE SERVICE (USFWS), US FOREST SERVICE, VA DEPARTMENT OF CONSERVATION AND RECREATION, WILDLIFE HABITAT COUNCIL AND MVP'S THREATENED AND ENDANGERED SPECIES CONSULTANT. MVP DEVELOPED SEED MIXES PROPOSED FOR PERMANENT STABILIZATION TO INCLUDE NATIVE SPECIES. SEED MIXES ARE PRESENTED IN THE PSS&S APPENDIX B, MVP TYPICAL CONSTRUCTION DETAILS MVP-ES11.1 THROUGH MVP-ES11.9. MVP REVIEWED THE DCR'S VIRGINIA INVASIVE PLANT SPECIES LIST DURING DEVELOPMENT OF THE PROJECT SPECIFIC PERMANENT STABILIZATION SEED MIXES. NO SPECIES LISTED ON THE DCR'S VIRGINIA INVASIVE PLANT SPECIES LIST ARE INCLUDED IN MVP'S PROPOSED PERMANENT STABILIZATION MIXES TO BE USED DURING PROJECT ACTIVITIES IN VIRGINIA.

MVP ALSO REVIEWED THE DCR'S NATIVE PLANTS FOR CONSERVATION, RESTORATION AND LANDSCAPING BROCHURES (MOUNTAIN NATIVE PLANTS AND RIPARIAN NATIVE PLANTS) DURING DEVELOPMENT OF THE PERMANENT STABILIZATION MIXES. MVP INCORPORATED MANY OF THE SPECIES INCLUDED IN THE DCR BROCHURES NOTED ABOVE TO THE PROJECT SPECIFIC PERMANENT STABILIZATION SEED MIXES.

FOR PROJECT ACTIVITIES ON JNF LANDS, THE USFS DEVELOPED SPECIFIC SEED MIXES FOR ACTIVITIES OCCURRING ON JNF AND GEORGE WASHINGTON NATIONAL FOREST LANDS. THESE MIXES ARE PRESENTED IN THE PSS&S APPENDIX B, MVP TYPICAL CONSTRUCTION DETAIL MVP-ES12.1 THROUGH ES12.4 AND INCLUDES THE TEMPORARY AND PERMANENT SEED MIXES SPECIFIED BY THE USFS GUIDANCE.

MVP PROPOSES TO UTILIZE THE VESCH STANDARD 3.31 TEMPORARY SEEDING MIX DURING PROJECT ACTIVITIES WITH THE ADDITION OF BROWNTOP MILLET (PANICUM RAMOSUM) TO MATCH THE TEMPORARY SEED MIX REQUIRED BY THE USFS FOR USE ON JEFFERSON NATIONAL FOREST LANDS. WHILE THESE ARE NON-NATIVE ANNUAL SPECIES, THEY ARE NOT LISTED ON THE DCR'S INVASIVE SPECIES LIST REFERENCED ABOVE. MVP PROPOSES TO UTILIZE NON-NATIVE, NON-INVASIVE SPECIES FOR TEMPORARY EROSION CONTROL BASED ON RECOMMENDATIONS OF THE USFS AND DEQ PROVIDED IN VARIOUS GUIDANCE DOCUMENTS. NATIVE PLANTS THAT PROVIDE DIVERSE WILDLIFE BENEFITS AND STRUCTURAL DIVERSITY ON THE LANDSCAPE OFTEN DO NOT GERMINATE OR GROW FAST ENOUGH TO PROVIDE INITIAL EROSION CONTROL. THEREFORE, FAST-GERMINATING, NON-INVASIVE, ANNUAL COVER CROPS ARE RECOMMENDED FOR THE FIRST ROUND OF SEEDING TO STABILIZE EXPOSED SOIL. THE TEMPORARY SEEDING PROPOSED FOR USE ON THE PROJECT ARE PRESENTED IN PSS&S APPENDIX B, MVP TYPICAL CONSTRUCTION DETAIL MVP-ES11.10 AND PROVIDED ON THE GENERAL DETAIL PLAN DRAWINGS INCLUDED WITH THE SPREAD 8 SUBMISSION.

DEVIATION REQUEST STD AND SPEC 3.05 SILT FENCE

DUE TO THE NATURE OF CONSTRUCTION AND THE STEEP SLOPES EXPECTED ON THE PROJECT, MVP IS REQUESTING A VARIANCE TO INCLUDE SUPER SILT FENCE AS A BEST MANAGEMENT PRACTICE FOR EROSION AND SEDIMENT CONTROL. FOLLOWING DISCUSSIONS WITH THE VADEQ, MVP PROPOSES TO ADOPT THE E-3 STANDARDS AND SPECIFICATIONS FOR SUPER SILT FENCE INCLUDED IN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE MATERIAL SPECIFICATIONS AND CONSTRUCTION SEQUENCE FROM THIS SPECIFICATION HAS BEEN INCLUDED IN THE SPREAD 8 GENERAL DETAILS AS DETAIL MVP-ES9.2 AND MVP-ES9.2A.

6	03/23/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
5	03/16/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
4	02/21/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
3	02/05/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
2	01/12/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
1	09/21/17	KAL	RE	DW	PLAN SUBMISSION
NO:	DATE:	DWN:	CHKD:	APPD:	DESCRIPTION:
REVISIONS:					



ANCILLARY SITE
VARIANCE AND EXEMPTION REQUESTS
MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE
GILES COUNTY, VIRGINIA

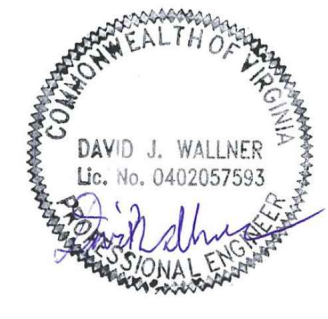
MOUNTAIN VALLEY PIPELINE, LLC
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CANONSBURG, PA 15317



TETRA TECH
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661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

CONSTRUCTION PLANS



DRAWN BY:	KAL
CHECKED BY:	RE
APPROVED BY:	DW
DATE:	03/23/18
SCALE:	AS SHOWN
SHT. NO.	LY-028-A OF 11

REVISION

MVP PIPELINE PROJECT
MVP-LY-028
VARIANCE AND DEVIATION REQUESTS

STEEP SLOPE EROSION CONTROL PRODUCTS

FOLLOWING RESTORATION OF THE ROW TO PRE–EXISTING CONTOURS AND CONDITIONS, MVP WILL UTILIZE SOIL STABILIZATION BLANKETS (OR THEIR EQUIVALENT) TO STABILIZE SLOPES EXCEEDING 33% TO PREVENT EROSION OF THE DISTURBED SOILS. THERE ARE SEVERAL VARIATIONS OF THESE PRODUCTS INCLUDING: ROLLED EROSION CONTROL BLANKET, AND HYDRAULICALLY APPLIED EROSION CONTROL PRODUCT.

ROLLED EROSION CONTROL BLANKET

ROLLED EROSION CONTROL BLANKET (ECB) IS A WOVEN MAT CONSISTING OF A MONOFILAMENT NETTING (OR SIMILAR) BACKED STRAW MAT THAT IS MECHANICALLY ANCHORED TO THE SOIL. PRIOR TO INSTALLATION, THE SOIL IS SCARIFIED AND SMOOTHED PRIOR TO APPLICATION OF SEEDING AND SOIL AMENDMENTS. ROLLED ECB IS THEN INSTALLED BY HAND OVER THE SEEDING/SOIL AMENDMENTS AND MECHANICALLY ANCHORED TO THE SOIL USING DEGRADABLE METAL ANCHORS.

BONDED FIBER MATRIX

BONDED FIBER MATRIX (BFM) IS A HYDRAULICALLY APPLIED SOIL STABILIZER THAT IS EFFECTIVE IN STABILIZING STEEP SLOPES. AS PER MANUFACTURER SPECIFICATIONS, BFM APPLICATION RATES VARY DEPENDING ON SLOPE AND SOIL CONDITIONS, BUT APPLICATION RATES ARE TYPICALLY BETWEEN 1,500 TO 4,000 LBS/ACRE. SOME MANUFACTURERS OFFER BFM PRODUCTS IN PELLETIZED FORM FOR APPLICATION VIA BROADCAST SPREADER AND INTENDED FOR USE IN REMOTE AREAS WHERE WATER SUPPLIES ARE LIMITED, WHERE ACCESS VIA HYDROSEEDER IS DIFFICULT OR WHERE SMALL AREA COVERAGE IS NECESSARY. ONCE APPLIED, THE PELLETIZED BFM IS ACTIVATED BY PRECIPITATION EVENT FOLLOWING APPLICATION. BFM SHOULD NOT BE APPLIED WHEN RAIN IS FORECAST WITHIN 24 – 48 HOURS OF APPLICATION. APPLICATION OF BFM IS TYPICALLY 90% EFFECTIVE IN PREVENTING ACCELERATED EROSION FROM OCCURRING WITHIN THE AREA OF APPLICATION. WHEN APPLICATION OF THESE PRODUCTS INCLUDES A POLYMER (ANIONIC) STABILIZER, BFM CAN BE UP TO 99% EFFECTIVE IN REDUCING TURBIDITY AND SEDIMENT RUNOFF FROM DISTURBED AREAS. INFORMATION ON THE USE OF BFM IS PROVIDED UNDER TYPICAL CONSTRUCTION DETAIL MVP–ES40 (BONDED FIBER MATRIX).

HYDRAULIC EROSION CONTROL PRODUCTS

HYDRAULIC EROSION CONTROL PRODUCTS (HECP) ARE TYPICALLY INSTALLED USING A HYDROSEEDER TO APPLY A LIQUID SOLUTION OF SEED, SOIL AMENDMENTS, MULCH (WOOD FIBER, WOOD CHIPS OR SIMILAR WOOD MATERIALS OR NEWSPRINT) AND MULCH TACKIFIER TO STABILIZE THE SOIL. UNLIKE ROLLED ECB PRODUCTS, HECP MAKES SOLID CONTACT WITH THE SOIL REGARDLESS OF SOIL SURFACE CONDITIONS AND A ROUGHENED SURFACE IS PREFERRED. REMOVAL OF LARGE ROCKS AND EXISTING RILLS SHOULD BE UNDERTAKEN PRIOR TO APPLICATION. TRACKING OF SLOPES SHOULD BE CONSIDERED TO SLOW RUNOFF DURING A STORM EVENT.

HECP TYPE 4

HECP TYPE 4 IS A PRODUCT APPROVED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD BRIDGE SPECIFICATIONS FOR USE ON SEVERE SLOPES UP TO 100% (1V:1H), AND MEETS THE CRITERIA SPECIFIED BY IN TABLE II–22A BELOW. MVP WILL UTILIZE HECP TYPE 4 IN AREAS OF SIDE HILL CONSTRUCTION THAT EXCEED 33% CROSS SLOPE DURING PROJECT RESTORATION ACTIVITIES. THE SPECIFIC MANUFACTURER AND PRODUCT HAVE NOT BEEN DETERMINED AT THIS TIME, BUT MVP INTENDS TO USE PRODUCTS CONTAINED IN THE VDOT MATERIALS DIVISION APPROVED MATERIALS LIST, LIST NO. 79, (79) MULCHES (HECP TYPES 1–4) – (MAINTENANCE DIVISION), (OR THEIR EQUIVALENT) THAT MEET THE MINIMUM REQUIREMENTS DEFINED IN TABLE II–22A AND THE VDOT SPECIAL PROVISION FOR ROADSIDE DEVELOPMENT AND SOIL STABILIZATION, DATED JULY 12, 2016, AND UPDATED JUNE 1, 2017, PERTAINING TO WOOD CELLULOSE FIBER MULCH FOR HYDRAULIC SEEDING MANUFACTURER CERTIFICATIONS.

THE HECP WILL BE APPLIED TO DISTURBED AREAS WHERE UPSLOPE FLOW LENGTH HAS POTENTIAL TO RESULT IN CHANNELIZED EROSION. WHEN APPLIED TO SLOPES OF GREATER THAN 33%, PROFILE PRODUCTS (THE MANUFACTURER OF FLEXTERRA HP–FGM WHICH IS ON LIST 79 AS AN APPROVED MANUFACTURER OF HECP TYPE IV) RECOMMENDED A MAXIMUM SLOPE LENGTH OF 125–FEET WHICH IS EQUAL THE LIMIT OF DISTURBANCE TO BE RECLAIMED ALONG THE PIPELINE RIGHT–OF–WAY. IN LOCATIONS WHERE EXPANDED WORKSPACE AREAS, OR DIAGONAL CROSS SLOPES RESULT IN FLOW LENGTHS EXCEEDING 125–FEET OF DISTURBED AREA, MVP WILL INSTALL AN ADDITIONAL TEMPORARY MEASURE (I.E. COMPOST FILTER SOCK) TO SERVE AS A SLOPE BREAK. COMPOST FILTER SOCK INSTALLATIONS WILL BE IMPLEMENTED IN ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS.SIZING WILL BE IN ACCORDANCE WITH THE FLOW LENGTHS OCCURRING WITHIN THE LIMIT OF DISTURBANCE.

FOLLOWING TREATMENT OF DISTURBED STEEP SLOPE SIDE HILL AREAS WITH TYPE 4 HECP, THE DISTURBED AREA WOULD BE CONSIDERED STABILIZED. UPGRADIENT CLEAN WATER DIVERSIONS MAY BE REMOVED IMMEDIATELY PRIOR TO HECP TYPE IV APPLICATION OR LEFT IN PLACE AT THE DISCRETION OF THE MVP LEI/EI DETERMINED ON A CASE BY CASE BASIS. MONITORING AND INSPECTION ACTIVITIES WILL CONTINUE UNTIL THE AREAS ARE PERMANENTLY STABILIZED WITH VEGETATION AS OUTLINED IN THE PROJECT SPECIFIC STANDARDS AND SPECIFICATIONS (APPROVED JUNE 20, 2017).

TABLE II-22A

HECP PROPERTY	TEST METHOD ¹	HECP TYPE 1	HECP TYPE 2	HECP TYPE 3	HECP TYPE 4
PHYSICAL	REQUIREMENT				
COLOR	VISUALLY OBSERVED	COLORED TO PROVIDE CONTRAST UPON APPLICATION. SHALL BE STABLE AND NOT STAIN CONCRETE OR PAINTED SURFACES.			
ORGANIC MATTER	ASTM D2974	90% MINIMUM			
WATER HOLDING CAPACITY	ASTM D7367	400% MINIMUM	500% MINIMUM	600% MINIMUM	700% MINIMUM
ACUTE TOXICITY	ASTM 7101 EPA 2021.0-1	NON TOXIC			
ENDURANCE	REQUIREMENT				
FUNCTIONAL LONGEVITY	VDOT APPROVED TESTING METHODS ³	UP TO 2 MONTHS	UP TO 3 MONTHS	UP TO 6 MONTHS	UP TO 12 MONTHS
PERFORMANCE	REQUIREMENT				
MAXIMUM SLOPE APPLICATION	OBSERVED	4.0 H:1V	3.0 H:1V	2.0 H:1V	1.0 H:1V
RAINFALL EVENT (R- FACTOR)	ASTM D6459 ²	N/A	75 < R	140 < R	175 < R
COVER FACTOR	ASTM D6459 ²	C ≤ 0.50	C ≤ 0.10	C ≤ 0.05	C < 0.01
VEGETATION ESTABLISHMENT	ASTM D7322 ²	200% MINIMUM	300% MINIMUM	400% MINIMUM	500% MINIMUM

1 ALL PRODUCTS MUST MEET THE REQUIREMENTS OF THIS SPECIFICATION TO BE LISTED ON THE MATERIALS DIVISION'S APPROVED LIST FOR HECPs.
2 ASTM TEST METHODS DEVELOPED FOR ROLLED EROSION CONTROL PRODUCTS (RECPs) THAT HAVE BEEN MODIFIED TO ACCOMMODATE HYDRAULIC EROSION CONTROL PRODUCTS (HECPs).
3 FUNCTIONAL LONGEVITY PERFORMED AT A VDOT TEST FACILITY OR TEST FACILITY APPROVED BY VDOT.

WOOD CELLULOSE FIBER MULCH FOR HYDRAULIC SEEDING MANUFACTURER'S CERTIFICATIONS

PROPERTY	VALUE
FIBER OR PARTICLE SIZE	
LENGTH	TO APPROXIMATELY 0.39 INCH (10 MM)
THICKNESS OR DIAMETER	APPROXIMATELY 0.04 INCH (1 MM)
NET DRY WEIGHT CONTENT (VTM–47)	MINIMUM STATED ON BAG
PH RANGE (TAPPI T509 OR ASTM D 778)	4.0 TO 8.5
ASH CONTENT (TAPPI T413 OR ASTM D 586)	MAXIMUM 7.0%
WATER–HOLDING CAPACITY (VTM–46)	MINIMUM 90%

6	03/23/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
5	03/16/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
4	02/21/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
3	02/05/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
2	01/12/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
1	09/21/17	KAL	RE	DW	PLAN SUBMISSION
NO:	DATE:	DWN:	CHKD:	APPD:	DESCRIPTION:



ANCILLARY SITE
VARIANCE AND EXEMPTION REQUESTS
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE
GILES COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC
555 SOUTHPOINTE BOULEVARD, SUITE 200
CANONSBURG, PA 15317

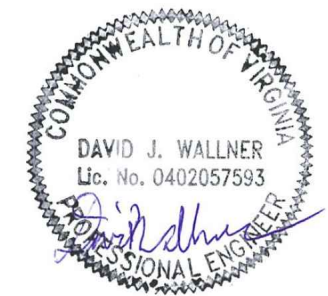


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661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

CONSTRUCTION PLANS



DRAWN BY: KAL

CHECKED BY: RE

APPROVED BY: DW

DATE: 03/23/18

SCALE: AS SHOWN

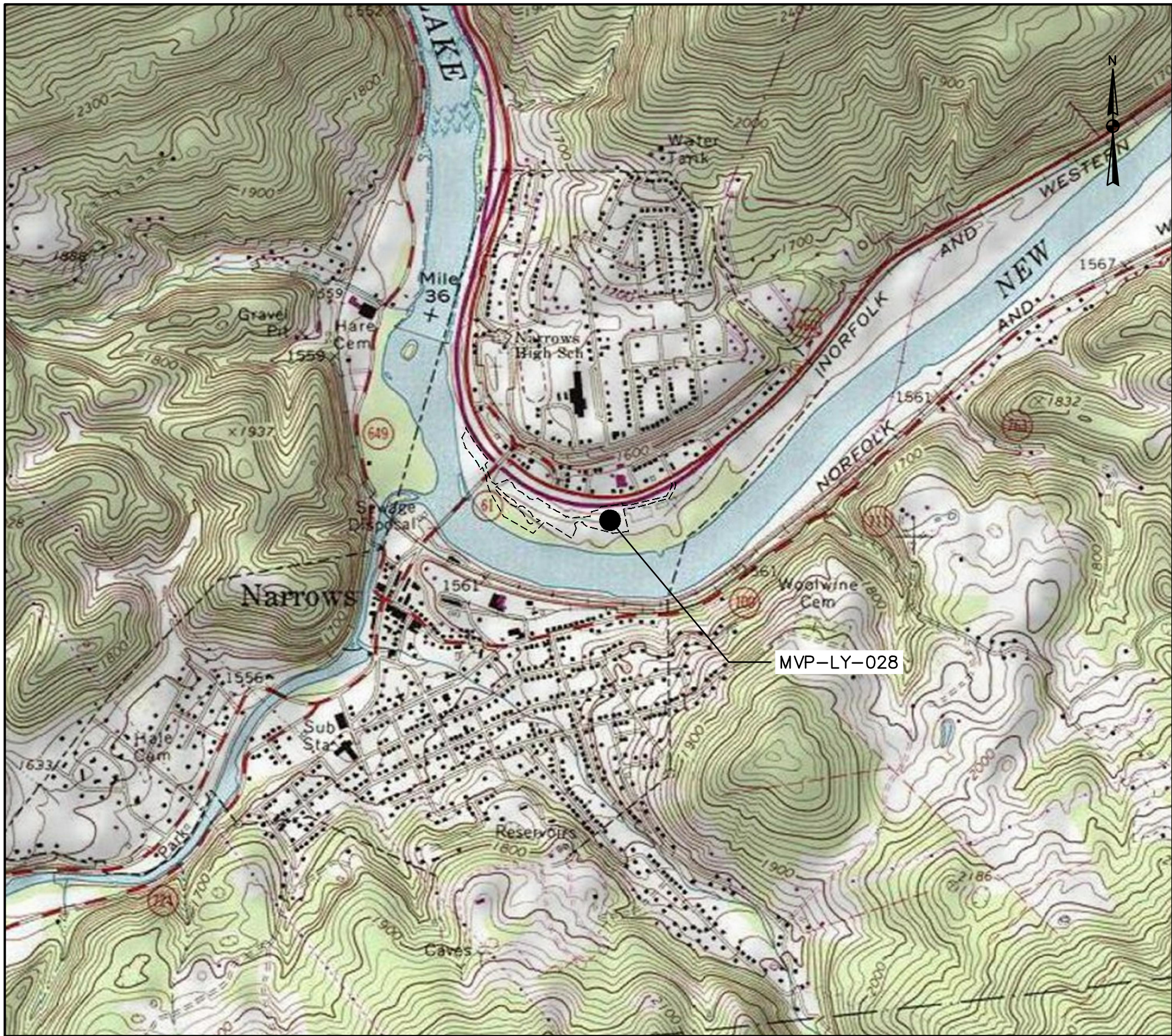
SHT. NO. LY-028-B OF 11

REVISION

MOUNTAIN VALLEY PIPELINE
EROSION AND SEDIMENT CONTROL PLAN

MOUNTAIN VALLEY PIPELINE
MVP-LY-028 GILES COUNTY

MARCH 2018



LOCATION MAP



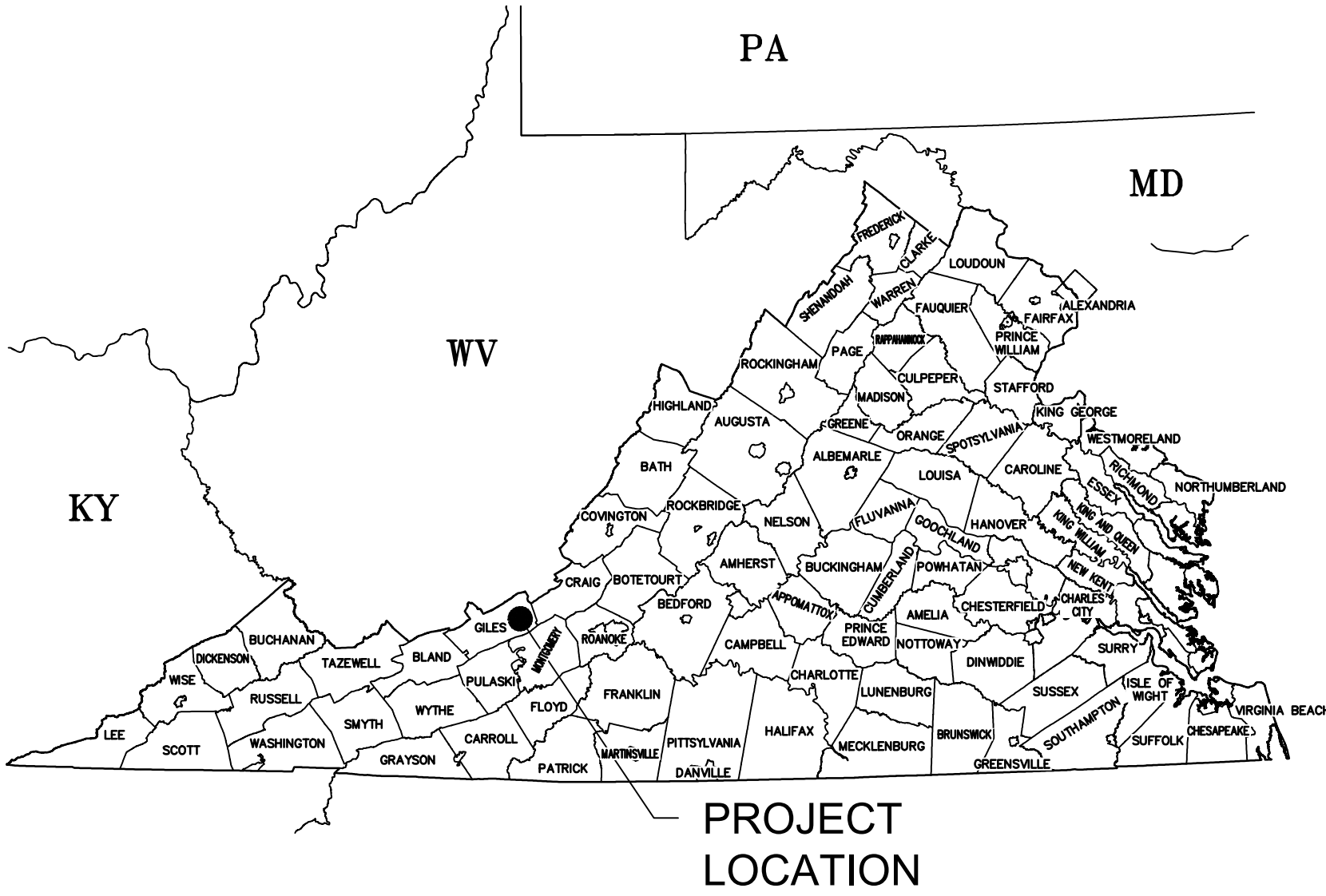
DRAWING INDEX table with 2 columns: SHEET No. and DRAWING TITLE. Rows include COVER SHEET, EROSION AND SEDIMENT CONTROL DETAILS, ESC NARRATIVE, EXISTING CONDITIONS PLAN, and EROSION AND SEDIMENT CONTROL/STORMWATER MANAGEMENT PLAN.



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CONTRACTOR IS RESPONSIBLE TO IDENTIFY ALL UTILITIES. THE UTILITY LINES SHOWN ON THE PLAN ARE FOR INFORMATIONAL PURPOSES ONLY AND DO NOT REPRESENT SURVEYED LINE INFORMATION.



VICINITY MAP

NOT TO SCALE

RESPONSIBLE LAND DISTURBER CERTIFICATION/INFORMATION form with fields for CERTIFICATE/LICENSE HOLDER NAME, ADDRESS, TYPE OF CERTIFICATE, and APPLICANT/AGENT SIGNATURE.

RESPONSIBLE LAND DISTURBER NOTE: FOLLOWING THE EXECUTION OF A CONTRACT WITH THE SITE CONTRACTOR FOR THIS PROJECT AND PRIOR TO THE INITIATION OF ANY LAND DISTURBANCE, A NEW RESPONSIBLE LAND DISTURBER CERTIFICATION SHALL BE SUBMITTED TO THE COUNTY BY THE CONTRACTOR NAMING A CERTIFIED INDIVIDUAL EMPLOYED BY THE CONTRACTOR AS THE DESIGNATED RESPONSIBLE LAND DISTURBER FOR THE PROJECT TO REPLACE THE INDIVIDUAL NAMED IN THE ABOVE CERTIFICATE.

Table with 6 columns: NO., DATE, DWN., CHKD., APPD., and DESCRIPTION. It lists revisions to the drawing, including plan submission and address vadeq comments.

Project information block including the Mountain Valley Pipeline logo, project name (MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE), location (GILES COUNTY, VIRGINIA), and contact information for Mountain Valley Pipeline, LLC.

Tetra Tech logo and address: 661 ANDERSEN DRIVE, FOSTER PLAZA 7, PITTSBURGH, PA 15220.

CONSTRUCTION PLANS

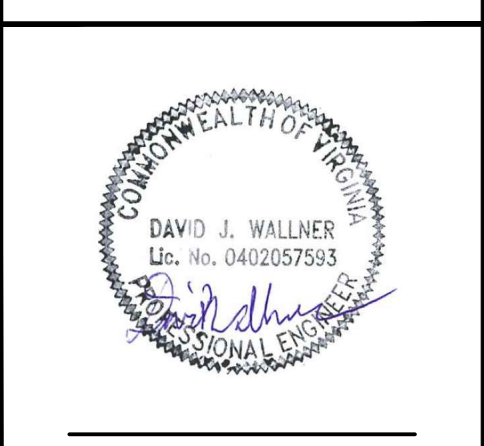
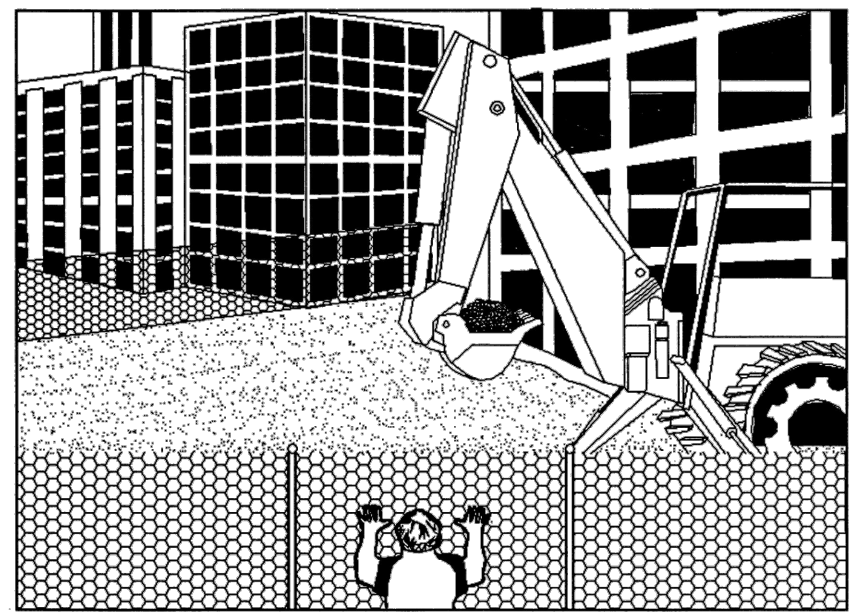


Table with 2 columns: DRAWN BY, CHECKED BY, APPROVED BY, DATE, SCALE, and SHT. NO. It contains the names of the project team members and the drawing date and scale.

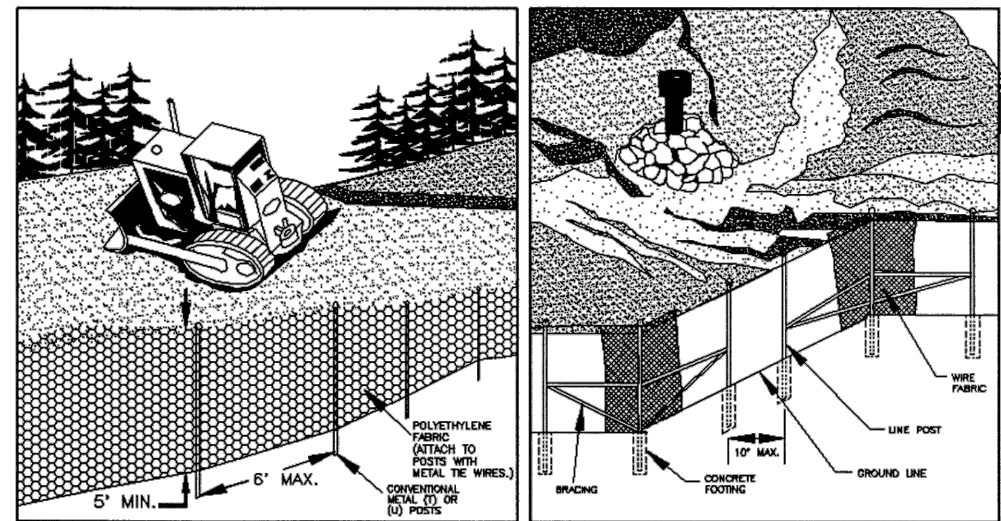
1992

3.01

SAFETY FENCE



PERSPECTIVE VIEW



PERSPECTIVE VIEW
PLASTIC FENCE

PERSPECTIVE VIEW
METAL FENCE

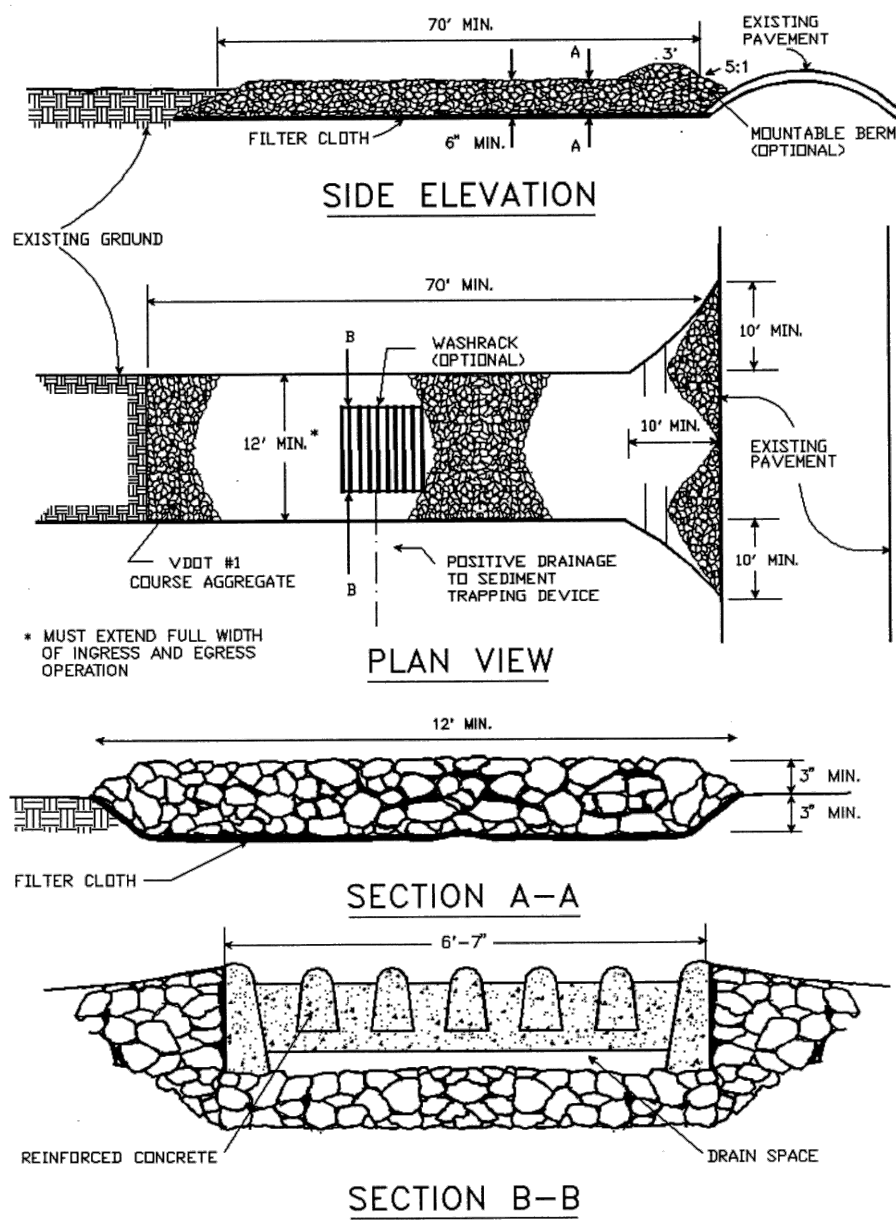
Source: Adapted from Conwed Plastics and
VDOT Road and Bridge Standards Plate 3.01-1

SAFETY FENCE
TAKEN FROM VADEQ 1992 MANUAL

1992

3.02

STONE CONSTRUCTION ENTRANCE



Source: Adapted from 1983 Maryland Standards for Soil
Erosion and Sediment Control, and Va. DSWC Plate 3.02-1

STONE CONSTRUCTION ENTRANCE
TAKEN FROM VADEQ 1992 MANUAL

WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.

WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE
ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.

A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL
VEHICLES EXITING THE SITE.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY
MAINTAINED TO THE SPECIFIED 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.

AT A MINIMUM, ROCK CONSTRUCTION ENTRANCES WITH WASH RACKS SHOULD BE
CONSTRUCTED TO THE LENGTH, WIDTH, AND THICKNESS DIMENSIONS SHOWN ON
STANDARD CONSTRUCTION DETAIL #3-2. A METAL WASH RACK OR LIVESTOCK GRATE
IS AN ACCEPTABLE ALTERNATIVE TO THE REINFORCED CONCRETE ONE SHOWN IN THE
STANDARD DETAIL. APPROACHES TO THE WASH RACK SHOULD BE LINED WITH
AASHTO #1 AT A MINIMUM OF 25' ON BOTH SIDES. THE WASH RACK SHOULD
DISCHARGE TO A SEDIMENT REMOVAL FACILITY, SUCH AS A CHANNEL LEADING TO A
SEDIMENT REMOVAL DEVICE (E.G. A SEDIMENT TRAP OR SEDIMENT BASIN). ROCK
CONSTRUCTION ENTRANCES WITH WASH RACKS SHOULD BE MAINTAINED TO THE
SPECIFIED DIMENSIONS BY ADDING ROCK WHEN NECESSARY AT THE END OF EACH
WORKDAY. A STOCKPILE OF ROCK MATERIAL SHOULD BE MAINTAINED ON SITE FOR
THIS PURPOSE.

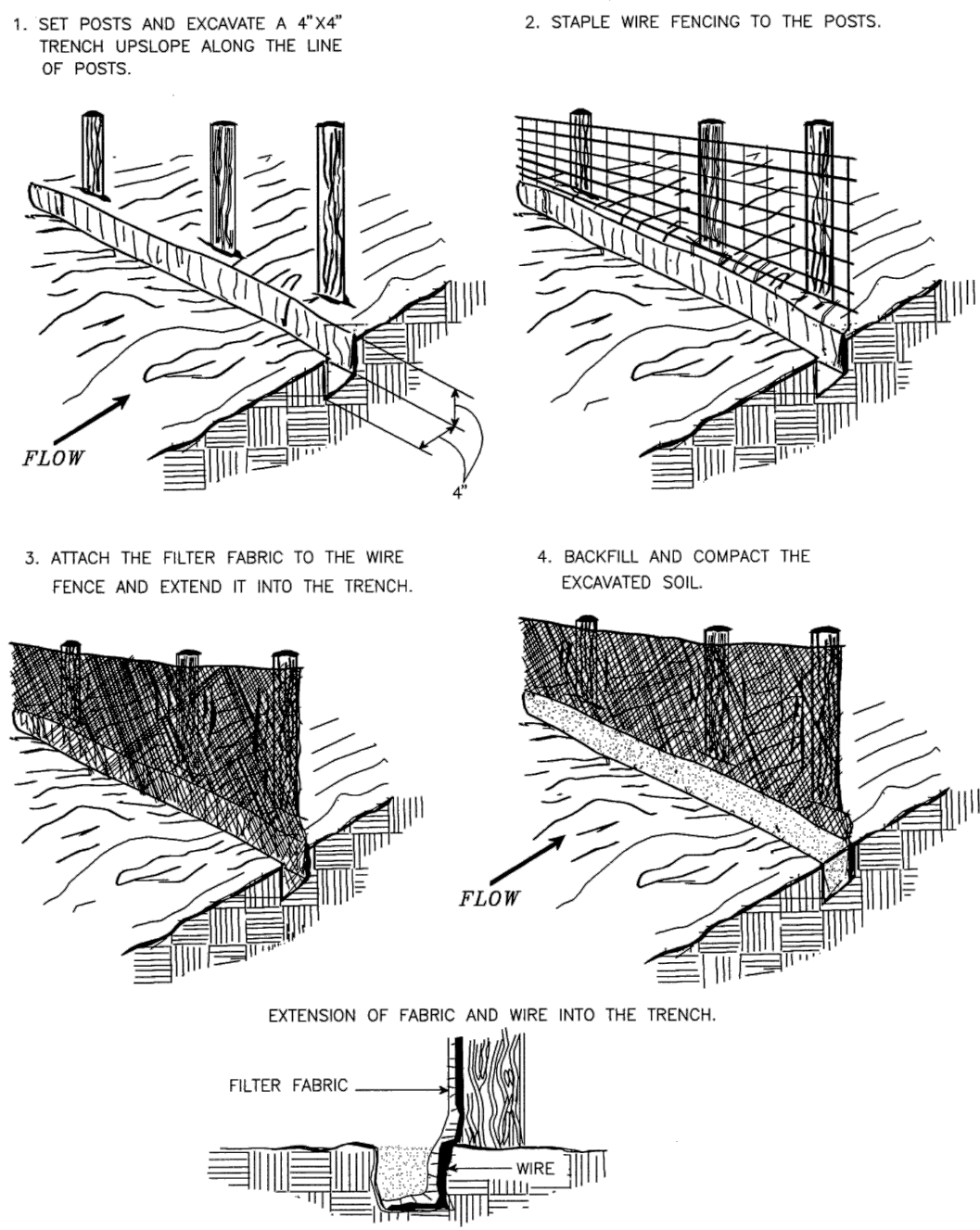
SEDIMENT DEPOSITED ON PAVED ROADWAYS SHOULD BE REMOVED AND RETURNED
TO THE CONSTRUCTION SITE.

NOTE: WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY
DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
DAMAGED WASH RACKS SHOULD BE REPAIRED AS NECESSARY TO MAINTAIN THEIR
EFFECTIVENESS.

1992

3.05

CONSTRUCTION OF A SILT FENCE
(WITH WIRE SUPPORT)



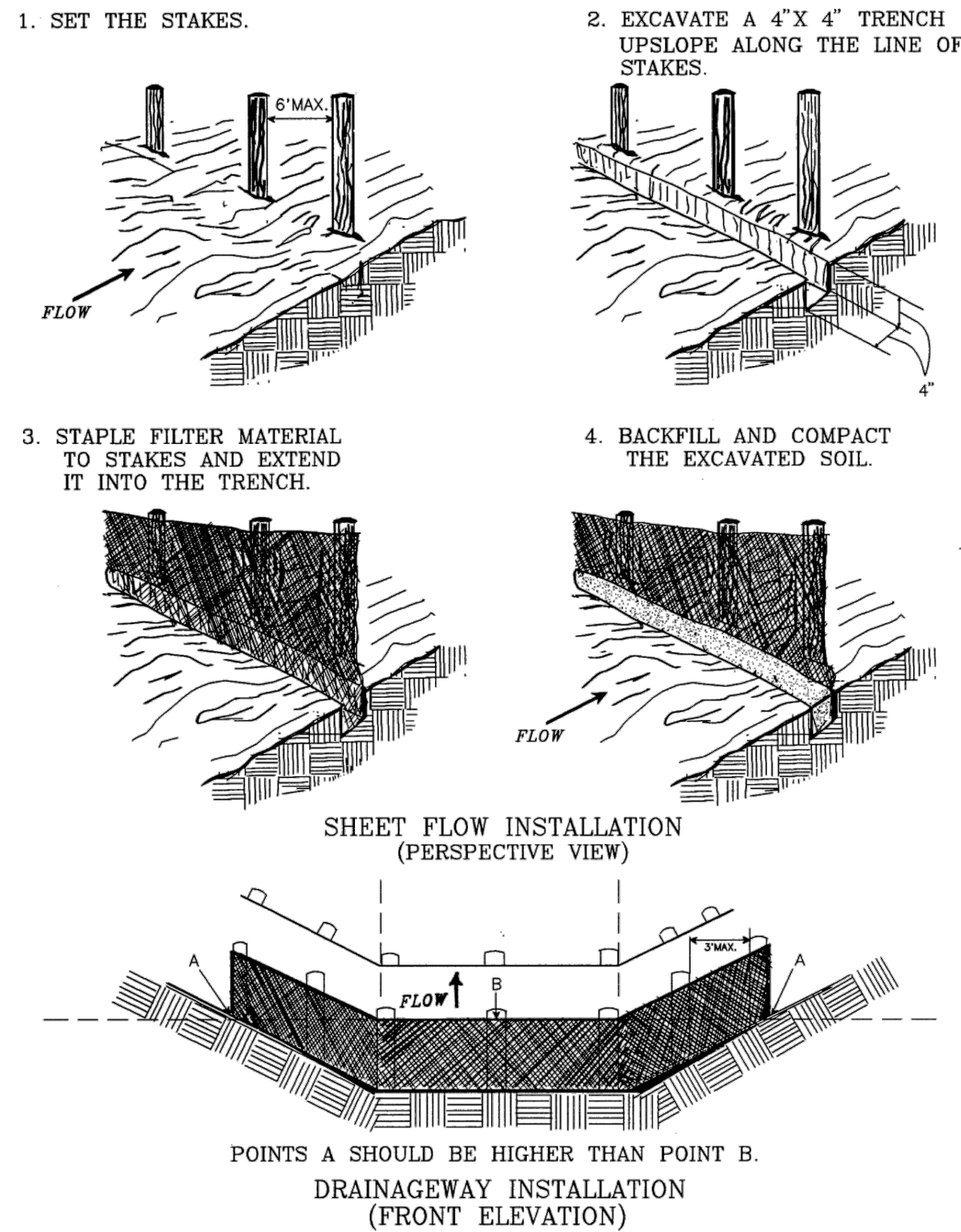
Source: Adapted from Installation of Straw and Fabric Filter
Barriers for Sediment Control, Sherwood and Wyant Plate 3.05-1

CONSTRUCTION OF SILT FENCE
(WITH WIRE SUPPORT)
TAKEN FROM VADEQ 1992 MANUAL

1992

3.05

CONSTRUCTION OF A SILT FENCE
(WITHOUT WIRE SUPPORT)



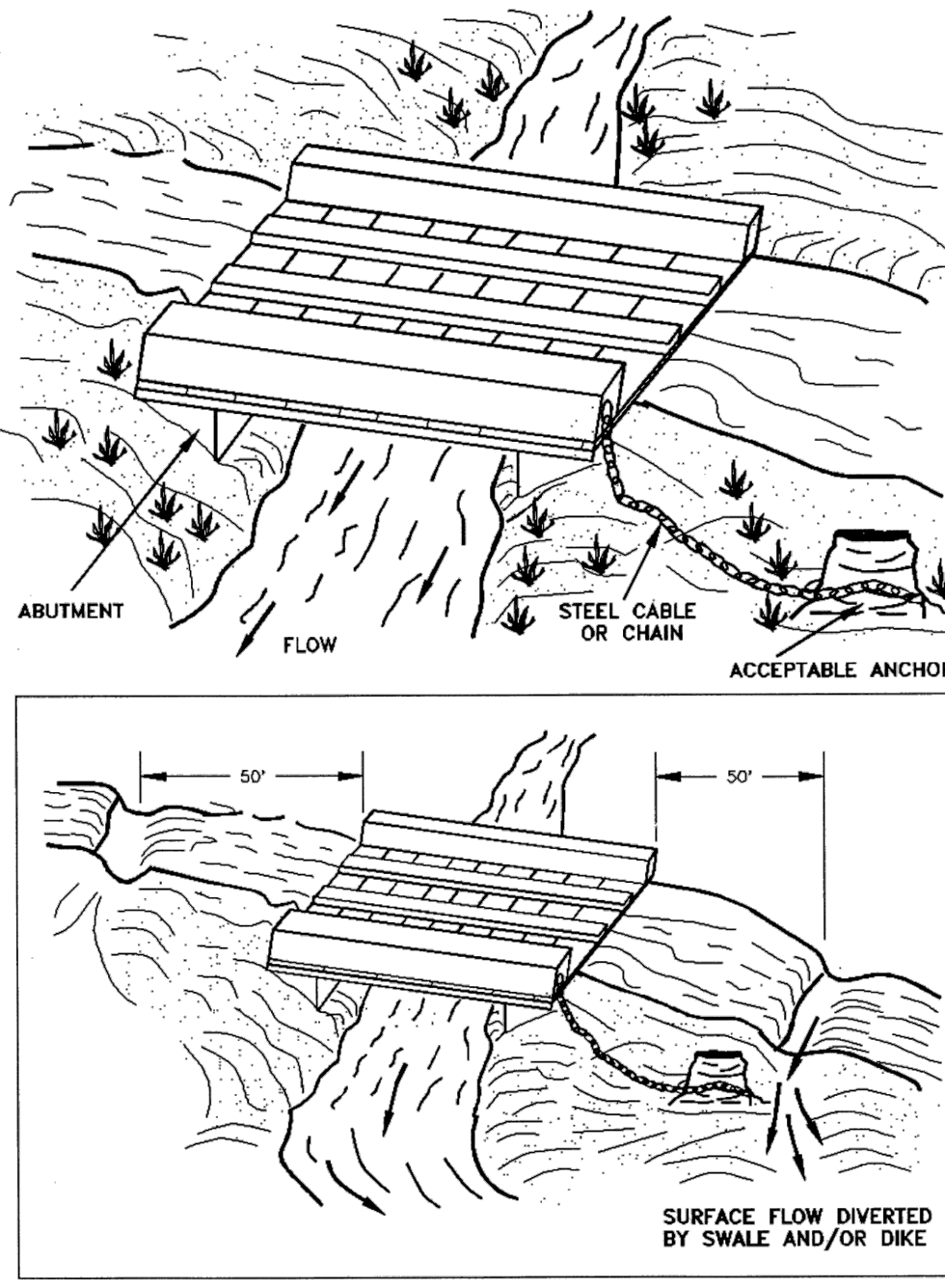
Source: Adapted from Installation of Straw and Fabric Filter
Barriers for Sediment Control, Sherwood and Wyant Plate 3.05-2

CONSTRUCTION OF SILT FENCE
(WITHOUT WIRE SUPPORT)
TAKEN FROM VADEQ 1992 MANUAL

1992

3.24

TEMPORARY BRIDGE CROSSING



Source: 1983 Maryland Standards and Specifications
for Soil Erosion and Sediment Control Plate 3.24-1

TEMPORARY BRIDGE CROSSING
DEVELOPED FROM VADEQ 1992 MANUAL

ADDRESS VADEQ COMMENTS	DW	RE	KAL	03/23/18	6
ADDRESS VADEQ COMMENTS	DW	RE	KAL	03/16/18	5
ADDRESS VADEQ COMMENTS	DW	RE	KAL	02/21/18	4
ADDRESS VADEQ COMMENTS	DW	RE	KAL	02/05/18	3
ADDRESS VADEQ COMMENTS	DW	RE	KAL	01/12/18	2
PLAN SUBMISSION	DW	RE	KAL	08/21/17	1
DESCRIPTION	CHD.	APPD.	DWN.	DATE	NO.
REVISIONS:					

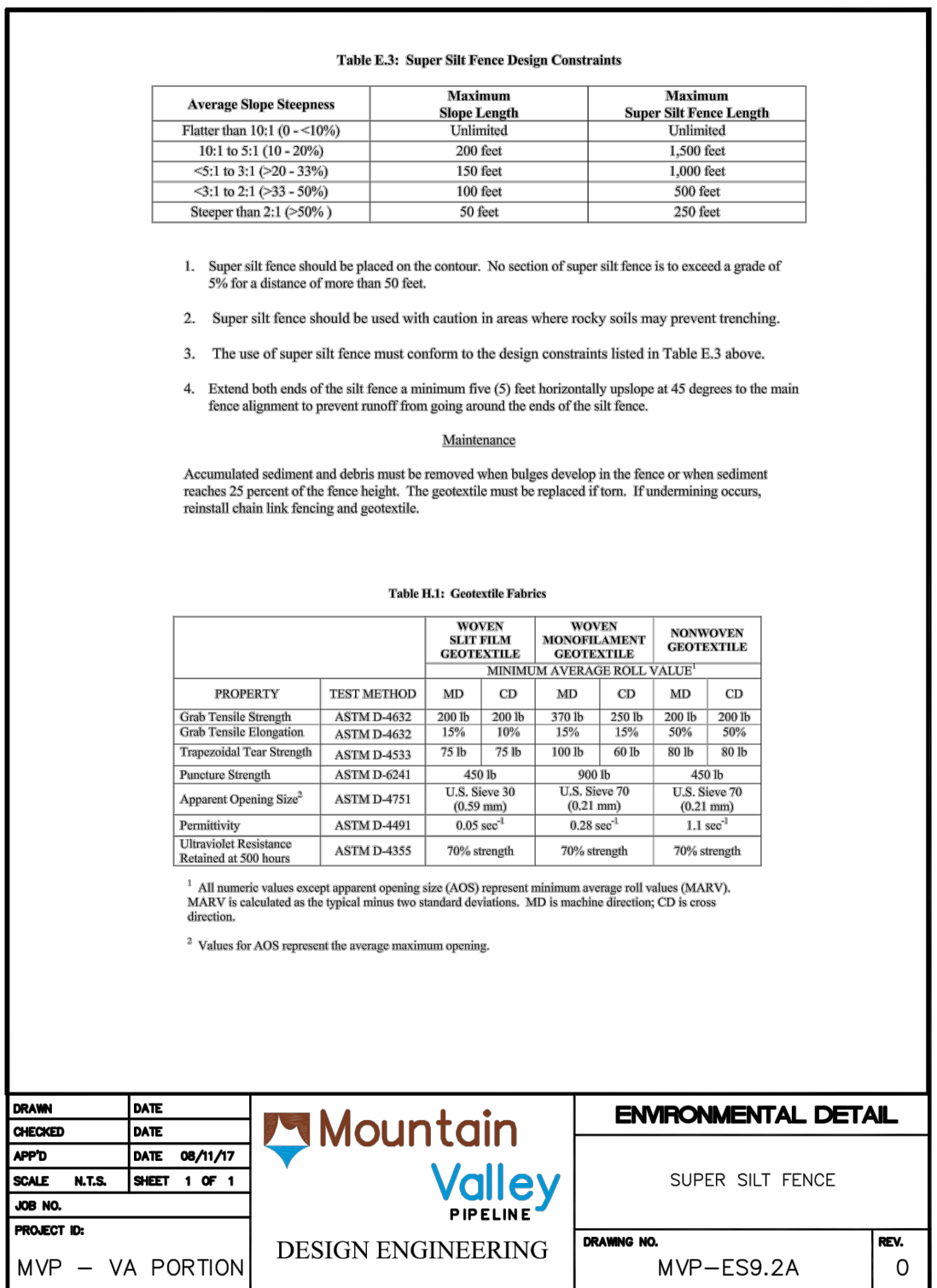
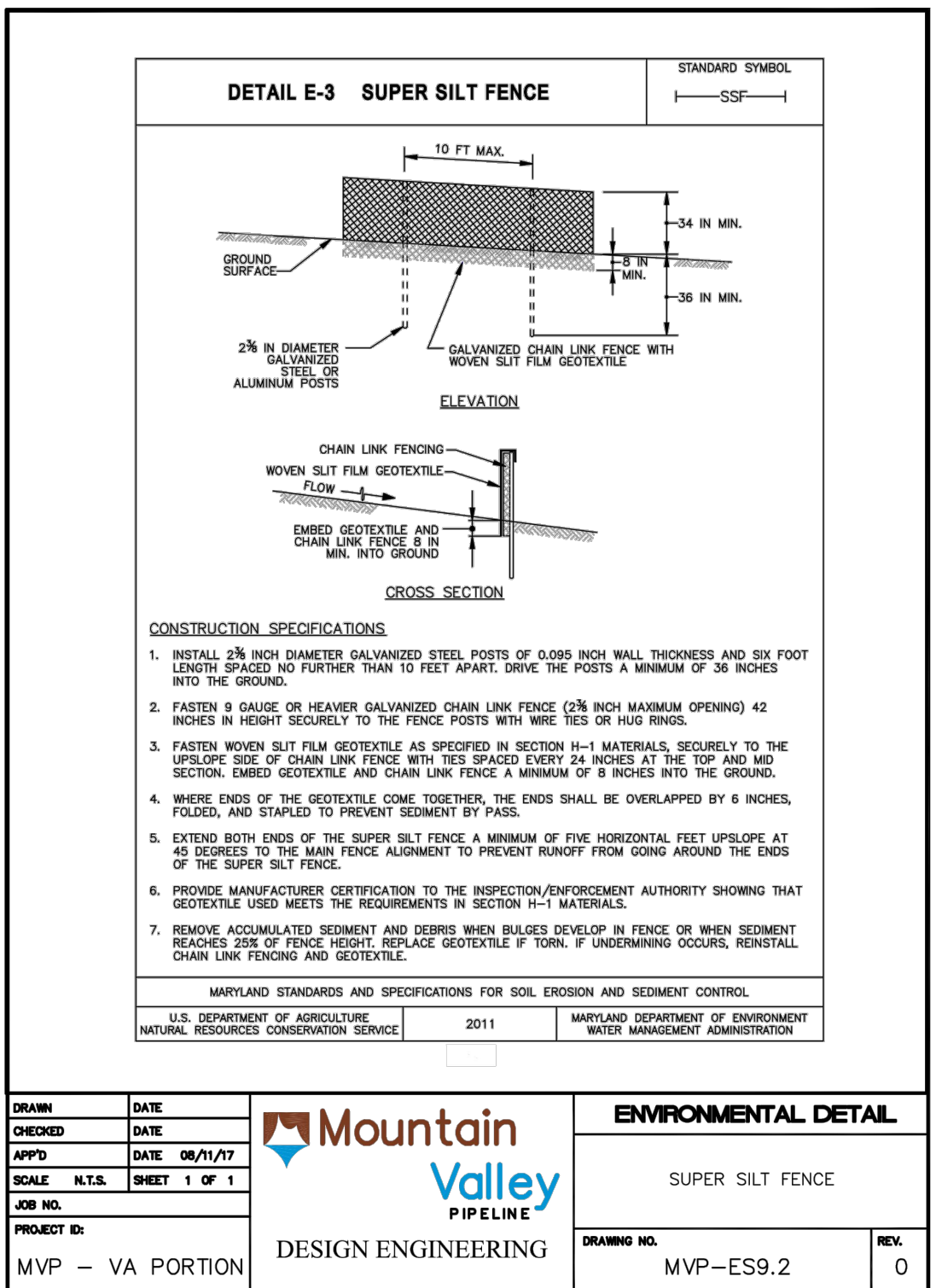
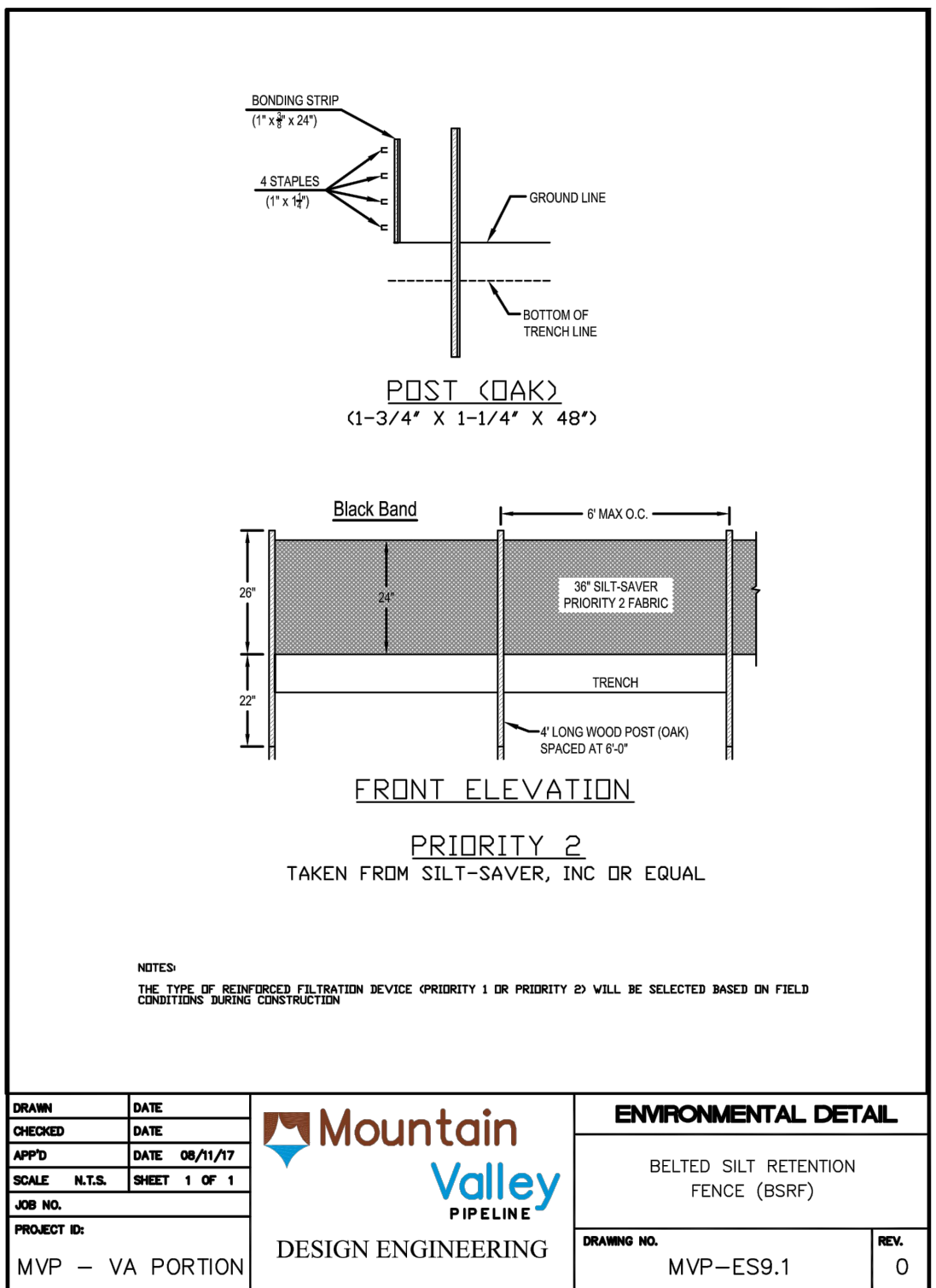
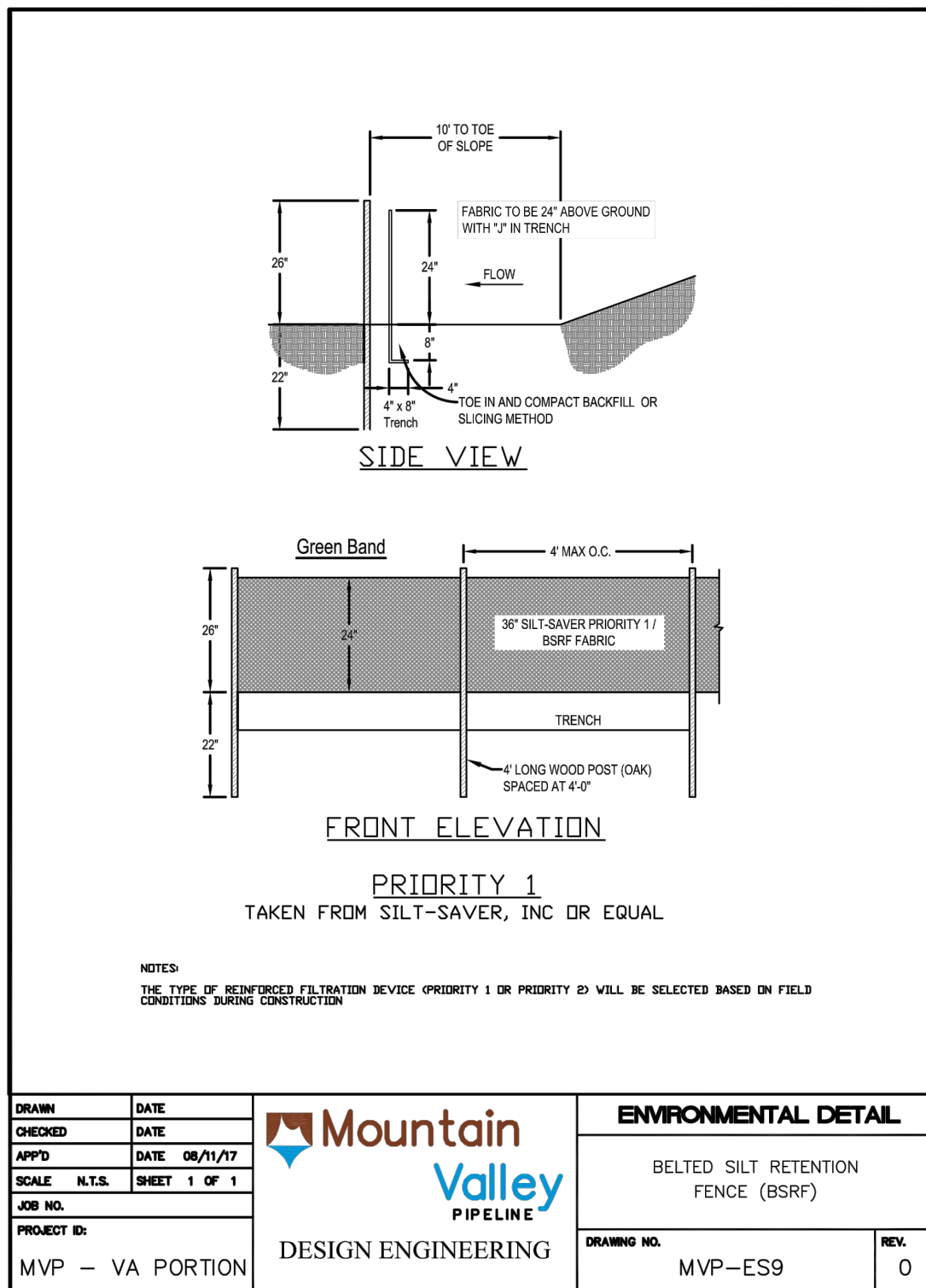
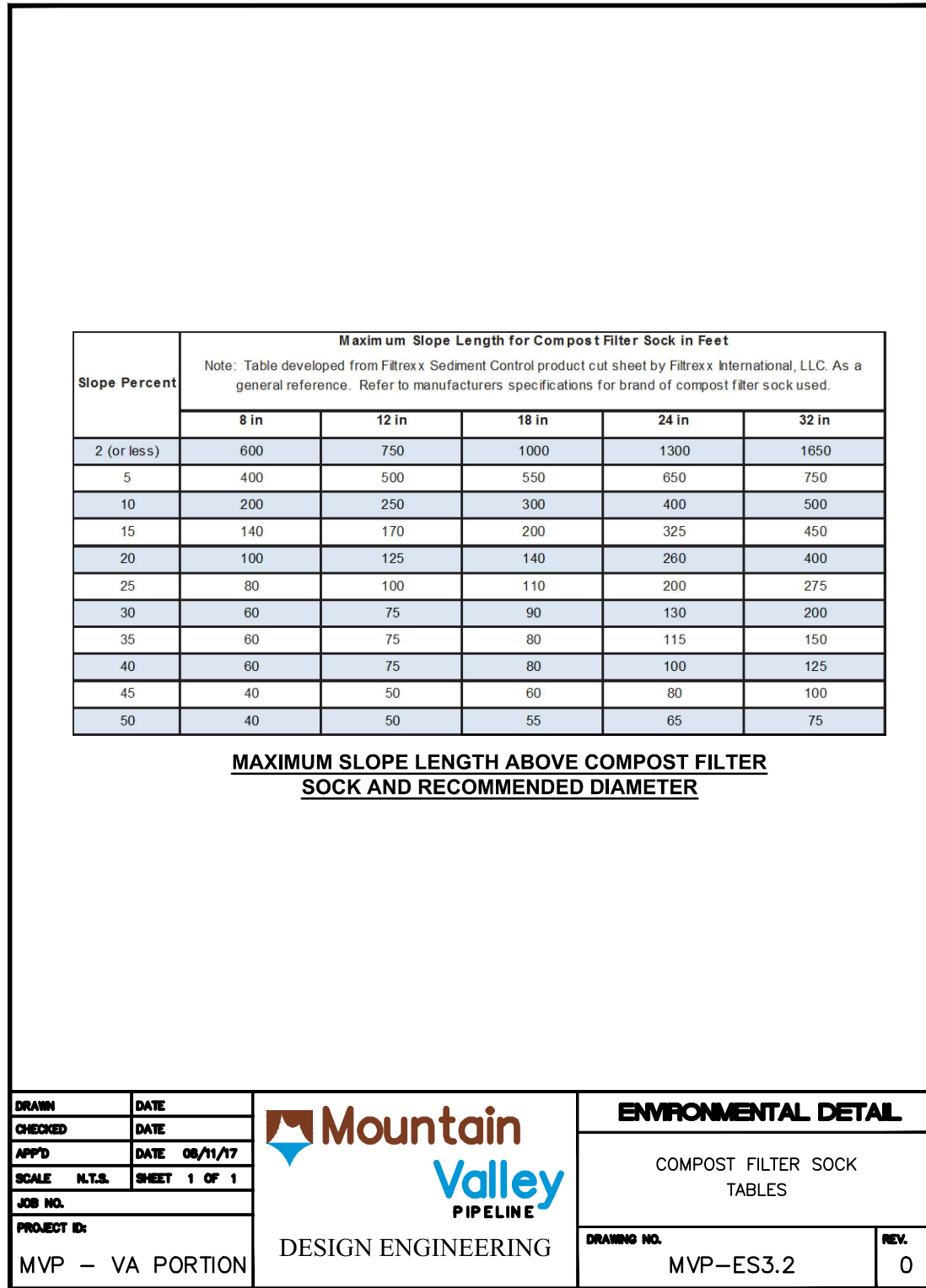
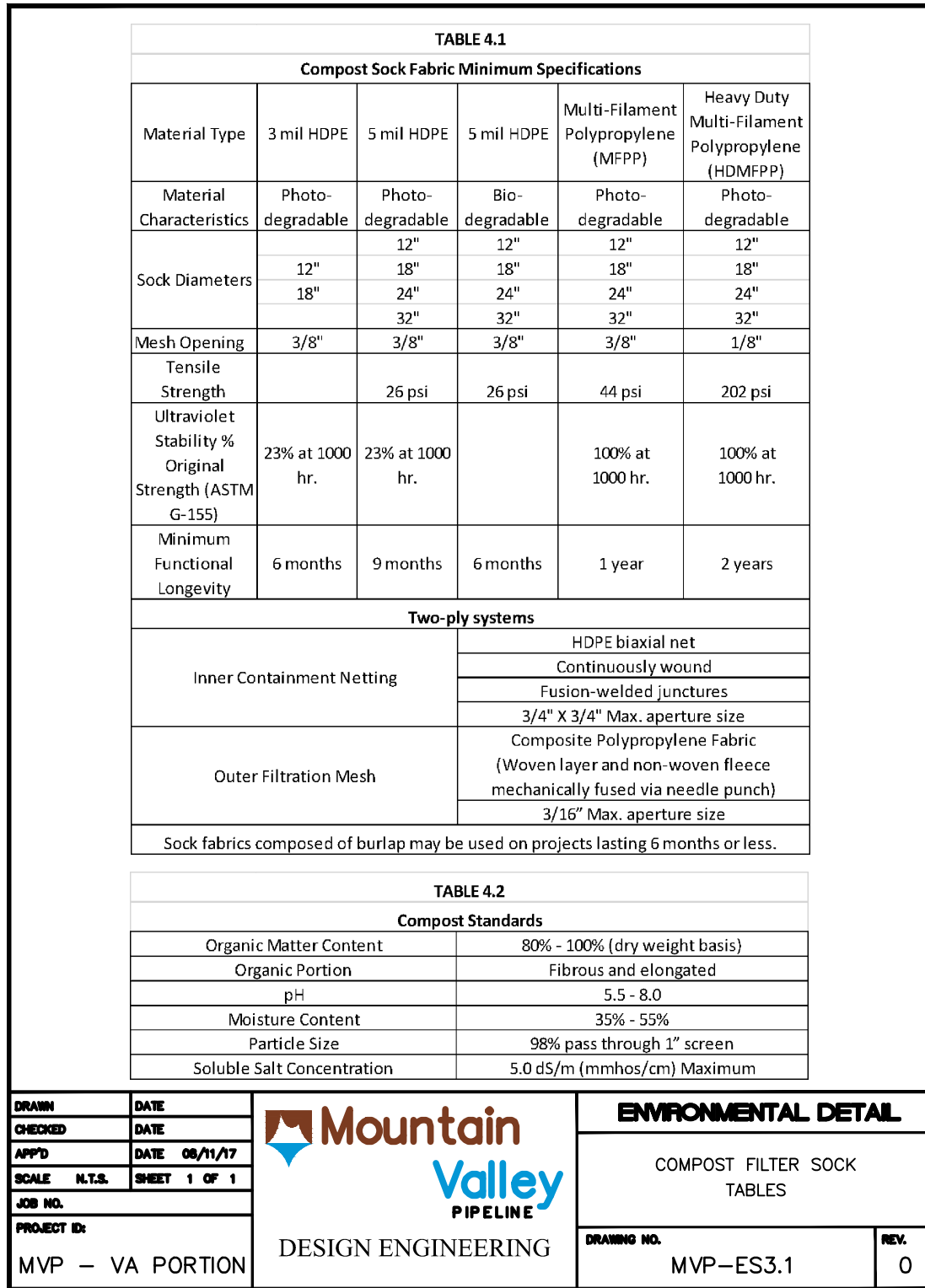
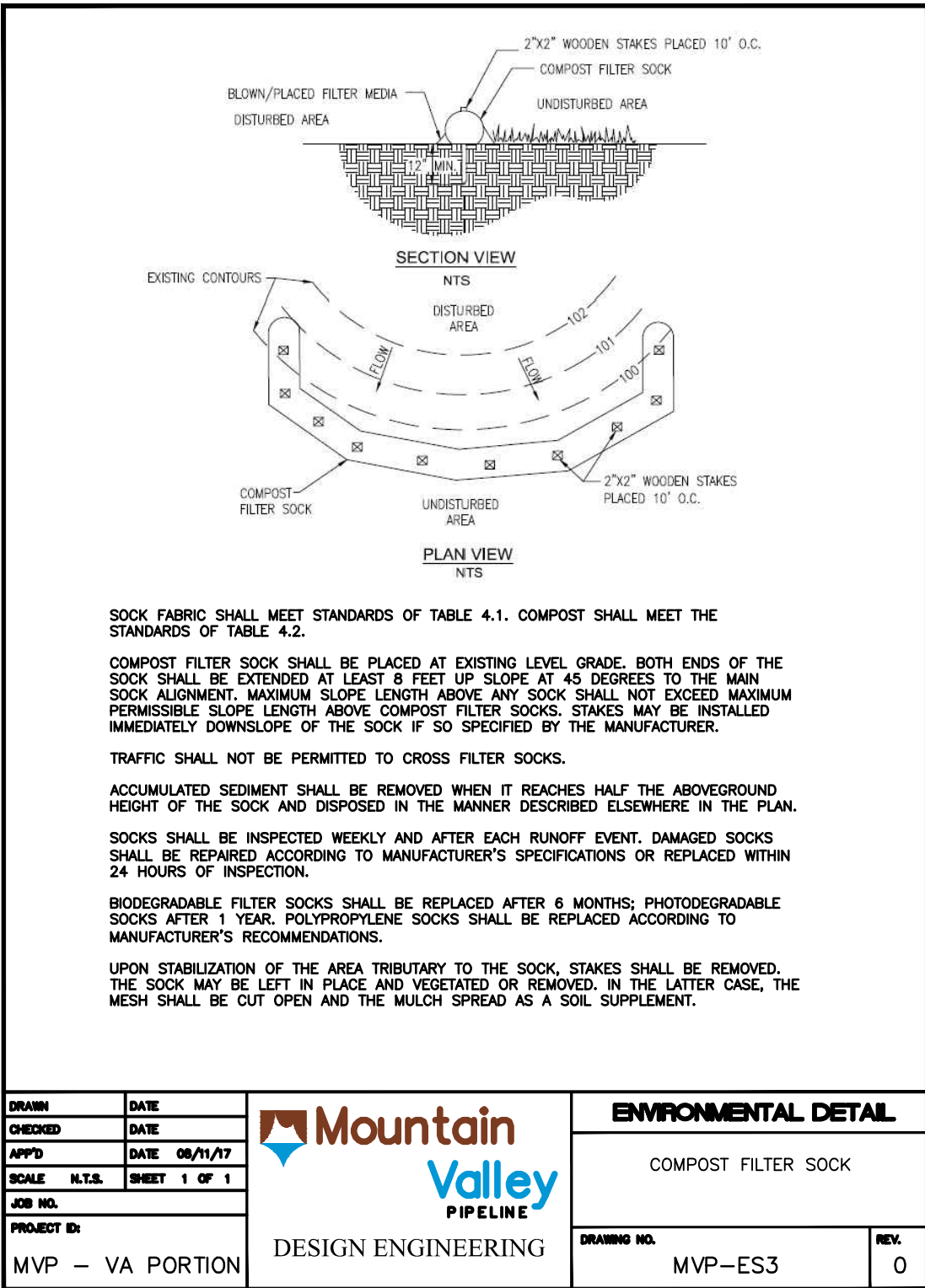
Mountain Valley ANCILLARY SITE EROSION AND SEDIMENT CONTROL PLANS MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE GILES COUNTY, VIRGINIA	MOUNTAIN VALLEY PIPELINE, LLC 555 SOUTHPOINTE BOULEVARD, SUITE 200 CANONSBURG, PA 15317
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CONSTRUCTION PLANS

DAVID J. WALLNER Lic. No. 0402057593 Professional Engineer
--

DRAWN BY:	KAL
CHECKED BY:	RE
APPROVED BY:	DW
DATE:	03/23/18
SCALE:	AS SHOWN
SHT. NO.	LY-028-2 OF 11



Forest Regeneration Woody Seed Mix and Application Rates.

Species	Common Name	Seeding Rate (lbs/acre)
Oak-Hickory Forest a		
<i>Fagus grandifolia</i>	American Beech	0.3
<i>Liriodendron tulipifera</i>	Tulip Poplar	0.3
<i>Pinus strobus</i>	White Pine	0.3
<i>Pinus virginiana</i>	Virginia Pine	0.3
<i>Prunus serotina</i>	Black Cherry	0.3
<i>Amelanchier canadensis</i>	Canadian Serviceberry	0.3
<i>Cercis canadensis</i>	Eastern Redbud	0.3
<i>Cornus florida</i>	Flowering Dogwood	0.3
<i>Diostyros virginiana</i>	Periwinkle	0.3
<i>Ilex opaca</i>	American Holly	0.3
<i>Nyssa sylvatica</i>	Black Gum	0.3
<i>Sassafras albidum</i>	Sassafras	0.3
<i>Hamelia virginiana</i>	Witch Hazel	0.3
<i>Lindera benzoin</i>	Spidobush	0.3
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	0.3
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum	0.3
<i>Vitis aestivalis</i>	Grape	0.3

NOTE:

WOODY SEED MIX TO BE USED IN COMBINATION WITH MVP-ES11.2 UPLAND MEADOW SEED MIX.

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PROJECT ID:

DATE
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DATE
N.T.S.
SHEET 1 OF 1

Mountain Valley
PIPELINE
DESIGN ENGINEERING

MVP – VA PORTION

ENVIRONMENTAL DETAIL

FOREST REGENERATION WOODY SEED MIX AND APPLICATION RATES

DRAWING NO. MVP-ES11.1

REV. 0

Upland Meadow Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Elymus virginicus</i>	Virginia Wildrye	4.00	5.0 - 7.4	June to October
<i>Schizanthus scoparium</i>	Little Bluestem	11.68	5.0 - 6.4	July to October
<i>Sorghastrum nutans</i>	Indiangrass	1.00	5.0 - 7.8	August to October
<i>Asclepias syriaca</i>	Common Milkweed	0.10		June to August
<i>Asclepias tuberosa</i>	Butterfly Milkweed	0.10	4.8 - 6.8	June to August
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.80	5.5 - 7.5	July to September
<i>Sensitive Partridge Pea</i>		0.08		June to October
<i>Sorghastrum nutans</i>	Indiangrass	14.40	5.0 - 7.8	August to October
<i>Asclepias syriaca</i>	Common Milkweed	0.09		June to August
<i>Aster pilosus</i>	Heath Aster	0.05	5.4 - 7.0	After fall frost
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.45	5.5 - 7.5	July to September
<i>Cornopsis lanceolata</i>	Lanceleaf Cornopsis	0.45	6.0 - 7.0	April to July
<i>Eupatorium coelestinum</i>	Mistflower	0.05	5.5 - 7.5	July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.45		July to August
<i>Liatris graminifolia</i>	Grassleaf Liatris	0.09	5.8 - 6.8	August to October
<i>Monarda fistulosa</i>	Wild Bergamot	0.10	6.0 - 8.0	June to September
<i>Penstemon laevigatus</i>	Appalachian Beardtongue	0.10		late May to late August
<i>Pycnanthemum incanum</i>	Hoary Mountainmint	0.20		May to June
<i>Rudbeckia fulgida</i> var. <i>fulgida</i>	Orange Coneflower	0.02	< 6.8	summer
<i>Rudbeckia hirta</i>	Blackeyed Susan	0.04		July to October

TEMPORARY SEED MIX:

9/1 - 2/15: 50/50 MIX ANNUAL RYEGRASS (LOULUM MULTI-FLOSUM) AND WINTER RYE (SECALE CEREALE) (50-100 LBS/AC)

2/16 - 4/30: ANNUAL RYEGRASS (LOULUM MULTI-FLOSUM) (60-100 LBS/AC)

5/1 - 8/31: GERMAN MILLET (SETARIA ITALICA) (50 LBS/AC)

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PROJECT ID:

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SHEET 1 OF 1

Mountain Valley
PIPELINE
DESIGN ENGINEERING

MVP – VA PORTION

ENVIRONMENTAL DETAIL

UPLAND MEADOW SEED MIX AND APPLICATION RATES

DRAWING NO. MVP-ES11.2

REV. 0

Upland Steep Slope Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Agrostis perennans</i>	Autumn Bentgrass	3.15	5.5 - 7.5	Midsummer
<i>Elymus virginicus</i>	Virginia Wildrye	9.05	5.0 - 7.4	June to October
<i>Panicum clandestinum</i>	Deertongue	4.50	4.0 - 7.5	May to September
<i>Schizanthus scoparium</i>	Little Bluestem	11.25	5.0 - 7.4	July to October
<i>Sorghastrum nutans</i>	Indiangrass	14.40	5.0 - 7.8	August to October
<i>Asclepias syriaca</i>	Common Milkweed	0.09		June to August
<i>Aster pilosus</i>	Heath Aster	0.05	5.4 - 7.0	After fall frost
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.45	5.5 - 7.5	July to September
<i>Cornopsis lanceolata</i>	Lanceleaf Cornopsis	0.45	6.0 - 7.0	April to July
<i>Eupatorium coelestinum</i>	Mistflower	0.05	5.5 - 7.5	July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.45		July to August
<i>Liatris graminifolia</i>	Grassleaf Blazing Star	0.09	5.8 - 6.8	August to October
<i>Monarda fistulosa</i>	Wild Bergamot	0.23	6.0 - 8.0	June to September
<i>Pycnanthemum incanum</i>	Hoary Mountainmint	0.05	< 6.8	summer
<i>Rudbeckia hirta</i>	Blackeyed Susan	0.45	6.0 - 7.0	May to July
<i>Senna hebecarpa</i>	Wild Senna	0.23		July to August
<i>Solidago nemoralis</i>	Gray Goldenrod	0.05	6.5 - 7.5	August to September
<i>Tradescantia ohioensis</i>	Ohio Spiderwort	0.05		late April to mid-July

NOTE:

ANNUAL RYEGRASS WILL BE USED AT A RATE OF 40 LBS/AC FOR STABILIZATION OF WETLANDS DISTURBED BY THE PROJECT.

FOLLOWING RESTORATION AND TEMPORARY STABILIZATION WITH ANNUAL RYEGRASS, SHOULD THE NATIVE SEEDBANK PRESENT IN THE TOPSOIL NOT REESTABLISH THE WETLAND, MVP WILL APPLY THIS SEED MIX TO SUPPLEMENT AND PERMANENTLY STABILIZE THE WETLAND.

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DESIGN ENGINEERING

MVP – VA PORTION

ENVIRONMENTAL DETAIL

UPLAND STEEP SLOPE SEED MIX AND APPLICATION RATES

DRAWING NO. MVP-ES11.3

REV. 0

Wetlands Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Alisma subcordatum</i>	Mud Plantain	0.04		
<i>Carex gynandra</i>	Fringed Sedge	0.10	5.0 - 7.0	Midsummer
<i>Carex lupulina</i>	Hop Sedge	1.00		May to June
<i>Carex lurida</i>	Shallow Sedge	3.00	6.2 - 7.0	June to October
<i>Carex scoparia</i>	Blunt Broom Sedge	1.00	4.9 - 6.8	June to July
<i>Carex vulpinoidea</i>	Fox Sedge	6.90	4.6 - 6.9	July to August
<i>Cinna arundinacea</i>	Wood Reedgrass	0.40	6.8 - 8.9	June to August
<i>Elymus virginicus</i>	Virginia Wildrye	4.00	4.0 - 6.5	August to September
<i>Juncus effusus</i>	Soft Rush	0.60	5.0 - 7.4	June to October
<i>Oncoclea sensibilis</i>	Sensitive Fern	0.20	5.5 - 7.0	May to June
<i>Scirpus cyperinus</i>	Woolgrass	0.20		June to October

NOTE:

ANNUAL RYEGRASS WILL BE USED AT A RATE OF 40 LBS/AC FOR STABILIZATION OF WETLANDS DISTURBED BY THE PROJECT.

FOLLOWING RESTORATION AND TEMPORARY STABILIZATION WITH ANNUAL RYEGRASS, SHOULD THE NATIVE SEEDBANK PRESENT IN THE TOPSOIL NOT REESTABLISH THE WETLAND, MVP WILL APPLY THIS SEED MIX TO SUPPLEMENT AND PERMANENTLY STABILIZE THE WETLAND.

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WETLAND SEED MIX AND APPLICATION RATES

DRAWING NO. MVP-ES11.4

REV. 0

Riparian Seed Mix and Application Rates in Virginia.

Species	Common Name	Seeding Rate (lbs/acre)	pH	Bloom Period (if applicable)
<i>Agrostis perennans</i>	Autumn Bentgrass	0.04	5.0 - 7.0	Midsummer
<i>Andropogon gerardi</i>	Big Bluestem	0.10		May to June
<i>Elymus virginicus</i>	Virginia Wildrye	1.00	6.2 - 7.0	June to October
<i>Juncus effusus</i>	Soft Rush	3.00	4.9 - 6.8	June to July
<i>Juncus tenuis</i>	Path Rush	1.00	4.5 - 6.9	July to August
<i>Panicum clandestinum</i>	Deertongue	6.90	6.8 - 8.9	June to August
<i>Sorghastrum nutans</i>	Indiangrass	0.40	4.0 - 8.5	August to September
<i>Asclepias incarnata</i>	Swamp Milkweed	4.00	5.0 - 7.4	June to October
<i>Chamaecrista fasciculata</i>	Partridge Pea	0.80	5.5 - 7.0	May to June
<i>Eupatorium coelestinum</i>	Mistflower	0.20		June to October
<i>Eupatorium fistulosum</i>	Joe Pye Weed	0.20	4.8 - 7.2	July to September
<i>Eupatorium perfoliatum</i>	Boneset	0.20		July to August
<i>Geum canadense</i>	White Avena	0.40	5.0 - 8.0	June to July
<i>Helianthus autumnalis</i>	Common Sneezeweed	0.10	5.5 - 7.5	July to October
<i>Helopsis helianthoides</i>	Oxeye Sunflower	0.14	4.5 - 7.0	July to September
<i>Monarda fistulosa</i>	Wild Bergamot	0.20		July to October
<i>Pycnanthemum tenuifolium</i>	Slender Mountainmint	0.10	4.0 - 7.5	August to September
<i>Rudbeckia hirta</i>	Blackeyed Susan	0.40		July to August
<i>Senna hebecarpa</i>	Wild Senna	0.10		August to September
<i>Verbena hastata</i>	Blue Vervain	0.10		June to September
<i>Vernonia noveboracensis</i>	New York Ironweed	0.72		June to October

TEMPORARY SEED MIX:

9/1 - 2/15: 50/50 MIX ANNUAL RYEGRASS (LOULUM MULTI-FLOSUM) AND WINTER RYE (SECALE CEREALE) (50-100 LBS/AC)

2/16 - 4/30: ANNUAL RYEGRASS (LOULUM MULTI-FLOSUM) (60-100 LBS/AC)

5/1 - 8/31: GERMAN MILLET (SETARIA ITALICA) (50 LBS/AC)

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RIPARIAN SEED MIX AND APPLICATION RATES

DRAWING NO. MVP-ES11.5

REV. 0

Native tree and shrub species for bare root plantings within riparian areas and forested wetlands.

Species	Common Name	Indicator Status	Riparian Planting ¹	Forested Wetland Planting ²
Native Trees				
<i>Acer rubrum</i>	Red Maple	FAC	X	X
<i>Acer saccharinum</i>	Silver Maple	FACW	X	X
<i>Betula nigra</i>	River Birch	FACW	X	X
<i>Carpinus caroliniana</i>	American Hornbeam	FAC	X	X
<i>Carya glabra</i>	Pignut Hickory	FACU	X	
<i>Carya ovata</i>	Shagbark Hickory	FACU	X	
<i>Chionanthus virginicus</i>	White Fringe Tree	FAC+	X	
<i>Diostyros virginiana</i>	Common Periwinkle	FAC	X	
Forested Wetland Planting ²				
<i>Fraxinus pennsylvanica</i>	Green Ash	FACW	X	X
<i>Juniperus virginiana</i>	Eastern Red Cedar	FACU	X	X
<i>Liquidambar styraciflua</i>	Sweet Gum	FAC	X	X
<i>Liriodendron tulipifera</i>	Tuliptree	FACU	X	X
<i>Nyssa sylvatica</i>	Black Gum	FAC	X	
<i>Platanus occidentalis</i>	American Sycamore	FACW+	X	X
<i>Populus deltoides</i>	Eastern Cottonwood	FAC	X	
<i>Quercus bicolor</i>	Swamp White Oak	FACW+	X	X
<i>Quercus falcata</i>	Cherrybark Red Oak	FACW	X	X
<i>Quercus phellos</i>	Willow Oak	FAC+	X	X
<i>Quercus nigra</i>	Water Oak	FAC	X	
<i>Quercus palustris</i>	Pin Oak	FACW	X	X
<i>Salix nigra</i>	Black Willow	FACW	X	X
<i>Ulmus americana</i>	American Elm	FACW-	X	X

NOTE:

1. REFER TO MVP-ES11.8 AND MVP-ES11.9 FOR LOCATIONS OF BARE ROOT PLANTINGS.

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ENVIRONMENTAL DETAIL

NATIVE TREE AND SHRUB SPECIES FOR BARE ROOT PLANTINGS WITHIN RIPARIAN AREAS AND FORESTED WETLANDS

DRAWING NO. MVP-ES11.6

REV. 0

Native Shrubs

Species	Common Name	Indicator Status	Riparian Planting ¹	Forested Wetland Planting ²
<i>Alnus serrulata</i>	Brook-alder Alder	OBL		X
<i>Amelanchier canadensis</i>	Canada Serviceberry	FAC	X	
<i>Arctostaphylos</i>	Red Chokeberry	FACW	X	X
<i>Baccharis halimifolia</i>	Groundsel Bush	FACW-	X	X
<i>Cephalanthus occidentalis</i>	Butterbush	OBL	X	X
<i>Cornus amomum</i>	Silly Dogwood	FACW	X	X
<i>Cornus stolonifera</i>	Red-osier Dogwood	FAC	X	X
<i>Hamelia virginiana</i>	American Witchhazel	FAC	X	
<i>Ilex verticillata</i>	Common Winterberry	FACW+	X	X
<i>Itea virginica</i>	Virginia Willow	OBL	X	X
<i>Iva frutescens</i>	Marsh Elder	FACW+	X	X
<i>Leucothoe racemosa</i>	Fetter-bush	FACW	X	X
<i>Lindera benzoin</i>	Spicebush	FACW-	X	X
<i>Lycoria ligustrina</i>	Maleberry	FACW	X	X
<i>Magnolia virginiana</i>	Sweetbay Magnolia	FACW+	X	X
<i>Physocarpus opulifolius</i>	Eastern Ninebark	FACW-	X	X
<i>Sambucus canadensis</i>	American Elder	FACW-	X	X
<i>Vaccinium corymbosum</i>	Highbush Blueberry	FACW-	X	X
<i>Viturnum dentatum</i>	Arrow-wood	FAC	X	
<i>Viburnum prunifolium</i>	Black-haw	FACU	X	

NOTE:

1. REFER TO MVP-ES11.8 AND MVP-ES11.9 FOR LOCATIONS OF BARE ROOT PLANTINGS.

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NATIVE TREE AND SHRUB SPECIES FOR BARE ROOT PLANTINGS WITHIN RIPARIAN AREAS AND FORESTED WETLANDS

DRAWING NO. MVP-ES11.7

REV. 0

Stream crossings proposed for bare-root seedling plantings.

Waterbody Name	MP	County	State	Valuable Resource
Kimballton Branch	199.1, 199.4	Giles	VA	headwaters of wild trout stream, coldwater stream
Waterbody Name MP County State Valuable Resource				
Story Creek	200.4	Giles	VA	candy darter, green floater, coldwater stream, wild trout stream
Little Story Creek	204.4	Giles	VA	coldwater stream, wild trout stream
Sinking Creek	211.2	Giles	VA	candy darter, green floater, coldwater stream, wild trout stream, non-listed mussels
UNT Craig Creek	219.2	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	219.3	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Craig Creek	219.7	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Craig Creek	219.7	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	219.8	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
UNT Craig Creek	220.0	Montgomery	VA	Headwaters of James spiny mussel occurrences, USFS lands area
Mill Creek	222.2	Montgomery	VA	upstream of Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
North Fork/Roanoke River	227.2	Montgomery	VA	Roanoke logperch present, non-listed mussels present, orangefin madtom, coldwater stream, wild trout
North Fork Roanoke River	227.4	Montgomery	VA	Roanoke logperch present, non-listed mussels present, orangefin madtom, coldwater stream, wild trout
Bradshaw Creek	230.7	Montgomery	VA	Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
Bradshaw Creek	231.5	Montgomery	VA	Roanoke logperch suitable habitat, orangefin madtom, coldwater stream, wild trout
Roanoke River	235.4	Montgomery	VA	Roanoke logperch present, orangefin madtom, non-listed mussels present
Bottom Creek	241.1	Roanoke	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout
Bottom Creek	242.5	Roanoke	VA	upstream of Bottom Creek Gorge, orangefin madtom, coldwater stream, wild trout

NOTE:

1. REFER TO MVP-ES11.8 AND MVP-ES11.9 FOR LOCATIONS OF BARE ROOT PLANTINGS.

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STREAM CROSSINGS PROPOSED FOR BARE ROOT SEEDLING PLANTINGS

DRAWING NO. MVP-ES11.8

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 **ANCILLARY SITE**
EROSION AND SEDIMENT CONTROL PLANS
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE
GILES COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC
555 SOUTHPOINTE BOULEVARD, SUITE 200
CANONSBURG, PA 15317

Chemical Mulches

Chemical mulches* may be used alone only in the following situations:

a. Where no other mulching material is available.

b. In conjunction with temporary seeding during the times when mulch is not required for that practice.

c. From March 15 to May 1 and August 15 to September 30, provided that they are used on areas with slopes no steeper than 4:1, which have been roughened in accordance with SURFACE ROUGHENING, Std. & Spec. 3.29. If rill erosion occurs, another mulch material shall be applied immediately.

*Note: Chemical mulches may be used to bind other mulches or with fiber mulch in a hydroseeded slurry at any time. Manufacturer's recommendations for application of chemical mulches shall be followed.

Maintenance

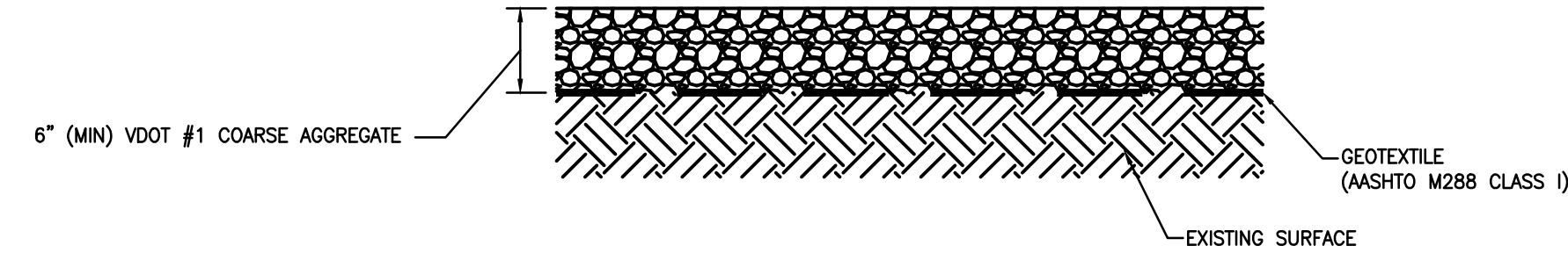
All mulches and soil coverings should be inspected periodically (particularly after rainstorms) to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. Nets and mats should be inspected after rainstorms for dislocation or failure. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repair as needed.

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Mountain Valley

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ENVIRONMENTAL DETAIL	
MULCHING	
DRAWING NO.	REV.
MVP-ES45.5	P



TEMPORARY GRAVEL SURFACE SPECIFICATIONS

- NO LAND DISTURBANCE WILL OCCUR AND THE GRAVEL WILL BE PLACED ON EXISTING GRADE.
- THE EXISTING SURFACE SHALL BE CLEARED OF ALL VEGETATION AND OTHER OBJECTIONABLE MATERIAL.
- A 6-INCH COURSE OF VDOT #1 COARSE AGGREGATE (AS PEER SECTION 203 OF VDOT'S ROAD AND BRIDGE SPECIFICATIONS) SHALL BE PROVIDED AS SOON AS VEGETATION REMOVAL IS COMPLETE.
- IN "HEAVY DUTY" TRAFFIC SITUATIONS THE AGGREGATE SHOULD INSTEAD BE PLACED AT AN 8-- TO 10-INCH DEPTH TO AVOID EXCESSIVE DISSIPATION OR MAINTENANCE NEEDS.
- IF THE GRAVEL SURFACE BECOMES CLOGGED WITH SEDIMENT AND OTHER DEBRIS, A TOP DRESSING OF NEW GRAVEL SHOULD BE APPLIED.
- GEOTEXTILE SHALL BE NON-WOVEN WITH AASHTO M288 SURVIVABILITY CLASS (1) AND A MIN. PERMITIVITY OF 90 GAL/MIN/FT².

TYPICAL GRAVEL SURFACE DETAIL
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Mountain Valley

ANCILLARY SITE

EROSION AND SEDIMENT CONTROL PLANS

MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE

GILES COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC

555 SOUTHPOINTE BOULEVARD, SUITE 200

CANONSBURG, PA 15317

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661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

CONSTRUCTION PLANS

COMMONWEALTH OF PENNSYLVANIA

DAVID J. WALLNER

Lic. No. 0402057593

Professional Engineer

DRAWN BY:		KAL
CHECKED BY:		RE
APPROVED BY:		DW
DATE:	03/23/18	REVISION
SCALE:	AS SHOWN	
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MS-16 UNDERGROUND UTILITY LINE INSTALLATION. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

- a. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
- b. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
- c. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
- d. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
- e. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
- f. COMPLY WITH APPLICABLE SAFETY REGULATIONS.

MS-17 VEHICULAR SEDIMENT TRACKING. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS:

- a. PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE.
- b. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY.
- c. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

MS-18 REMOVAL OF TEMPORARY MEASURES. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

MS-19 STORMWATER MANAGEMENT. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF. FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA, STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:

- a. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
- b. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:

- 1. THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
 - 2. (A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
 - (b) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
 - (c) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
 - c. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
- 1. IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS; OR
 - 2. IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
 - 3. DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A 10-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR
 - 4. PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.

- d. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
- e. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
- f. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
- g. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
- h. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
- i. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
- j. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
- k. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.
- l. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15:54 OR 62.1-44.15:65 OF THE ACT.
- m. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15:52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44.15:24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMMP) REGULATION OR ARE EXEMPT PURSUANT TO SUBDIVISION C 7 OF § 62.1-44.15:34 OF THE ACT.
- n. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMMP) REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.

MS-19 COMPLIANCE DURING CONSTRUCTION

A. INTRODUCTION

THE PRIMARY INTENT OF MS-19 IS TO ENSURE THAT DOWN GRADIENT PROPERTIES ARE PROTECTED FROM ADVERSE IMPACTS RESULTING FROM INCREASES IN STORMWATER RUNOFF FROM DEVELOPMENT ACTIVITIES. IN ACCORDANCE WITH 9VAC25-870-66, WATER QUANTITY COMPLIANCE WITH THE WATER QUALITY REQUIREMENTS CONTAINED IN THAT SECTION SATISFIES THE REQUIREMENTS OF M.S. 19:

"COMPLIANCE WITH THE MINIMUM STANDARDS SET OUT IN THIS SECTION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF SUBDIVISION 19 OF 9VAC25-840-40 (MINIMUM STANDARDS; VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS)."

THERE IS ONE PRIMARY FLOW REGIME ASSOCIATED WITH THE CONSTRUCTION PHASE OF THE PROJECT THAT WILL NEED TO BE ASSESSED FOR COMPLIANCE WITH MS-19. THIS FLOW REGIME INCLUDE FLOWS GENERATED DIRECTLY WITHIN THE PROJECT LIMIT OF DISTURBANCE (LOD) THAT ARE CONTROLLED BY PERIMETER CONTROLS CONSISTING OF COMPOST FILTER SOCKS (CFS) OR SILT FENCE, AS WELL AS FLOWS ROUTED TO SEDIMENT TRAPS.

REGARDLESS OF THE SPECIFIC LOCATION AND/OR FLOW REGIME, ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDED IN THE DESIGN PLANS FOR THE PROJECT HAVE BEEN DEVELOPED AND DESIGNED TO BE IN FULL COMPLIANCE WITH STATE REQUIREMENTS, AS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), AS WELL AS THE APPROVED *PROJECT SPECIFIC STANDARDS AND SPECIFICATIONS*. AS A RESULT, ALL IMPLEMENTED PRACTICES (SILT FENCE, CFS, SOIL STABILIZATION, ETC.) WILL MEET ALL STATE REQUIREMENTS.

IN ALL INSTANCES OF OFFSITE STORMWATER FLOW DURING THE CONSTRUCTION PHASE OF THE PROJECT, COMPLIANCE WITH MS-19 IS PROVIDED THROUGH THE PROVISION OF SHEETFLOW BELOW THE RESPECTIVE EROSION AND SEDIMENT CONTROL PRACTICES ALONG THE PERIMETER (CFS OR SILT FENCE) ; SITE-SPECIFIC ANALYSES WILL BE COMPLETED WHEN SITING SEDIMENT TRAPS/BASINS AND LEVEL SPREADERS TO DEMONSTRATE COMPLIANCE WITH MS-19. A DESCRIPTION OF THE FLOW REGIME FOR DIRECT RUNOFF FROM DISTURBED AREAS OF THE PROJECT IS PROVIDED BELOW, FOLLOWED BY AN ANALYSIS THAT DEMONSTRATES THAT FLOW FROM THE PROPOSED PRACTICES WILL PROVIDE FOR NON-EROSIVE SHEET FLOW AND IS THEREFORE IN FULL COMPLIANCE WITH MS-19.

B. RUNOFF FROM PROJECT SITE

PROPERLY DESIGNED AND IMPLEMENTED EROSION AND SEDIMENT CONTROLS IN THE FORM OF SOIL STABILIZATION, STAND-ALONE CFS, AND/OR SILT FENCE WILL ENSURE DISTURBED AREAS WITHIN THE PROJECT SITE ARE PROTECTED IN ACCORDANCE WITH VESCH SPECIFICATIONS. PERIMETER CONTROLS (CFS AND/OR SILT FENCE, DEPENDING ON THE SPECIFIC LOCATION) WILL FILTER RUNOFF AND PROVIDE SHEETFLOW TO DOWNGRADIENT AREAS IN A NON-EROSIVE MANNER. THIS WILL RESULT IN RUNOFF FROM THE PROJECT SITE MEETING MS-19 REQUIREMENTS.

1. SHEETFLOW DISCHARGES

THE RELEVANT STANDARD REFERRED TO IN 9VAC25-870-66 IS IN SECTION D THAT CONTAINS THE REQUIREMENTS WHEN DISCHARGING STORMWATER IN THE FORM OF SHEETFLOW:

"A INCREASED VOLUMES OF SHEET FLOW RESULTING FROM PERVIOUS OR DISCONNECTED IMPERVIOUS AREAS, OR FROM PHYSICAL SPREADING OF CONCENTRATED FLOW THROUGH LEVEL SPREADERS, MUST BE IDENTIFIED AND EVALUATED FOR POTENTIAL IMPACTS ON DOWN-GRADIENT PROPERTIES OR RESOURCES. INCREASED VOLUMES OF SHEET FLOW THAT WILL CAUSE OR CONTRIBUTE TO EROSION, SEDIMENTATION, OR FLOODING OF DOWN GRADIENT PROPERTIES OR RESOURCES SHALL BE DIVERTED TO A STORMWATER MANAGEMENT FACILITY OR A STORMWATER CONVEYANCE SYSTEM THAT CONVEYS THE RUNOFF WITHOUT CAUSING DOWN-GRADIENT EROSION, SEDIMENTATION, OR FLOODING. IF ALL RUNOFF FROM THE SITE IS SHEET FLOW AND THE CONDITIONS OF THIS SUBSECTION ARE MET, NO FURTHER WATER QUANTITY CONTROLS ARE REQUIRED."

SHEETFLOW DOWN GRADIENT OF THE LOD DURING THE CONSTRUCTION PHASE WILL BE PROVIDED BY PERIMETER CONTROLS THAT HAVE BEEN DESIGNED IN ACCORDANCE WITH THE APPROVED *PROJECT SPECIFIC STANDARDS AND SPECIFICATIONS*, AS WELL AS THE RELEVANT SPECIFICATIONS CONTAINED IN THE VESCH (AS NOTED ABOVE). EACH PRACTICE (SILT FENCE AND CFS) HAS BEEN SELECTED BASED ON THE SITE SPECIFIC CONDITIONS TO MAKE CERTAIN THAT THEY WILL FUNCTION PROPERLY AND AS INTENDED. CONFIRMATION THAT SHEETFLOW WILL BE PROVIDED DOWNGRADIENT OF EACH PRACTICE IS PROVIDE BELOW.

a) SILT FENCE

BY DEFINITION, SILT FENCE IS A FILTERING PRACTICE THAT HAS A STATED PERMEABILITY OF 0.3 GAL/MIN/SF (VESCH TABLE 3.05-A). ASSUMING A MAXIMUM PONDING DEPTH OF 24-IN, THIS WILL RESULT IN A FLOW RATE THROUGH THE FENCING OF 0.6 GAL/MIN/LF OF FENCING. CONVERTING, THIS EQUATES TO APPROXIMATELY 0.00134 CFS/LF (448.83 GPM = 1 CFS). THIS FLOW RATE CAN BE INSERTED INTO MANNING'S EQUATION TO SOLVE FOR THE CORRESPONDING DEPTH OF FLOW:

$$Q = (1.49/N) A R^{2/3} S^{1/2}$$

WHERE:

$$Q = \text{OVERLAND FLOW RATE, CFS}$$

$$A = \text{CROSS-SECTIONAL FLOW AREA PER LF OF FENCE (I.E. DEPTH X 1), FT}^2$$

$$N = \text{MANNING'S COEFFICIENT:}$$

THIS PARAMETER WAS ASSUMED TO BE 0.24 FOR SHEETFLOW IN "DENSE GRASSES" (TR-55, TABLE 3-1. AREAS BELOW THE END TREATMENTS WILL BE SEEDED WITH A NATIVE GRASSES AND WOODY SPECIES, SO THE "DENSE GRASSES" N VALUE WAS DEEMED TO BE THE MOST APPROPRIATE VS THE "SHORT PRAIRIE GRASS" (N = 0.15) OR "BERMUDA GRASS" (N = 0.41) ALTERNATIVES).

$$R = \text{HYDRAULIC RADIUS, FT.}$$

THIS TERM IS DEFINED AS THE CROSS-SECTIONAL FLOW AREA DIVIDED BY THE WETTED PERIMETER. HOWEVER, FOR SHALLOW, WIDE FLOW THIS CAN BE ASSUMED TO BE EQUAL TO THE FLOW DEPTH. TO ILLUSTRATE, ASSUME A FLOW DEPTH OF 0.10 FT OVER A LENGTH OF 10 FT:

$$\begin{aligned} R &= A / WP \\ &= (0.1 \text{ FT} * 10 \text{ FT}) / (0.1 \text{ FT} + 10 \text{ FT} + 0.1 \text{ FT}) \\ &= 1.0 \text{ FT}^2 / 10.2 \text{ FT} \\ &= 0.098 \text{ FT} \end{aligned}$$

$$\text{DEPTH} = 0.10 \text{ FT IS A VALID ASSUMPTION}$$

$$S = \text{DOWN-GRADIENT OVERLAND SLOPE, FT/FT:}$$

ASSUMING AN OVERLAND SLOPE OF 0.5 FT/FT AND AN "N" VALUE OF 0.24 (MEADOW), RESULTS IS A NOMINAL FLOW DEPTH OF 0.0078 FT:

$$0.00134 = (1.49/0.24) (\text{DEPTH} \times 1) \text{DEPTH}^{2/3} 0.5^{1/2}$$

REARRANGING,

$$\text{DEPTH}^{5/3} = 0.000305$$

$$\text{DEPTH} = 0.0078 \text{ FT}$$

THIS FLOW DEPTH CAN THEN BE USED TO COMPUTE THE VELOCITY IN ACCORDANCE WITH:

$$V = Q/A$$

$$= 0.00134 / 0.0078$$

$$= 0.17 \text{ FPS}$$

THIS VALUE IS AN ORDER OF MAGNITUDE LOWER THAN THE CONSERVATIVELY ASSUMED ALLOWABLE VELOCITY OF 2 FPS (BARE EARTH). THIS RESULT IS NOT UNEXPECTED AS THE PURPOSE OF SILT FENCE IS TO SLOWLY FILTER STORMWATER RUNOFF.

b) CFS

THE OTHER PERIMETER CONTROL THAT WILL BE IMPLEMENTED, DEPENDING ON THE SPECIFIC LOCATION, WILL BE CFS. THE COMPOST FILTER SOCKS ARE RATED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) IN THE DOCUMENT *FILTER BERMS AND FILTER SOCKS: STANDARD SPECIFICATIONS FOR COMPOST FOR EROSION/SEDIMENT CONTROL* TO PASS A RANGE OF FLOWS, FROM 4 TO OVER 10 GPM/LF (TABLE 2). A PRODUCT SPECIFIC CITATION OBTAINED FROM FILTREXX® STIPULATES A FLOW THROUGH RATE OF 22.5 GAL/MIN/LF FOR A 24-IN DIAMETER CFS (THE EFFECTIVE SIZE THAT WILL BE USED FOR THIS PROJECT). IN ORDER TO ENSURE A SHEETFLOW DEPTH OF NOT MORE THAN 0.10 FT BELOW THE CFS, AN EVEN HIGHER FLOW RATE OF 43 GPM WAS ASSUMED (VERY CONSERVATIVE).

ASSUMING A WORST CASE OF 43 GPM, THIS EQUATES TO A FLOW RATE OF 0.095 CFS/LF. USING MANNING'S EQUATION TO SOLVE FOR THE DEPTH OF FLOW USING THE SAME ASSUMPTIONS AND METHODOLOGY NOTED ABOVE RESULTS IN AN OVERLAND FLOW DEPTH OF 0.10 FT:

$$0.095 = (1.49/0.24) (\text{DEPTH} \times 1) \text{DEPTH}^{2/3} 0.5^{1/2}$$

REARRANGING,

$$\text{DEPTH}^{5/3} = 0.022 \text{ FT}$$

$$\text{DEPTH} = 0.10 \text{ FT}$$

THIS FLOW DEPTH CAN THEN BE USED TO COMPUTE THE VELOCITY IN ACCORDANCE WITH:

$$V = Q/A$$

$$= 0.095 / 0.10$$

$$= 0.95 \text{ FPS}$$

THUS, THE CFS WILL ALSO PRODUCE SHEETFLOW IN A NON-EROSIVE MANNER THAT WILL NOT IMPACT DOWN GRADIENT PROPERTIES. AS A RESULT, SHEETFLOW DOWNGRADIENT FROM THE CFS PERIMETER CONTROL IMMEDIATELY FOLLOWING CONSTRUCTION IS ALSO IN FULL COMPLIANCE WITH M.S. 19.

c) FLOODING

BECAUSE SHEETFLOW HAS BEEN DEMONSTRATED FOR DOWNGRADIENT FLOWS DURING THE CONSTRUCTION PROCESS, COMPLIANCE WITH THE FLOODING PROVISION OF THE REGULATIONS (9VAC25-870-66 C. FLOOD PROTECTION) IS NOT REQUIRED. HOWEVER, THE SHEETFLOW PROVISION CITED IN THIS NARRATIVE DOES REQUIRE THAT "FLOODING" OF DOWNGRADIENT PROPERTIES OR RESOURCES" DOES NOT OCCUR. THE DEFINITION OF "FLOODING" PROVIDED IN THE REGULATIONS IS:

"FLOODING" MEANS A VOLUME OF WATER THAT IS TOO GREAT TO BE CONFINED WITHIN THE BANKS OR WALLS OF A STREAM, WATER BODY, OR CONVEYANCE SYSTEM AND THAT OVERFLOWS ONTO ADJACENT LANDS, THEREBY CAUSING OR THREATENING DAMAGE."


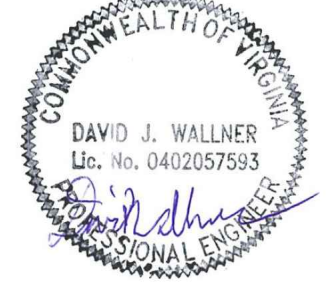

IN THIS INSTANCE, THERE ARE NO CONVEYANCES (I.E. SHEETFLOW), THEREFORE THE APPLICABLE PORTION OF THE DEFINITION IS RELATED TO OVERLAND FLOW THAT CAUSES OR THREATENS TO CAUSE DAMAGE. THIS ANALYSIS HAS DEMONSTRATED THAT THE SHEETFLOW FROM EITHER THE SILT FENCE OR CFS IS NON-EROSIVE. THEREFORE, THE TEMPORARY, NOMINAL INCREASES IN DOWN GRADIENT FLOW RATES THAT MAY OCCUR IN SOME SITUATIONS (NOTE - IN MANY INSTANCES THE FLOW RATES WILL ACTUALLY BE REDUCED AS A RESULT OF PONDING BEHIND THE SILT FENCE AND/OR CFS) WILL NOT RESULT IN DAMAGE AND THEREFORE COMPLIES WITH THE REQUIREMENTS OF MS-19.

2. DISCHARGE TO A CONVEYANCE SYSTEM

SEDIMENT TRAPS/BASINS WILL BE DESIGNED IN ACCORDANCE WITH THE VESCH AND TO CONTROL THE 2-YEAR STORM EVENT TO ENSURE THAT THERE IS NO INCREASE IN THE PEAK RATE OF RUNOFF AT THE DOWNSTREAM POINT OF DISCHARGE.

C. SUMMARY

SINCE IT HAS BEEN DEMONSTRATED THAT UNDER THE MOST CONSERVATIVE ASSUMPTIONS THAT SHEETFLOW DOWN GRADIENT OF THE PERIMETER CONTROLS WILL NOT "CAUSE OR CONTRIBUTE TO EROSION, SEDIMENTATION, OR FLOODING OF DOWN GRADIENT PROPERTIES" DURING AND IMMEDIATELY FOLLOWING CONSTRUCTION, THE CONSTRUCTION PHASE OF THE PROJECT WILL BE IN FULL COMPLIANCE WITH MS-19.

ADDRESS VADO COMMENTS	ADDRESS VADO COMMENTS	ADDRESS VADO COMMENTS	ADDRESS VADO COMMENTS	ADDRESS VADO COMMENTS	PLAN SUBMISSION	DESCRIPTION:	REVISIONS:										
DW	DW	DW	DW	DW	DW	CHGD.:											
RE	RE	RE	RE	RE	RE	APPD.:											
KAL	KAL	KAL	KAL	KAL	KAL	DWN.:											
6	03/23/18	KAL	03/16/18	KAL	02/21/18	KAL	02/05/18	KAL	01/12/18	KAL	09/21/17	KAL	NO.:	DATE:			
Mountain Valley Ancillary Site EROSION AND SEDIMENT CONTROL PLANS MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE GILES COUNTY, VIRGINIA																MOUNTAIN VALLEY PIPELINE, LLC 555 SOUTHPOINTE BOULEVARD, SUITE 200 CANONSBURG, PA 15317	
 TETRA TECH complex world CLEAR SOLUTIONS™ 661 ANDERSEN DRIVE FOSTER PLAZA 7 PITTSBURGH, PA 15220																	
<div>CONSTRUCTION PLANS</div>																	
																	
DRAWN BY: KAL																	
CHECKED BY: RE																	
APPROVED BY: DW																	
DATE: 03/23/18																	
SCALE: AS SHOWN																	
SHT. NO. LY-028-8 OF 11																	

14. **BEST MANAGEMENT PRACTICES INSTALLATION AND REMOVAL NOTES:**

TEMPORARY AND PERMANENT BMPS WILL BE USED DURING CONSTRUCTION ACTIVITIES TO AVOID AND/OR MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS OF CONSTRUCTION ACTIVITIES.

THE FOLLOWING ARE GENERAL BMP INSTALLATION NOTES FOR PIPEYARD AND LAYDOWN AREA CONSTRUCTION ACTIVITIES.

- A STONE CONSTRUCTION ENTRANCE, SHOWN ON DETAIL SHEET, SHALL BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PAVED ROAD DIRECTLY FROM A DISTURBED AREA.
- VEGETATION WILL BE REMOVED BY BRUSH HOGGING THE AREA; ANY TREES TO BE REMOVED WILL BE CONDUCTED BY HAND FELLING/CUTTING OF STUMPS AT THE GROUND SURFACE. TEMPORARY GRAVEL OVER GEOTEXTILE (SEE DETAIL) WILL BE INSTALLED AFTER ALL VEGETATION/TREES ARE REMOVED.
- WETLANDS (IF PRESENT) WILL BE PROTECTED WITH SILT FENCE OR BELTED SILT RETENTION FENCE (BSRF). IN ADDITIONAL, ORANGE CONSTRUCTION SAFETY FENCE WILL BE INSTALLED TO PROTECT WETLANDS FROM DISTURBANCE. STREAM CROSSINGS (IF PRESENT) WILL EITHER UTILIZE EXISTING CULVERTS OR BE SPANNED USING TIMBER MAT BRIDGES.
- DEWATERING, IF NEEDED, WILL BE CONDUCTED USING A PUMP AND HOSE. WATER WILL BE RELEASED INTO A FILTER BAG THAT WILL BE LOCATED IN A WELL-VEGETATED UPLAND AREA.
- ALL DISTURBED AREAS WILL BE GRADED IN PREPARATION FOR SEEDING AND MULCHING. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. REFER TO TABLES ON THIS SHEET FOR TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS.
- TEMPORARY SEDIMENT BARRIERS WILL BE MAINTAINED UNTIL VEGETATION HAS BECOME ESTABLISHED WITH A GROUND COVER THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. ONCE THIS COVERAGE HAS BEEN OBTAINED, APPROPRIATE CONTROLS WILL BE REMOVED FROM THE WORK AREA. AREAS DISTURBED DURING THE REMOVAL OF THE EROSION CONTROLS WILL BE STABILIZED IMMEDIATELY.
- ALL WASTE MATERIAL WILL BE TRANSPORTED OFFSITE FOR RECYCLING AND/OR DISPOSAL AT A FACILITY APPROVED TO RECEIVE THE MATERIAL.
- IN NON-AGRICULTURAL AREAS THE VISUAL SURVEY SHALL BE COMPARED TO THE DENSITY AND COVER OF ADJACENT UNDISTURBED LANDS. IN AGRICULTURAL AREAS, THE VISUAL SURVEY SHALL BE COMPARED TO THE ADJACENT UNDISTURBED PORTIONS OF THE SAME FIELD, UNLESS THE EASEMENT AGREEMENT SPECIFIES OTHERWISE.

GENERAL CONSTRUCTION SEQUENCE

THE FOLLOWING IS A GENERAL SEQUENCE OF ACTIVITIES ASSOCIATED WITH CONSTRUCTION OF THE PIPEYARDS AND LAYDOWN AREAS:

1. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO EARTH DISTURBANCE. APPROPRIATE BMPS SHOULD BE PLACED AROUND SENSITIVE AREAS PRIOR TO EARTH DISTURBANCE. STONE CONSTRUCTION ENTRANCES (SCE) ARE TO BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ACCESSING A PAVED ROAD DIRECTLY FROM A DISTURBED AREA.
2. INSTALL PERIMETER CONTROLS PRIOR TO VEGETATION REMOVAL.
3. REMOVE VEGETATION BY BRUSH HOGGING THE AREA; REMOVE TREES (IF NECESSARY) BY HAND FELLING/CUTTING STUMPS AT THE GROUND SURFACE.
4. INSTALL TEMPORARY GRAVEL OVER GEOTEXTILE.
5. FOLLOWING PROJECT USE, ALL GRAVEL AND UNDERLYING GEOTEXTILE WILL BE REMOVED.
6. PRIOR TO SEEDING MVP WILL DISC AREAS TO A DEPTH OF 4-6" TO FACILITATE REVEGETATION.
7. REVEGETATE DISTURBED AREA PER THE TABLES ON DETAILS MVP-ES11.1 TO 11.9 OR PER LANDOWNER REQUEST.
8. TEMPORARY BMP'S WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION, WHICH IS DEFINED AS "A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION". AREAS NOT ATTAINING AN ACCEPTABLE VEGETATIVE COVER SHALL BE RESEEDDED AS NEEDED UNTIL THE ENDPOINT IS ACHIEVED.
9. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND LEGALLY DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATERS. WOODY DEBRIS MAY BE CHIPPED AND SPREAD ON-SITE.

BMP MAINTENANCE

- TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPS SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH THE APPROVED STANDARDS AND SPECIFICATIONS.
- IN NON-AGRICULTURAL AREAS THE VISUAL SURVEY SHALL BE COMPARED TO THE DENSITY AND COVER OF ADJACENT UNDISTURBED LANDS. IN AGRICULTURAL AREAS, THE VISUAL SURVEY SHALL BE COMPARED TO THE ADJACENT UNDISTURBED PORTIONS OF THE SAME FIELD, UNLESS THE EASEMENT AGREEMENT SPECIFIES OTHERWISE.
- CONDUCTING INSPECTIONS OF TEMPORARY ESC CONTROLS AND SWM BMPS AT LEAST ONCE EVERY FOUR BUSINESS DAYS.
- TEMPORARY BMPS WILL BE REMOVED UPON ACHIEVING VEGETATIVE STABILIZATION, WHICH IS DEFINED AS "A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION". DISTURBED AREAS NOT ATTAINING AN ACCEPTABLE VEGETATIVE COVER SHALL BE RESEEDDED AS NEEDED UNTIL THE ENDPOINT IS ACHIEVED.
- TEMPORARY EROSION AND SEDIMENT CONTROL BMPS SHOULD BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPS ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPS OR VEGETATION SHALL BE PERMANENTLY STABILIZED.


RESTORATION BMP PHASING

THE FOLLOWING IS THE SEQUENCE OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE REMOVAL AND INSTALLATION RELATED TO RESTORATION ACTIVITIES. THIS WORK WILL OCCUR BETWEEN RESTORATION OF PIPEYARD / LAYDOWN AREA AND FINAL CLOSURE OF THE PROJECT DEFINED AS "ACHIEVING VEGETATIVE STABILIZATION". THE SEQUENCE IS:

1. REMOVE TEMPORARY GRAVEL AND UNDERLYING GEOTEXTILE.
2. DISC/AERATE SOILS TO A DEPTH OF 4-6" TO FACILITATE REVEGETATION.
3. APPLY SPECIALTY SEEDS AS REQUIRED THAT WILL NOT BE HANDLED IN THE MULCH PHASE (STEP 4), SEED THE AREA USING THE SEED MIXES AND RATES SPECIFIED IN MVP-ES11.1 TO MVP-ES11.9 OR PER LANDOWNER REQUEST.

4. APPLY MULCH IN THE FORM OF ORGANIC MULCH (PER MVP-ES45), SOIL STABILIZATION MATTING (PER VADEQ STD & SPEC 3.36), OR HYDRAULIC EROSION CONTROL PRODUCT (PER MVP-ES40).
5. FOLLOWING A DETERMINATION THAT THE SITE HAS ACHIEVED VEGETATIVE STABILIZATION, THE COMPOST FILTER SOCK WILL BE "OPENED" AND THE MULCH CONTAINED WITHIN WILL BE SPREAD WITHIN THE LIMITS OF DISTURBANCE.

6	03/23/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
5	03/16/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
4	02/21/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
3	02/05/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
2	01/12/18	KAL	RE	DW	ADDRESS VADEQ COMMENTS
1	09/21/17	KAL	RE	DW	PLAN SUBMISSION
NO.:	DATE:	DWN.:	CHD.:	APPD.:	DESCRIPTION:
REVISIONS:					



Mountain Valley
ANCILLARY SITE

EROSION AND SEDIMENT CONTROL PLANS
MOUNTAIN VALLEY PIPELINE PROJECT – H600 LINE
GILES COUNTY, VIRGINIA

MOUNTAIN VALLEY PIPELINE, LLC
555 SOUTHPOINTE BOULEVARD, SUITE 200
CANONSBURG, PA 15317

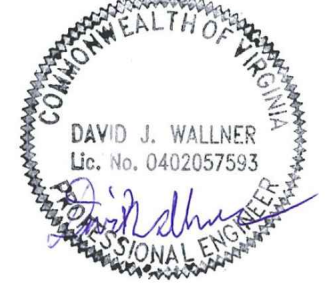


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FOSTER PLAZA 7
PITTSBURGH, PA 15220

CONSTRUCTION
PLANS



DRAWN BY: KAL

CHECKED BY: RE

APPROVED BY: DW

DATE: 03/23/18

SCALE: AS SHOWN

SHT. NO. LY-028-9 OF 11

REVISION

EXISTING CONDITIONS PLAN



TOPO DATA SOURCE:
CONTOUR DATA DERIVED FROM LIDAR PROVIDED BY EQT 2018

PROPOSED PIPE YARD PLAN
SCALE: 1" = 100'
100 0 100 200

LEGEND

- | | | | |
|------|---------------------------|-----|--------------------------------|
| 1160 | EXISTING CONTOUR (MAJOR) | — | FEMA FLOODWAY |
| --- | EXISTING CONTOUR (MINOR) | --- | EXISTING SOIL DIVIDE |
| --- | EXISTING PROPERTY LINE | --- | PROPOSED LIMIT OF DISTURBANCE |
| --- | EXISTING ROAD CENTERLINE | --- | AGRI |
| ○ | EXISTING FIRE HYDRANT | ○ | AGRICULTURAL LAND USE BOUNDARY |
| ○ | EXISTING WATER METER | ○ | STEEP SLOPE (SEE NOTE 2) |
| ○ | EXISTING SANITARY MANHOLE | ○ | |
| — | EXISTING STREAM | — | |
| — | EXISTING WETLAND | — | |

- NOTES:
- CONTRACTOR IS RESPONSIBLE TO IDENTIFY ALL UTILITIES. THE UTILITY LINES SHOWN ON THE PLAN ARE FOR INFORMATIONAL PURPOSES ONLY AND DO NOT REPRESENT SURVEYED LINE INFORMATION.
 - THE SITE IS LOCATED WITHIN THE FLOOD PLAIN OF THE NEW RIVER. MVP HAS WORKED WITH THE TOWN OF NARROWS AND THE SITE AREA HAS BEEN MODIFIED TO ADDRESS THE LOCALITY'S CONCERNS. NO ADDITIONAL SPECIAL CRITERIA ARE REQUIRED PER THE LOCALITY.

NO.	DATE	CHKD.	APPD.	DESCRIPTION
6	03/23/18	KAL	DW	ADDRESS VADEQ COMMENTS
5	03/16/18	KAL	DW	ADDRESS VADEQ COMMENTS
4	02/21/18	KAL	DW	ADDRESS VADEQ COMMENTS
3	02/05/18	KAL	DW	ADDRESS VADEQ COMMENTS
2	01/12/18	KAL	DW	ADDRESS VADEQ COMMENTS
1	09/21/17	KAL	DW	PLAN SUBMISSION

Mountain Valley ANCILLARY SITE EXISTING CONDITION PLANS MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE GILES COUNTY, VIRGINIA	REVISIONS: MOUNTAIN VALLEY PIPELINE, LLC 555 SOUTHPOINTE BLVD, SUITE 200 CANONSBURG, PA 15317
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TETRA TECH complex world CLEAR SOLUTIONS™ 661 ANDERSEN DRIVE FOSTER PLAZA 7 PITTSBURGH, PA 15220
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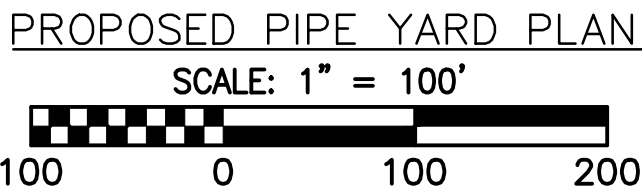
CONSTRUCTION PLANS

COMMONWEALTH OF PENNSYLVANIA DAVID J. WALLNER Lic. No. 0402057593 Professional Engineer	DRAWN BY: KAL CHECKED BY: RE APPROVED BY: DW DATE: 03/23/18 SCALE: AS SHOWN SHT. NO. LY-028-10 OF 11
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EROSION AND SEDIMENT CONTROL/STORMWATER MANAGEMENT PLAN



TOPO DATA SOURCE:
CONTOURS DATA DERIVED FROM LIDAR PROVIDED BY EQT 2018



LEGEND

- | | | | |
|-------|----------------------------------|-------------|--|
| 1160 | EXISTING CONTOUR (MAJOR) | 12-12-12-12 | PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2) |
| ----- | EXISTING CONTOUR (MINOR) | 18-18-18-18 | PROPOSED COMPOST FILTER SOCK (SEE DETAILS MVP-ES3, 3.1, 3.2) |
| ----- | EXISTING PROPERTY LINE | ----- | PROPOSED LIMIT OF DISTURBANCE |
| ----- | FEMA FLOODWAY | ----- | STEEP SLOPE AREAS |
| ----- | EXISTING STREAM | ----- | PROPOSED STONE CONSTRUCTION ENTRANCE |
| ----- | EXISTING WETLAND | ----- | FLOW DIRECTION |
| ----- | PROPOSED ACCESS ROAD CENTERLINE | | |
| ----- | ORCSF | | |
| ----- | ORANGE CONSTRUCTION SAFETY FENCE | | |

NOTES:

- CONTRACTOR IS RESPONSIBLE TO IDENTIFY ALL UTILITIES. THE UTILITY LINES SHOWN ON THE PLAN ARE FOR INFORMATIONAL PURPOSES ONLY AND DO NOT REPRESENT SURVEYED LINE INFORMATION.
- THE SITE IS LOCATED WITHIN THE FLOODPLAIN OF THE NEW RIVER. MVP HAS WORKED WITH THE TOWN OF NARROWS AND THE SITE AREA HAS BEEN MODIFIED TO ADDRESS THE LOCALITY'S CONCERNS. NO ADDITIONAL SPECIAL CRITERIA ARE REQUIRED PER THE LOCALITY.
- VEGETATION WILL BE REMOVED BY BRUSH HOGGING THE AREA; ANY TREES TO BE REMOVED WILL BE CONDUCTED BY HAND FELLING/CUTTING OF STUMPS AT THE GROUND SURFACE. TEMPORARY GRAVEL OVER GEOTEXTILE (SEE DETAIL) WILL BE INSTALLED AFTER ALL VEGETATION/TREES ARE REMOVED.
- NO GRUBBING OR OTHER SOIL DISTURBING ACTIVITIES WILL BE CONDUCTED, AND TOPSOIL STRIPPING WILL NOT OCCUR.
- ALL OIL OR OTHER CHEMICAL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY IN ACCORDANCE WITH THE LY-028 STORMWATER POLLUTION PREVENTION PLAN (SWPPP).

NO.	DATE	CHKD.	APPD.	DESCRIPTION
6	03/23/18	KAL	DW	ADDRESS VADEQ COMMENTS
5	03/16/18	KAL	DW	ADDRESS VADEQ COMMENTS
4	02/21/18	KAL	DW	ADDRESS VADEQ COMMENTS
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2	01/12/18	KAL	DW	ADDRESS VADEQ COMMENTS
1	09/21/17	KAL	DW	PLAN SUBMISSION

Mountain Valley ANCILLARY SITE	
EROSION AND SEDIMENT CONTROL PLANS	
MOUNTAIN VALLEY PIPELINE PROJECT - H600 LINE	
GILES COUNTY, VIRGINIA	
REVISIONS:	
MOUNTAIN VALLEY PIPELINE, LLC	
555 SOUTHPOINTE BOULEVARD, SUITE 200	
CANONSBURG, PA 15317	

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complex world | CLEAR SOLUTIONS™

661 ANDERSEN DRIVE
FOSTER PLAZA 7
PITTSBURGH, PA 15220

CONSTRUCTION PLANS

COMMONWEALTH OF PENNSYLVANIA
DAVID J. WALLNER
Lic. No. 0402057593
Professional Engineer

DRAWN BY:	KAL
CHECKED BY:	RE
APPROVED BY:	DW
DATE:	03/23/2018
SCALE:	AS SHOWN
SHT. NO.	LY-028-11 OF 11